

**UNIVERSITY OF ST. THOMAS
INFORMATION RESOURCES AND TECHNOLOGIES PLAN**

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I. INTRODUCTION

The Information Resources and Technologies (IRT) Plan provides strategic direction for information resources and technologies in support of the University of St. Thomas Strategic Plan. As the University of St. Thomas moves toward the completion of its new Strategic Plan, great attention is being paid to the characteristics – Access, Excellence, and Catholic Identity – that will define and direct the university in the coming years.

A. University of St. Thomas Mission and Vision

The IRT Plan is grounded in the University’s Mission, Vision, and Strategic Planning Process Priorities.

University of St. Thomas Mission

Inspired by Catholic intellectual tradition, the University of St. Thomas educates students to be morally responsible leaders who think critically, act wisely and work skillfully to advance the common good.

University of St. Thomas Vision

We seek to be a recognized leader in Catholic higher education that excels in effective teaching, active learning, scholarly research and responsible engagement with the local community as well as with the national and global communities in which we live.

B. University of St. Thomas Strategic Priorities: Planning for the Future

(Approved by the University of St. Thomas Board of Trustees May 4, 2006)

“As we continue to move forward, we set forth our goals under three themes: *Access, Excellence, and Catholic Identity.*”

1. Access

Strategic Priority 2:

The University will attract and retain a highly talented and diverse student body at the undergraduate and graduate levels by reducing financial barriers and improving the environment for under-represented groups on campus.

Indicators of achievement of this priority:

Technology enables student services to be more accessible and effective.

2. Excellence

Strategic Priority 1

The University of St. Thomas will further develop a campus environment wherein all students are challenged to develop intellectually, personally, and spiritually to remain life-long learners and morally responsible citizens.

Indicators of achievement of this priority:

Technology makes learning opportunities more varied and available.

3. Excellence

Strategic Priority 4

We will improve academic and administrative processes, systems, and policies to enhance effectiveness and eliminate waste and duplication; and develop budget and resource allocation strategies that reward progress toward institutional goals and priorities.

Indicators of achievement of this priority:

Human, fiscal, technological and physical resources are focused to support the institution's emphasis on excellence and its strategic plan.

4. Catholic Identity

Strategic Priority 1

The University of St. Thomas will further engage its Catholic identity by exploring the meaning and heightening the understanding of Catholic intellectual tradition throughout its curricular and co-curricular activities.

Indicators of achievement of this priority:

Search committees provide information on the Catholic identity and mission of the University to candidates and consider their potential contributions to the mission of the University.

C. The Information Resources and Technologies Context

From this framework, the strategic directions for IRT continue to evolve. IRT's strategic vision is to collaborate within and beyond the university to create and sustain an information resources and technologies environment that enables innovation and outstanding service to university constituents. The vision is characterized by an environment – a high performance workplace -- that is personalized, secure, intuitive and integrated, and provides access to exceptional information resources with seamless movement and full mobility for its users on our always-on, 24x7 network. The Gartner Group definition of a high performance workplace is that it “combines technologies, processes and management so workers can create more value. This area integrates multiple technology perspectives, including collaboration, information access, content and knowledge management, messaging, portals, e-learning and productivity tools.”

The high performance workplace environment outlined in this vision is an ideal toward which IRT and its many partners aspire. It is an environment of constant change and improvement – and one of continuing care and support across our community. Whether it is by proposing or funding a project to address future requirements, maintaining on-going security and operations, reporting a problem or asking a question, all of us are obligated to make sure UST's technology resources are built and maintained to the full benefit of the university.

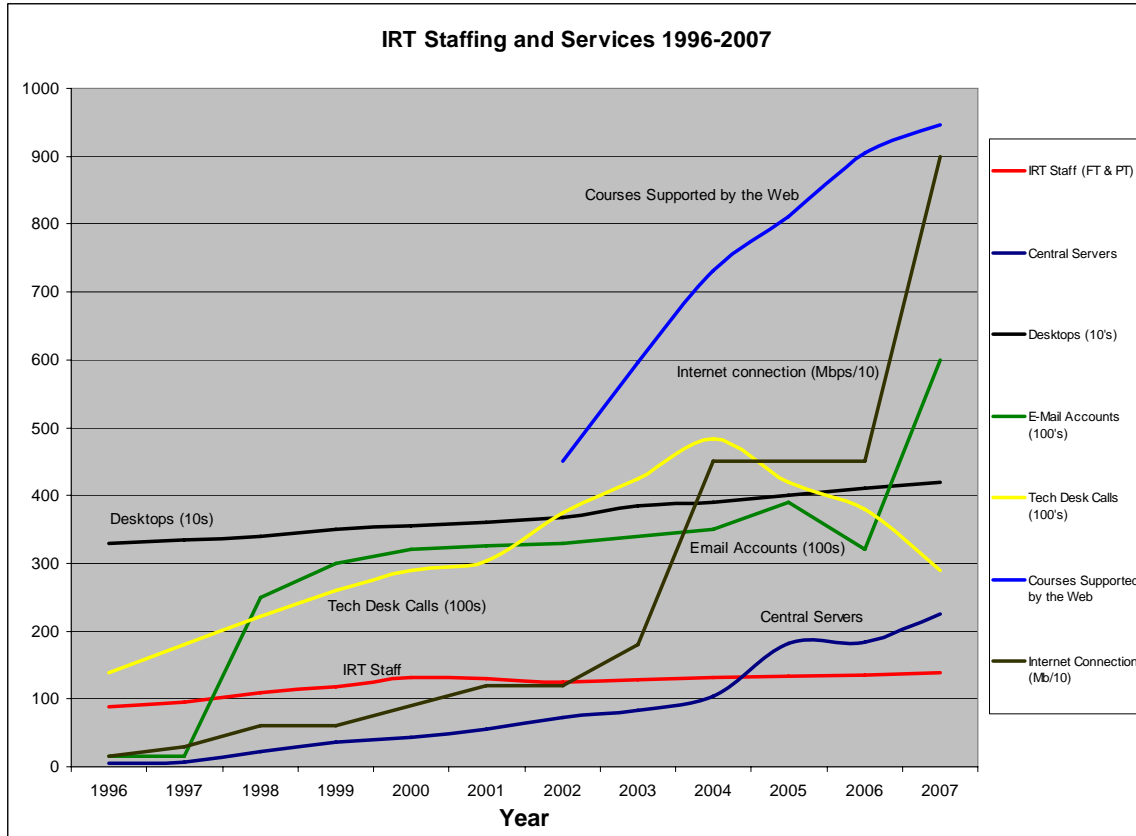
The IRT Plan addresses the importance of planning issues that will face the University in the coming years. The IRT goals contained within this document provide the strategies necessary to support the use of information resources and technologies in the academic and administrative practices of the university and the growth and expansion of current programs and services for new University-wide initiatives.

Information resources and technologies at the University encompass institutional activities that use technology for the distribution and access of information across our campuses and other locations.

That includes the use of computing and network technologies to support instruction in classrooms, classroom computing labs, open computing labs and in many other learning spaces on our campus and through secure connectivity from off campus. It also includes:

- An enterprise network that connects all the systems and applications through a central network, including wired and wireless connectivity.
- UST's Information Commons in the University Libraries.
- UST's Web presence, which includes more than 354 web sites as of 2007.
- Technologies that support the University's business and communications processes, including 225 servers that support 83 enterprise software applications.
- A technology environment that consists of all the hardware and operating systems for the network, central computer systems and storage, voice systems, and video systems.
- The University's growing technology resources include:
 - Networked personal computers that have grown to over 4,200 today.
 - Eighty-four academic department computing labs that total 1,063 stations, and another 32 department settings with 1-2 computers each.
 - Nineteen "public" labs with 434 stations.
 - Seven residence hall labs with 66 stations.
 - Wireless network access (800 access points) across the campuses.
 - "Smart" spaces that include 179 of UST's 267 (67%) classrooms – 75 added over the last four years.
 - Network systems supporting more than 15,000 voice stations/13,500 network nodes.
 - Campus and intercampus networks: The University is connected to the Internet via two 45-Megabit circuits, and a single 45-Megabit connection to Internet2. The former provide Internet access for full-time and part-time faculty, staff, students and the community, while the latter provides connectivity to universities and other organizations connected to Internet2. By fall 2007, connectivity will increase to 150 Mbps for Internet and 50 Mbps for Internet2, with an intercampus connection between St. Paul and Minneapolis campuses of 200 Mbps.

Rapid growth in the use of technology resources has been a part of UST's overall growth in the last decade. Increased use for teaching and learning, scholarly activity, and conducting the university's business are defining characteristics, and have mirrored the growth in universities in general, as well as all sectors of the economy.



Year	IRT Staff	Servers	E-Mail Accounts	PCs	Tech Desk Calls	Web Courses	Internet Connection (Mb/sec)
1996	89	5	1,500	3,300	138,000		1.5
1997	96	7	1,500	3,350	180,000		3
1998	109	22	25,000	3,400	222,000		6
1999	117	36	30,000	3,500	260,000		6
2000	131	43	32,000	3,559	290,000		9
2001	130	55	32,500	3,607	304,000		12
2002	125	73	33,000	3,671	374,000	450	12
2003	128	84	34,000	3,856	425,000	597	18
2004	132	104	35,000	3,900	484,000	732	45
2005	133	182	39,000	4,000	420,000	811	45
2006	135	184	32,000	4,100	380,000	905	45
2007	138	225	60,000	4,200	290,000	946	90

These services are supported and maintained through the Information Resources and Technologies division and are described in greater detail at <http://www.stthomas.edu/irt>.

II. PLANNING PROCESS

A. Overview

The *IRT Plan* is an integral part of the University-wide process for strategic planning. The *University Vision, Mission, Convictions* contained within this document are the principles that guide the IRT plan. The IRT Plan is a projection, which will be reviewed, revised and funded on an annual basis to reflect UST's evolving needs and technological advancements. The plan identifies current status in a variety of areas, summarizes literature reviewed by the University Technology Advisory Committee, describes principles, assumptions and findings from committee and subcommittee work, and establishes a set of goals for consideration in future university planning and budgeting priorities.

The *University Technology Advisory Committee (UTAC)* advises IRT on the development of the IRT Plan drafts through consultative and deliberative processes. A final draft is submitted for review by university leaders. The Plan is then submitted, following executive review, to the Board of Trustees as part of the UST Strategic Plan.

The process is integrated with the development of the University's Strategic Plan. The IRT Plan's development is coordinated by the Vice President of Information Resources and Technologies. Also, industry consultants, major vendors, and every area of the University are involved in the planning process through IRT Partners and other advisory committees. Interviews, surveys, and research are used to collect data on information resources and technologies directions and define major issues that will impact the University in the coming years.

We owe special thanks to the UTAC members of past years, and especially those of 2006-07, for their contributions. The 2006-07 members include:

Carole Bagley, Lisa Burke, Rosann Cahill, Jane Canney, Dan Gjelten, Jennifer Haas, Mari Heltne, Elizabeth Houle, Tom Ippoliti, Marisa Kelly, Sam Levy, Bhabani Misra, Lucy Payne, William Raffield, Randy Sauter, Gene Scapanski, and Mark Vangsgard.

B. Planning Principles

As the UTAC and UST's IRT organization select from among the many alternatives that hold potential to assist in bringing this vision to reality, several dominant principles resonate as guides to our work.

- ***Support of instruction, scholarly activity, service, and the university's business is our primary mission – not technology for its own sake.*** Information resources and technologies projects exist to facilitate the greater mission of the university.
- ***The information resources and technologies environment is ubiquitous and requires collaboration and personalization.*** Access to resources and devices in an increasingly collaborative and personalized environment challenges many accepted principles of learning environments and business processes, but also leads to great opportunities.
- ***Change is continuous in information resources and technologies, and the rate of change continues to increase.*** No information resources and technologies environment is ever complete. It reflects the on-going evolution of the university and its constituents.
- ***The structure of information resources and technologies is increasingly complex.*** The instructional and business processes of the university require an integrated and sophisticated portfolio of information resources and technologies.
- ***Collaboration is essential as complexity increases.*** On an enterprise, university-wide level, no single group can evaluate the full spectrum of systems needs nor assess priorities

among the various technology investments available. Managing the university's information resources and technologies requires that people and departments "own" their data and processes while collaborating in a campus-wide coordination.

- ***Information resources and technologies demand careful stewardship and project management.*** The potential for successful outcomes from technology projects is best assured by cooperating throughout the university to examine potential costs and benefits, evaluate alternatives and provide appropriate direction and oversight.

While seemingly apparent, these principles provide a foundation of shared values. By adopting these principles, IRT is challenged to bring understanding and dedication to the tasks of information resources and technologies management.

C. Planning Assumptions

The planning assumptions are the conditions or boundaries that are recognized in the development of the plan. They were derived from the external environment and campus guidelines.

University Libraries and Information Commons

- The Libraries will be operating a "hybrid" environment, with collections that are both print and digital.
- The Libraries' digital resources will grow in number and type and will continue to be among the most heavily used of the collection.
- The Libraries' physical spaces will evolve into "community" space and will evolve from repositories to spaces where teaching, learning and socializing occurs.
- Library services will expand from the traditional (collection building, circulation and reference) into areas such as digital asset management, remote information services, and instruction in principles of information literacy.

Information Resources and Technologies

- Information resources and technologies are a strategic, university-wide resource.
- Continuous upgrade of the university's network is increasingly critical to all information resources and technologies' use.
- Technologies' use will continue to increase on campus.
- Technologies will continue to become increasingly mobile.
- Security will continue to be a critical and challenging issue.
- Improvements to search engines will continue to make information resources increasingly accessible.
- The increasing use of technologies necessitates provision of clear access to information repositories and clear policy and conventions for organizational communications.
- The information resources and technologies environment should meet student, faculty, and staff expectations for service and support.
- Training and support are necessary components in using technology effectively.
- New facilities should be designed with an understanding of technologies use.
- Technology infrastructure and applications should be continually improved based on cost effective solutions.
- Future development of systems will be Web-centric.
- Investment in appropriate technologies should continue.
- Assessment of the technology needs of the institution should continue.
- The program of development for "smart" classrooms should continue.

Technology Replacement

- We will annually evaluate the technology replacement plan for all systems and applications.
- We will maintain systems replacement based upon current lease cycles.
- The PC replacement cycle will continue on a three-year or four-year cycle for desktop and laptop computers, projectors, network printers, and servers. Enterprise servers will be replaced on a three-year cycle as needed, with buyouts exercised as appropriate.

III. REVIEWING THE LITERATURE FOR FUTURE DIRECTIONS OF INFORMATION RESOURCES AND TECHNOLOGIES IN HIGHER EDUCATION

Higher Education institutions are facing dramatic changes being fueled by continuing advancements in technologies. The UTAC reviewed, as part of its processes, literature from a variety of sources and on a variety of topics. Those sources and their key findings are summarized below. The results were intended to inform a wide ranging discussion, not to be a prescriptive set of goals and objectives.

1. Changing a Cultural Icon: The Academic Library as a Virtual Destination
2. ECAR Study of Students and Information Technology 2005: Convenience, Connection, Control and Learning
3. Learners, Learning, & Technology
4. Gartner's Magic Quadrant for Higher Education Administrative Suites, 2006
5. 2007 Gartner Hype Cycle
6. The Horizon Report 2007
7. Growing by Degrees: Online Education in the United States, 2005
8. Tomorrowland: When New Technologies get Newer
9. Educause Top-Ten IT Issues, 2007
10. Educause Top-Ten IT Issues, 2006

1. Changing a Cultural Icon: The Academic Library as a Virtual Destination

By Jerry D. Campbell

<http://www.educause.edu/apps/er/erm06/erm0610.asp>

Abstract

Deep into the digital age, academic libraries have relinquished much of their fundamental and sustaining role. For most people, including academicians, the library—in its most basic function as a source of information—has become overwhelmingly a virtual destination.

Academic libraries today are complex institutions with multiple roles and a host of related operations and services developed over the years. Yet their fundamental purpose has remained the same: to provide access to trustworthy, authoritative knowledge. Consequently, academic libraries—along with their private and governmental counterparts—have long stood unchallenged throughout the world as the primary providers of recorded knowledge and historical records. Within the context of higher education especially, when users wanted dependable information, they turned to academic libraries.

Today, however, the library is relinquishing its place as the top source of inquiry. The reason that the library is losing its supremacy in carrying out this fundamental role is due, of course, to the impact of

digital technology. As digital technology has pervaded every aspect of our civilization, it has set forth a revolution not only in how we store and transmit recorded knowledge, historical records, and a host of other kinds of communication but also in how we seek and gain access to these materials.

Need for a New Mission

Numerous creative and useful services have evolved within academic libraries in the digital age: providing quality learning spaces; creating metadata; offering virtual reference services; teaching information literacy; choosing resources and managing resource licenses; collecting and digitizing archival materials; and maintaining digital repositories

Providing Quality Learning Spaces

In recent years, library spaces have been altered to accommodate the increasingly digital environment and to adapt to changing research and study styles. It may be that as scholarship becomes more interdisciplinary and classrooms become more virtual, universities will need more high-quality, library-like space for student interaction, peer learning, collaboration, and similar functions.

Creating Metadata

As libraries continue to make information accessible via the Web, there will be considerable need within the academy for the development of portals, tools, and strategies customized for precision research on the vast Web.

Offering Virtual Reference Services

Academic libraries now widely report that reference transactions have expanded from the reference desk to online chat, individual consultation, e-mail, and telephone-reference services have become more virtual. At the same time, the question-and-answer process, which is the heart of traditional reference, is suffering encroachment from increasingly sophisticated natural-language search engines.

Teaching Information Literacy

The National Forum on Information Literacy (<http://www.infolit.org>) was established in 1989, and a number of organizations, including the Association of College and Research Libraries, have developed information literacy competency standards. It is unclear whether the continued migration of information to the Web will result in a less-complicated environment with a reduced need for information literacy or whether placing everything together in one environment will make the need greater.

Choosing Resources and Managing Resource Licenses

Within the next decade, published academic knowledge of all types will likely be issued digitally and made accessible on the Web, with paper publishing limited to mass-market titles, textbooks, and other areas that make economic sense. This circumstance will gradually eliminate much of what remains of the collection-development process and will shift the librarian's role much more toward managing licenses.

Collecting and Digitizing Archival Materials

Academic libraries and other agencies began efforts to develop digital archives and make them available on the Web. This has caused an increase in the use of archives by scholars and, in turn, has given new value and impetus to both the collecting and the digitizing of archival materials.

Maintaining Digital Repositories

Creating and maintaining institutional repositories (IRs), developing the policies necessary to accompany them, and helping to manage the intellectual property rights associated with the data constitute an urgent and important agenda.

Conclusion

Because of the fundamental role that academic libraries have played in the past century, it is tremendously difficult to imagine a college or university without a library. Considering the extraordinary pace with which knowledge is moving to the Web, it is equally difficult to imagine what an academic library will be and do in another decade. But that is precisely what every college and university should undertake to determine. Given the implications of the outcome, this is not an agenda that librarians can, or should, accomplish alone. Over the next decade, colleges and universities will have to make critically important practical and policy decisions about the function of libraries, about the space devoted to libraries, and about the roles of librarians. If these decisions are made wisely, the academy may be able to maintain much of the ineffable, inspirational value associated with academic libraries while retaining their practical value through altogether transformed activities and functions built upon a new mission designed for a more digital world.

2. ECAR Study of Students and Information Technology 2005: Convenience, Connection, Control and Learning

*By Judith Caruso, and Robert Kvavik, Educause Center for Applied Research
October 2005*

<http://connect.educause.edu/library/abstract/ECARStudyofStudentsa/41159>

This 2005 roadmap is based on quantitative data from over 18,000 freshmen and senior students at 63 higher education institutions. It focuses on what kinds of information technologies today's students are using, with what levels of skill they are using them, how information technology use contributes to the undergraduate experience, and what value the use of IT adds in terms of learning.

Key Findings

- Students use technology primarily for convenience and connection, both for academic and social activities.
- Laptop ownership in the 2005 study is 55.6 percent, well above the 46.8 percent laptop ownership in the 2004 study.
- Engineering, business and life sciences students prefer more technology in courses than do students in other disciplines.
- More than 36 percent of student survey respondents think they do not need additional training in order to use IT in their courses. Older students say they need additional training more often than younger students.
- Most students prefer a moderate amount of technology in their courses.
- Students who perceive their instructors to be effective users of IT report more engagement in the course, more interest in the subject matter and better understanding of complex concepts.
- Of students who have used a course management system (CMS), more than 75 percent report a positive or very positive experience with it.
- Regarding CMS features, students most value tracking grades on assignments and tests, and accessing sample exams and quizzes.
- Students report that using CMS improves their learning.

Recommendations

1. Curriculum is important – a major finding was that the students with the highest level of IT skills acquired many of these skills as a result of curricular requirements.
2. Definition of skills is needed for e-learning – each discipline must articulate the competencies and skill level required in digital literacy.
3. Comprehensive training is suggested – Once the skill level is agreed upon training can be designed for both faculty and students
4. Consistent use of IT is desired – students want consistent use of technologies –especially with CMS.
5. IT services and support need to be fast, easy-to-use, and reliable – Students and faculty need basic reliability in IT services or they will not fully adopt technologies to enhance learning.
6. Monitoring and benchmarking are needed – there is a need to measure student and faculty competencies, attitudes about IT in their courses, the use of technology, and the performance of training programs.

3. Learners, Learning, & Technology

By Diana G. Oblinger

The Educause Learning Initiative

<http://www.educause.edu/ir/library/pdf/erm0554.pdf>

Much of what education seeks to achieve—developing human potential—remains constant from one generation of students to the next. However, the social, intellectual, and technical context changes rapidly. As the context changes, institutions must adapt.

As learning technologies have enabled us to do new and exciting things in the classroom, we have also had to ask hard questions about their value for learning. These questions are reshaping how we integrate technology into education and are also pushing us to reexamine our assumptions about teaching and learning:

1. Who are the learners?
2. How do people learn?
3. Is covering content enough?

Learners

- *Net Generation* – students who have grown up in the wired world.
- *Nontraditional Learners* – the majority of American students are considered nontraditional – a category defined by age, work, and dependents.
- *The Next Generation of Learners* – this group will demand to be engaged.

Learning Principles

- *Learning Outcomes* – the ability to learn what we need for tomorrow is more important than what we know today – acquiring a set of skills, attitudes, and competencies. 21st century skills include, information and media literacy; critical thinking and systems thinking; problem identification, formulation, and solution; creativity and intellectual curiosity; interpersonal and collaborative skills; and social responsibility.
- *Successful Learning*

- ID barriers to learning - one of the most common limitations to learning may be the inflexibility of class schedules.
- Interaction and engagement – active and collaborative learning environments are effective for Net generation learners.
- *Informal Learning* – most learning takes place outside of the classroom. With that in mind campuses need to create environments that encourage students to mingle, collaborate, share, and make connections.

Learning Technologies

- *Alternative Media* - enables communicating, conducting research, publishing, and teaching in ways that are essentially different from those based on text. For example podcasting allows faculty to share lectures, updates, or additional material with students in a format that provides the flexibility desired by a highly mobile, busy student population.
- *Learning Spaces* – Learning technology should support learning activity – not be independent of it. Classroom design can help or hinder learning. Effective learning spaces create new patterns of social and intellectual interaction stemming from an understanding of desired competencies, learner activities, campus culture, and human habits.
- *Social Networks* - Social networks adapt to people; social software emulates how people behave. Applications like blogs bring extensive networks of links, references, and recommendations to campuses.

The need for a technology infrastructure to support teaching and learning is no longer in question. Today, IT is defined more broadly: it concerns not only *information* technology but also *instructional* technology—that is, technology in service to learning.

4. Gartner's Magic Quadrant for Higher Education Administrative Suites, 2006

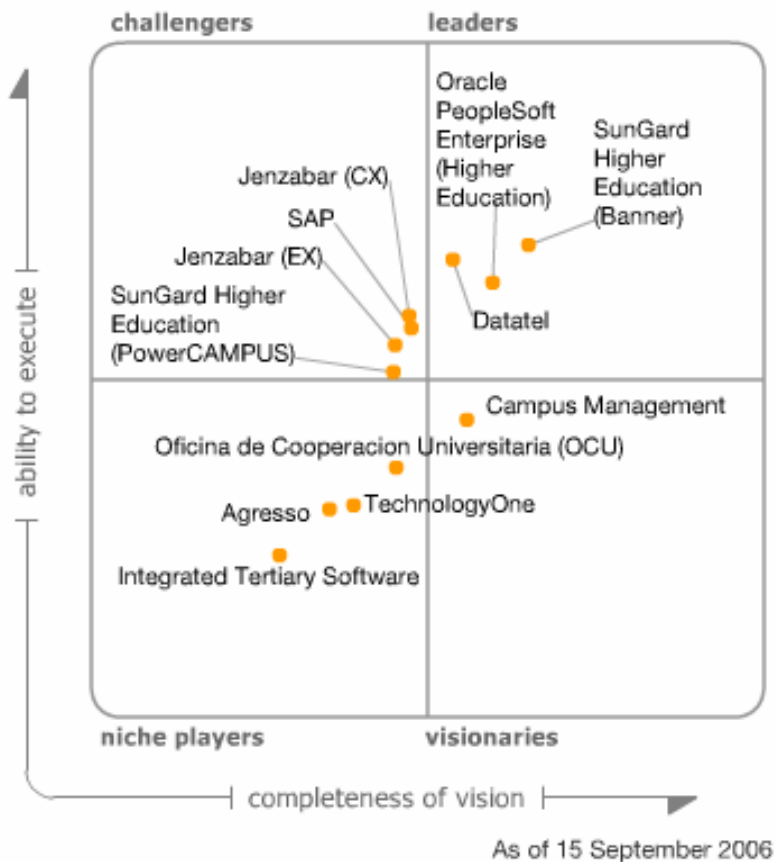
*By Marti Harris, Michael Zastrocky, and Jan-Martin Lowendahl
26 September 2006*

http://www.gartner.com/DisplayDocument?doc_cd=143221&format=html

Abstract

Higher education administrative suite providers are in a tight race to differentiate their products and services. Institutions find themselves with more choices and stronger products to evaluate than in recent years.

The market for higher education administrative applications finds more solutions and more stability. SunGard Higher Education's Unified Digital Campus has begun to move from concept to product releases. Oracle has strengthened its higher education position through the new release of the PeopleSoft Enterprise and Campus Solutions, while SAP has progressed with its student system. Jenzabar's Internet Campus Solution (JICS) portal and Non-Traditional System (NTS) provide customers with more choices. The good news is that higher education institutions are beginning to have more and better choices than in prior years. The bad news is that the selection decision is getting more difficult as vendor vision and execution come closer to completion and as differences are less noticeable. This requires a great deal of human and political investment in the selection process.



Market Overview

This year's Magic Quadrant includes several additional vendors — Agresso, Integrated Tertiary Software (ITS), Oficina de Cooperacion Universitaria (OCU) and TechnologyOne — to provide a global view of administrative suite providers for higher education. We have also increased the number of suites reviewed by breaking out Jenzabar and SunGard Higher Education by product, instead of viewing them as a single company providing multiple suites.

Datatel, Oracle and SunGard have maintained their position in the Leaders quadrant. SunGard continues to set the pace with a strong understanding of higher education administrative needs and a new management team with a solid vision. Jenzabar EX and Jenzabar CX moved up in both ability to execute and their vision, and they are positioned as challengers along with SAP. SunGard PowerCAMPUS has benefited from the recent SunGard Higher Education management change and joins the challengers. Campus Management has moved into the Visionaries quadrant this year and has become a viable contender for small or midsize institutions. Overall, the competition for higher education administrative applications is heating up, and the global picture is improving from the tight budget period of 2001 to 2004.

5. 2007 Gartner Hype Cycle

http://www.gartner.com/DisplayDocument?doc_cd=148910&format=html#h1

Overview

This is the fourth Hype Cycle for Higher Education. New and emerging technologies for

consideration must be viewed from a consumer perspective as students bring their own technologies to campus and expect IT leaders on campus to allow them to seamlessly connect these devices to the campus network while providing quality service and support. Tied to this demand is a need for CIOs to plan for and manage changing expectations while facing the aging of the IT workforce and bringing digital natives into the workforce. This will result in a cultural tension that will rage on at most institutions for at least the next 10 years.

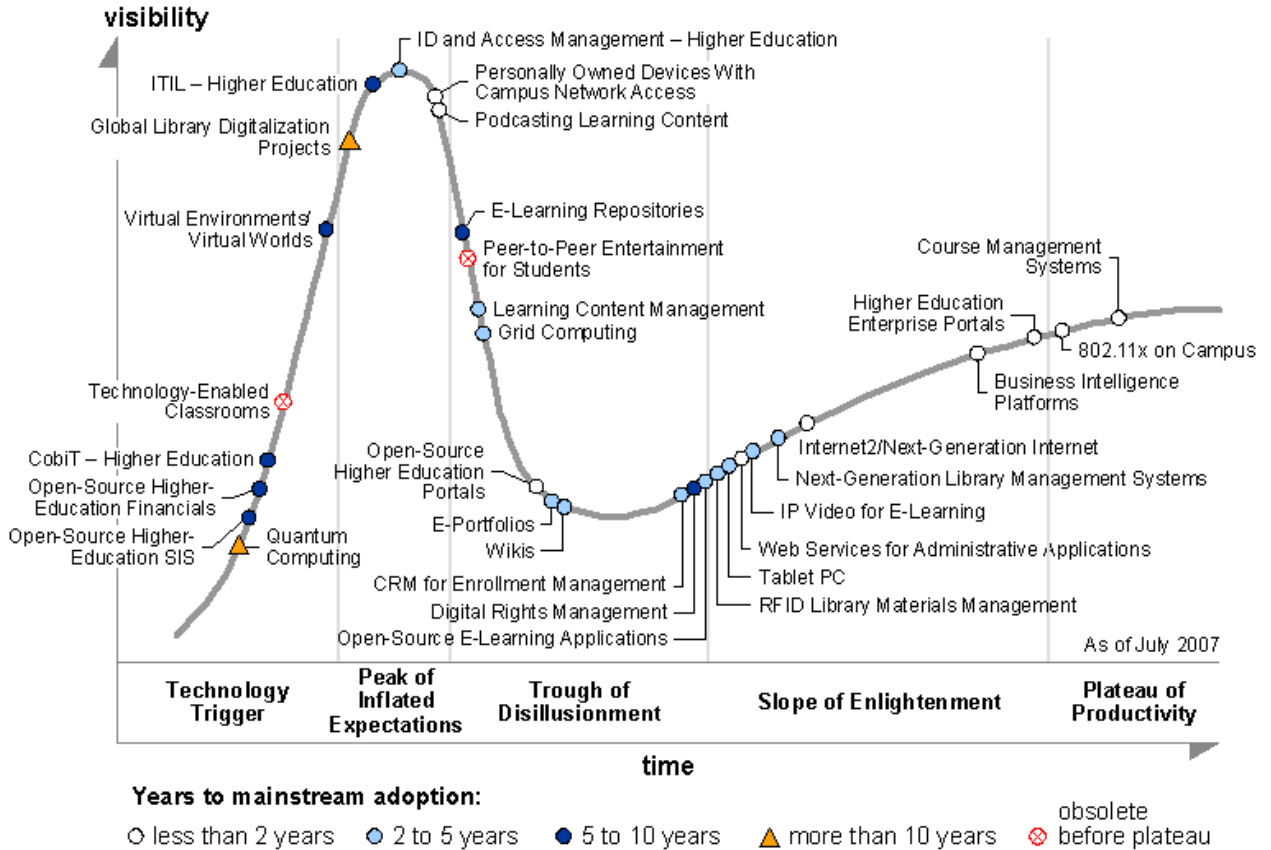
While technologies on the Hype Cycle offer the promise of long-term efficiencies, the cost to bring these technologies to the campus falls on IT budgets, which continue to grow more slowly than demand. This disconnect between increased demand and the need for increased IT expenditures requires higher education IT leaders to market the value and savings to executive leaders and work within a governance model that can appropriately assess and assign priorities. New technologies must continue to be sold and viewed as campus strategies, rather than as IT strategies. Not every institution will or should buy into new technologies at the Technology Trigger point, but should carefully decide when to invest based on the greatest value to the institution and the expected time to maturity. Long-term investments still must be viewed in light of strategic value and competitive advantages.

Since the 2006 Hype Cycle, several key technologies have made progress, some have disappeared as their relevance has diminished, and some new entries are already commanding the attention of higher education IT leaders. New to the Hype Cycle for 2007 are virtual environments/virtual worlds, quantum computing, open-source higher-education financials, open-source student systems, grid computing, wikis, tablet PCs, open-source higher education portals, business intelligence platforms and digital rights management.

The priority for most higher education institutions in 2007 is to ensure that IT investments follow institutional strategic and tactical needs and plans. New investments must be made to ensure institutional competitiveness and provide services and support for changing student and staff needs.

Higher education technology leaders must follow consumer technology-buying trends and the "hot items" that higher education consumers will likely bring to campus in the next 10 years. Higher education institutions must begin to assess their cultural environment for openness of language differences and plan for clear communications with the increasing numbers of digital natives entering their organizations. At the same time, higher education CIOs must become (or must identify) the digital "interpreter" to continually review language and decisions with regard to the nature of the differences in user expectations and needs of both digital natives and digital immigrants.

Hype Cycle for 2007



Technologies that have the ability to transform higher education include global library digitalization projects, personally owned devices with campus network access, Internet2/next-generation Internet, e-learning repositories, quantum computing and virtual environments/virtual worlds. Most of these transforming technologies focus on the teaching and learning environment, where we expect the transforming power of IT to have the greatest impact.

benefit	years to mainstream adoption			
	less than 2 years	2 to 5 years	5 to 10 years	more than 10 years
transformational	Internet2/Next-Generation Internet Personally Owned Devices With Campus Network Access	IP Video for E-Learning	E-Learning Repositories Virtual Environments/ Virtual Worlds	Global Library Digitalization Projects Quantum Computing
high	802.11x on Campus Business Intelligence Platforms Course Management Systems Higher Education Enterprise Portals Web Services for Administrative Applications	CRM for Enrollment Management Grid Computing ID and Access Management – Higher Education Learning Content Management Next-Generation Library Management Systems Open-Source E-Learning Applications		
moderate	Open-Source Higher Education Portals Podcasting Learning Content	E-Portfolios RFID Library Materials Management Tablet PC Wikis	CobiT – Higher Education Digital Rights Management ITIL – Higher Education	
low			Open-Source Higher-Education Financials Open-Source Higher-Education SIS	

As of July 2007

6. The Horizon Report 2007

*Collaboration between The New Media Consortium and the Educause Learning Initiative
 Excerpt from the 2007 Horizon Report's Executive Summary
<http://www.educause.edu/ir/library/pdf/CSD4781.pdf>*

Key Trends

The Horizon Advisory Board reviewed key trends in the practice of teaching, learning, and creativity, and ranked those it considered most important for campuses to watch. Trends were identified through a careful analysis of interviews, articles, papers, and published research. The six trends below emerged as most likely to have a significant impact in education in the next five years. They are presented in priority order as ranked by the Advisory Board.

1. The environment of higher education is changing rapidly.
2. Increasing globalization is changing the way we work, collaborate, and communicate.

3. Information literacy increasingly should not be considered a given.
4. Academic review and faculty rewards are increasingly out of sync with new forms of scholarship.
5. The notions of collective intelligence and mass amateurization are pushing the boundaries of scholarship.
6. Students' views of what is and what is not technology are increasingly different from those of faculty.

Critical Challenges

The 2007 Horizon Project Advisory Board also considered critical challenges facing higher education over the five-year time period described in this report, and there were many identified. The six challenges listed below were ranked as most likely to impact teaching, learning, and creative expression in the coming years, and appear in priority order as determined by the Advisory Board.

1. Assessment of new forms of work continues to present a challenge to educators and peer reviewers.
2. There are significant shifts taking place in scholarship, research, creative expression, and learning, and a profound need for leadership at the highest levels of the academy that can see the opportunities in these shifts and carry them forward.
3. While progress is being made, issues of intellectual property and copyright continue to affect how scholarly work is done.
4. There is a skills gap between understanding how to use tools for media creation and how to create meaningful content.
5. The renewed emphasis on collaborative learning is pushing the educational community to develop new forms of interaction and assessment.
6. Higher education is facing a growing expectation to deliver services, content and media to mobile and personal devices.

These challenges and trends reflect the changing nature of the way we seek, classify, and perceive information, all crucial activities in teaching, learning, and creative expression. They provide a framing perspective with which to consider the possible effects of the six technologies described in this edition of the *Horizon Report*.

Technologies to Watch

In the body of the report, each featured technology includes specific examples, but as the horizon moves farther out in time these tend to be more isolated. Our research indicates that each of these six areas will have significant impact on college and university campuses within the next five years.

1. *User-Created Content*
It's all about the audience, and the "audience" is no longer merely listening. User-created content is all around us, from blogs and photostreams to wikibooks and machinima clips. Small tools and easy access have opened the doors for almost anyone to become an author, a creator, or a filmmaker. These bits of content represent a new form of contribution and an increasing trend toward authorship that is happening at almost all levels of experience.
2. *Social Networking*
Increasingly, this is the reason students log on. The websites that draw people back again and again are those that connect them with friends, colleagues, or even total strangers who have a shared interest. Social networking may represent a key way to increase student access to and participation in course activities. It is more than just a friends list; truly engaging social networking offers an opportunity to contribute, share, communicate, and collaborate.

3. *Mobile Phones*
Mobile phones are fast becoming the gateway to our digital lives. Feeding our need for instant access, mobile phones are our constant companions and offer a connection to friends, information, favorite websites, music, movies, and more. From applications for personal safety, to scheduling, to GIS, photos, and video, the capabilities of mobile phones are increasing rapidly, and the time is approaching when these little devices will be as much a part of education as a bookbag.
4. *Virtual Worlds*
Customized settings that mirror the real world—or diverge wildly from it—present the chance to collaborate, explore, role-play, and experience other situations in a safe but compelling way. These spaces offer opportunities for education that are almost limitless, bound only by our ability to imagine and create them. Campuses, businesses, and other organizations increasingly have a presence in the virtual world, and the trend is likely to take off in a way that will echo the rise of the web in the mid-1990s.
5. *The New Scholarship and Emerging Forms of Publication*
The nature and practice of scholarship is changing. New tools and new ways to create, critique, and publish are influencing new and old scholars alike. Although this area is farther out on the horizon, we are beginning to see what new publications might look like—and how new scholars might work.
6. *Massively Multiplayer Educational Gaming*
Like their non-educational counterparts in the entertainment industry, massively multiplayer games are engaging and absorbing. They are still quite difficult to produce, and examples are rare; but steps are being taken toward making it easier to develop this kind of game. In the coming years, open-source gaming engines will lower the barrier to entry for developers, and we are likely to see educational titles along with commercial ones.

7. Growing by Degrees: Online Education in the United States, 2005

Overview from the Executive Summary

<http://www.sloan-c.org/news/pr/pr051118.asp>

Growing by Degrees: Online Education in the United States, 2005 represents the third annual report on the state of online education in U.S. Higher Education. This study is aimed at answering some of the fundamental questions about the nature and extent of online education. Supported by the Alfred P. Sloan Foundation and based on responses from over 1,000 colleges and universities, the study addresses the following key questions:

1. *Have the course and program offerings in online education entered the mainstream?*

The answer to this question appears to clearly be “Yes:” schools are offering a large number of online courses, and there is great diversity in the courses and programs being offered:

- Sixty-five percent of schools offering graduate face-to-face courses also offer graduate courses online.
- Sixty-three percent of schools offering undergraduate face-to-face courses also offer undergraduate courses online.
- Among all schools offering face-to-face Master’s degree programs, 44% also offer Master’s programs online.

- Among all schools offering face-to-face Business degree programs, 43% also offer online Business programs.

2. *Who is teaching online?*

Staffing for online courses does not come at the expense of core faculty. Institutions use about the same mixture of core and adjunct faculty to staff their online courses as they do for their face-to-face courses. Instead of more adjunct faculty teaching online courses, the opposite is found; overall, there is a slightly greater use of core faculty for teaching online than for face-to-face.

- Sixty-five percent of higher education institutions report that they are using primarily core faculty to teach their online courses compared to 62% that report they are using primarily core faculty to teach their face-to-face courses.
- Seventy-four percent of Public colleges report that their online courses are taught by core faculty, as opposed to only 61% for their face-to-face courses.
- Except for the largest schools (15000+ enrollment), all sized schools report an equal or greater rate of online courses being taught primarily by core faculty compared to their face-to-face courses.

3. *Is online education becoming part of long-term strategy for most schools?*

The evidence from higher education's academic leaders suggests that there is a strong trend upwards in considering online education as part of a school's long-term strategy. While there is some diversity in response to this question, there is growth among all types of schools:

- The overall percent of schools identifying online education as a critical long-term strategy grew from 49% in 2003 to 56% in 2005.
- The largest increases were seen in Associates degree institutions where 72% now agree that it is part of their institution's long-term strategy, up from 58% in 2003.
- The smallest schools, private nonprofit institutions and Baccalaureate colleges remain the least likely to agree that online education is part of their long-term strategy.

4. *Have online enrollments continued their rapid growth?*

Growth has continued at a healthy rate, but not as rapidly as last year. The increase in the overall number of online learners was the same this year as last (an increase of around 360,000 each year) for an overall enrollment growth rate of 18.2%. This growth rate greatly exceeds the overall growth rate in the higher education student body.

- Overall online enrollment increased from 1.98 million in 2003 to 2.35 million in 2004.
- The online enrollment growth rate is over ten times that projected by the National Center for Education Statistics for the general postsecondary student population.
- In the aggregate, survey respondents do a reasonable job in predicting changes in online enrollments, but individual schools were often inaccurate in their 2003 predictions of their 2004 online enrollments.

5. *What else do Chief Academic Officers and faculty believe about online education?*

There is some good news for online education, but the opinions of Chief Academic Officers also raise a number of challenges. On the positive side, they believe it is no harder to evaluate online courses than those delivered face-to-face. More challenging, however, is that Academic leaders believe that online courses require more effort for faculty and more discipline by students, and many of them continue to believe that their faculty have not accepted the value of online education.

- Chief Academic Officers believe, in general, that it takes more effort to teach online.
- A large majority of respondents (64%) believe that it takes more discipline for a student to succeed in an online course.
- Although online education continues to penetrate into all types of institutions, a relatively stable minority of Chief Academic Officers (28% in 2003 compared with 31% in 2005) continue to believe that their faculty fully accept the value and legitimacy of online education.
- Eighty-two percent of respondents believe that it is no more difficult to evaluate the quality of an online course than one delivered face-to-face.

8. Tomorrowland: When New Technologies get Newer

By Bonnie Neas and the Educause Evolving Technologies Committee
<http://www.educause.edu/er/erm05/erm0560.asp>

Overview

Focusing on "tomorrow," the Evolving Technologies Committee looked at five technologies and trends—wireless, portals, outsourcing, gaming, and student collaboration tools—and dreamed about what may come as the new evolve into the even newer.

1. *Wireless*

Wireless continues to be a rapidly evolving technology, one that will dramatically affect lives on and off campus. Colleges and universities must plan now to take advantage of the emerging standards as wireless converges to handsets. Perhaps the most exciting development is the 802.11s standard, or mesh networks. Basically, mesh networks are self-configuring and self-healing. Other emerging wireless technologies include ultrawideband (UWB), free space optics (FSO), and virtual fiber.

2. *Portals*

Simply put, portals provide a flexible, customizable, and personalized access point to and view of information based on the interests and roles of the individual. The information is often presented in the form of links and “channels” that relate to applications, events, calendars, discussions, searching, content management, and more, in formats tailored to the aesthetic and topical interests of the individual. Since portals require authentication in order to establish the identity of each user, the look and contents specific to each user will be the same every time the portal is accessed and from any location it is accessed.

Finding and deploying effective means of providing communication and access to information is an ongoing challenge for all organizations. In higher education, there are many types and sizes of communities each with diverse interests and varying needs for information. Developing and maintaining Web sites for each unique community is both cost-prohibitive and confusing when an individual fits more than one category. But with customization as an integral feature of portals, individuals may be assigned rights that facilitate access to features, channels, and information targeted to their roles and needs, thus simplifying communication with target groups or audiences.

3. *IT Outsourcing*

Outsourcing some campus IT services may well make sense, but only if a long, thoughtful examination shows that the monetary and other benefits for the institution far outweigh the costs. If saving money is the only reason that outsourcing is being considered, then the institution will create resentment and probably will not in fact cut any costs.

4. *Gaming in Higher Education*

Gaming stands to have a significant pedagogical and technological impact on higher education. Ironically, the challenge facing higher education from the expansion of video gaming involves factors not much different from those facing higher education in general: cost, attitudes, and gender gap.

5. *Student Collaboration Tools*

Learning is a social activity. Whether in class, remotely, or in ad hoc sessions, students form study groups to collaborate. Various new technologies facilitate and promote this collaboration: communication systems, conferencing methods, messaging, courseware platforms, Web services, portals, blogs, and wikis. However, the sheer diversity of existing methods and rules can make collaboration more difficult and time-consuming than it ought to be. Providing a common, simple, easy-to-use toolset is thus an important step toward fostering a collaborative environment. Ideally, every student should have access to the widest range of communication platforms and Web publishing and sharing systems, integrated with calendaring and scheduling systems.

Institutions must monitor developments in student collaboration tools and actively craft a strategy to manage students' expectations and to facilitate their collaboration needs. After all, most professions that require a college degree require collaboration among team members, and those are skills that many of us develop during our college years.

9. **Educause Top-Ten IT Issues, 2007**

John S. Camp, Peter B. DeBlois, and the 2007 EDUCAUSE Current Issues Committee
<http://www.educause.edu/apps/er/erm07/erm0730.asp>

Top-Ten IT Issues, 2007

1. Funding IT
2. Security
3. Administrative/ERP/Information Systems
4. Identity/Access Management
5. Disaster Recovery/Business Continuity
6. Faculty Development, Support, and Training
7. Infrastructure
8. Strategic Planning
9. Course/Learning Management Systems
10. Governance, Organization, and Leadership for IT

10. **Educause Top-Ten IT Issues, 2006**

Barbara J. Dewey, Peter B. DeBlois, and the 2006 Educause Current Issues Committee
<http://www.educause.edu/apps/er/erm06/erm0633.asp>

Top-Ten IT Issues, 2006

1. Security and Identity Management

2. Funding IT
3. Administrative/ERP/Information Systems
4. Disaster Recovery/Business Continuity
5. Faculty Development, Support, and Training
6. Infrastructure
7. Strategic Planning
8. Governance, Organization, and Leadership
9. E-Learning/Distributed Teaching and Learning
10. Web Systems and Services

IV. UTAC FINDINGS

A. UTAC Subcommittees

The three UTAC subcommittees - Teaching and Learning, Service and Support, and Infrastructure – examined UST’s current environment and identified emphases and made recommendations for consideration by the UTAC.

- 1. The UTAC Teaching and Learning Subcommittee** worked through the academic deans to gather information from academic department heads on their current uses, goals and barriers to using technology for teaching, learning and research. The subcommittee received 27 responses (65% of those surveyed).
- 2. The UTAC Service and Support Subcommittee** studied current UST processes, levels of support, and services across the university to recommend areas for:
 - Improving current processes and establishing new processes and policy
 - Improving levels of support and service, and establishing support and serving for emerging areas
 - Establishing the need to provide Service Level Agreements (SLA) in respective areas
- 3. The UTAC Infrastructure Subcommittee** examined current infrastructure – networks, enterprise hardware and software systems – and made recommendations for operational and strategic issues to address and support institutional growth issues.

B. UTAC Emphases

Current information resources and technologies usage ranges from enhanced to fully delivered programs while simultaneously supporting student learning through all the instructional, business, and increasingly social, student life activities. Information resources and technologies have become a basic requirement in higher education. An analysis of survey and industry data continues to reveal that the major issues facing the University in the coming years will include:

1. Integration of information resources, technologies and instruction
2. Collaborative and personalized applications and tools
3. Faculty, staff, & student support and training
4. Technology replacement and expansion
5. Strong identity management and security
6. Increasing demand for mobility and access
7. Funding consistent with careful stewardship of resources

1. Integration of Information Resources, Technologies, and Instruction

Rapid advances in information resources and technologies have transformed our access to information and increased our options for scholarly research and instructional models. Increasingly, we can use information technology to organize and deliver information without regard to time and place in ways that integrate rich media and adapt to different learners' styles and circumstances, simulate real-world processes, and foster distributed communities of learners. These uses support the promise that information technology can improve the effectiveness, flexibility and efficiencies of teaching, learning and research across the enterprise in revolutionary ways.

It is IRT's role to create an environment where information resources and technologies, become ubiquitous for the development and delivery of instruction and research. To do so, we need to provide global access to information, the capability to collaborate and share curricular materials;

collect, assess, and share performance information; expand discipline specific software and support; provide more technology-enhanced classrooms and wireless access for both faculty and students across the campus. We must also expand instructional technology training resources available to faculty and continue to collaborate with faculty on new technologies, tools and techniques to meet the curricular needs of all learners.

2. Collaborative and Personalized Applications and Tools

Technology is providing the tools to change our support systems from people intensive solutions to automated self-help system solutions. Through *administrative applications and tools*, we can provide process improvements in new and existing applications. We have implemented applications that improve personal productivity and communications and will continue to replace and add new systems and applications. These systems include e-mail, calendaring, and the Course Schedule. Organizational productivity continues to be improved through workflow, electronic forms, and information access. New data analysis and mining tools are needed. The new portal system will be implemented beginning in FY08 and will improve campus-wide communications by integrating the functionalities defined above and provide a single sign on environment for students, faculty, and staff. The portal will provide much easier access to information and provide better data driven decisions.

Like many institutions today, St. Thomas struggles to interact with multiple and various audiences with a simple web site or directory of Internet links to other sites. Current emerging technology provides us with an opportunity to take the wide variety of sites and services we interact with and create a site that allows us to become the center of our own universe. These capabilities are referred to as portals, content and collaboration (PCC) and they are they are driving deeper into Academia. Portals, content and collaboration unleashes the power to use these capabilities in a growing number of processes and applications across the university.

Personalization through portals provide the management of selecting which users see what content under what circumstances, and provide the ability for users to assemble and organize content on demand. The portal is intended to be a unifying tool, providing access to content and applications and a consistent user experience.

This evolution, combined with expanding technical capabilities and increased organizational maturity can be established in five ways:

- Create a foundation for a high performance, collaborative enterprise by deploying audience-centric information and communications.
- Use a combination of portal and content management for university Web presence.
- Explore opportunities for portal, content and collaboration as steps to service-oriented architecture.
- Implement collaborative content governance and consolidate intranet and content repositories.
- Focus on content-enabled vertical applications and workplace-enhanced business applications.

As we move from tools to collaborative services, one of the most critical information management trends will be the use of collaboration services that can be embedded in the way our university conducts its business applications and processes.

3. Faculty, Staff, & Student Support and Training

With the continual growth in technology, additional faculty, staff, and student IT support is needed to resolve problems and to respond to questions. Technology cannot be just purchasing

hardware and software; it must include a continued commitment to user's support. All users including the IRT staff require a particular skill set to do their jobs. As new technology is implemented, many times a different skill set is needed to effectively use and support the technology. All staff must continue to be trained and retrained in using the current technology. The more knowledgeable the user, the less IT support is needed and greater productivity is realized. Over the next several years, many IRT staff will need to be retrained as we shift environments. Online and self paced learning systems can provide effective future solutions in providing additional training.

4. Technologies Replacement and Expansion

Technology replacements and expansion are essential to maintain what we have while we build a new future. We must continue to evaluate the current technologies, replace technologies on predictable and dependable schedules, and utilize new technologies when appropriate. A high level of support accompanies the implementation and use of technology in academic settings. UST has allocated funding for presentation technologies and smart classrooms in past years, and must continue to support on-going maintenance costs. There are five primary areas that distinguish technology use for the academic community: stand-alone personal computing, classrooms, labs, libraries, and infrastructure. The University must pay special attention to the replacement and expansion in each of these areas to assure these areas continue to be complementary while supporting each area's specialized needs.

5. Identity Management and Security

Security has become a major national, state and local issue over the last year. Issues with secure access to information, identity theft, copyright, computer viruses, business continuity, disaster recovery and e-mail require that we spend additional efforts in protecting the University and the rights of our students, faculty and staff. The University must comply with all applicable federal and state regulations such as FERPA, Graham-Leach Bliley, HIPPA, etc. and comply with all industry standards requiring certifications such as PCI.

Increasing complexity in our information systems has taken us beyond our ability to monitor and manage access to these systems in a manual way. As a result we need to further develop a set of policies, processes and tools that will allow UST community members to conveniently access resources they need to perform their work, and at the same time allow IRT to effectively minimize risk to university resources. A key element to addressing this issue will be the development of an identity management solution that will allow quick provisioning and de-provisioning of accounts and role-based permissions assignments.

6. Mobility and Access

Using portable computing devices (such as laptops, tablet PCs, PDAs, and smart phones) with wireless networks enables mobility and mobile learning, allowing teaching and learning to extend beyond the traditional classroom. Within the classroom, mobile learning gives instructors and learners increased flexibility and new opportunities for interaction. Mobile technologies support learning experiences that are collaborative, accessible, and integrated with the world beyond the classroom.

7. Funding

Clear financing principles for technology will continue to be a major planning principle for UST. Indeed, we have sound principles in place, and we will continue to adapt those based on institutional needs. Technology is playing a larger role in everything we do and is therefore consuming a significant part of the University budget. One sound practice is that as new buildings and spaces have been constructed, funding for technology infrastructure needs have been included in the construction costs. All equipment has a life cycle identifying when the

equipment will need to be replaced or disposed, thus we recognize replacement costs in the future plans. Our planning must encompass projections as far into the future as is reasonable to assist the university in strategic planning and budgeting.

C. UTAC Recommendations – The following recommendations were made by the three UTAC Subcommittees: Teaching and Learning, Service and Support, and Infrastructure.

1. Facilities for Teaching and Learning: Continue the planned growth and improvement of instructional facilities and integrated information resources and technologies.

- *Smart classrooms*
 - Continue to assess the current smart classroom environment, identify a target state (number and types of rooms) for smart classroom and define a prioritized plan to fund, deploy, support, and maintain the target level of facilities over the span of the strategic plan. The goal is to continue the principle of creating basic smart classrooms with a consistent set of technologies
- *Advanced classrooms*
 - Assess the current *advanced* smart classroom (collaborative white board, clickers, video conferencing in addition to basic smart technologies) environment, identify a target state (number and types of rooms) for advanced smart classroom and define a prioritized plan to fund, deploy, support, and maintain the target level of facilities over the span of the strategic plan.
- *General and Specialized Computer Labs*
 - Assess the current general and special use computer lab environment and identify a target for increasing in number and or/ increasing the software and software support needed to support discipline specific and academic program needs.
- *Laptop stations as method for increasing lab space*
 - Assess, by building, the utility of placing laptop stations in each as a method to provide mobile classroom labs.

2. Faculty development and support: Expand instructional and research technology support and resources.

To provide a rich academic experience for students in a rapidly changing world, UST faculty are incorporating new knowledge, new pedagogies, and emerging technologies into UST's curriculum. As faculty members widen and deepen their interests, IRT will respond to faculty needs by inspiring the community, engaging in appropriate assessment of needs and implementation and evaluation of changing pedagogies.

- Launch the Faculty Center for e-Learning
 - The Faculty Center for eLearning provides physical and virtual space and programming designed for the exchange of ideas, conversation and the building of community – all with the goal of developing effective collaborations between and among faculty and IRT staff to promote effective learning and academic excellence.
 - Launch a year-long exploration and evaluation of programming with a goal of engaging each faculty member to create a personal definition of how e-learning fits into their curriculum.
 - Host presenters on topics of national and local interest.
 - Create a variety of interactions (face to face and virtual) designed to inspire.
 - Allow faculty to experience and apply various technologies.
 - Evaluate a variety of incentives to encourage faculty to participate.

- Expand instructional materials and documentation to provide faculty with comprehensive just in time information about the features and operation of smart classroom technologies and other teaching, learning and research technologies and include discipline specific tools.
- Emerging Technologies: develop and implement a resource and organizational model to provide improved research for and faculty access to emerging instructional technologies and tools. Examples of current emerging technologies are:
 - Virtual reality (Second Life, Croquet)
 - Provide opportunities to explore simulation and learning objects
 - Awareness campaign for I2
 - Gaming

3. Increase technologies and support for achieving academic excellence by providing mechanisms for continuous improvement and deeper integration of discipline specific technologies.

Assessment and Learning Outcomes Systems: Enable continuous improvement for academic quality and to meet reporting requirements to various governing bodies, provide evaluation and assessment tools.

- Assist the campus community, academic and administrative leadership in identifying how existing technologies such as course management systems (Blackboard), ePortfolio, and survey/testing tools can be used for college, department, and program-level assessment.
 - Continue consulting with departments and academic units on creating e-portfolio programs.
 - Provide access to Web based survey tools and or/expand scanning capabilities of current assessment systems.
- Support institutional assessment and accreditation activities to locate and/or build, and implement new scalable evaluation and assessment tools.
 - Work with units/schools and colleges to identify requirements, focus scope, and determine priorities for new tools.
 - Leverage the University and investment in Blackboard by using Blackboard “building blocks” to expand evaluation and assessment tools.
- Support faculty efforts in using existing and new assessment tools by providing ongoing training, resources, and best practices.
- Leverage data within existing instructional systems to support teaching and learning, and assessment needs.
 - Increase unit and faculty access to strategic assessment/evaluation data regarding instructional technology systems.
 - Identify ways in which this data can be used to improve teaching and learning.
 - Assist units in gathering and communicating findings to key stakeholders.
- Plan for change to existing assessment procedures and technologies by implementing a process and plan to analyze existing technologies viability and sustainability and when appropriate, identify emerging or replacement technologies.

Increase students’ and faculty access to the unique tools and technologies of their discipline for teaching, learning, and research while balancing faculty/ department/ unit needs for discipline specific tools and software with sound pedagogy, sustainability and central support.

- Work with units and colleges to assess the range of discipline specific software and tools currently in use and identify instructional and research needs that can be addressed by expanding and/or acquiring discipline specific software and tools.
- Design, develop, fund and implement a process for expanding discipline specific software and support. Establish new and detailed service level agreements with each instance.

4. Enhance quality of instruction and create efficiencies by planned use of shared digital curricular materials and services.

- *Collaborate with Academic Affairs to engage in course redesign*
 - Develop a process, plan, fund and support collaborating with faculty teams to evaluate multi-section courses and redesign for integration of digital curricular materials and other technologies.
- *Collaborate with Academic Affairs to create shared learning materials for core curriculum, among disciplines and between the ACTC schools*
 - Develop a process, plan, fund and support collaborating with faculty teams to create learning materials for core curriculum.
- *Provide systems for easier sharing of content*
 - Roll out, communicate and train on the use of the Blackboard Content Management System for sharing across courses and departments.
 - Develop centralized instructional or support resources that can be used across campus.
- *Extend course management systems*
 - Leverage the University and investment in Blackboard by extending the Blackboard system by building “Building Blocks.” Partner with discipline committees to research, identify, design, and deploy additional Blackboard building blocks and enhancements to support shared resources.

5. Toward a more mobile university: develop baseline support for the increasing need for mobile devices and a process for engaging department heads on the integration of mobile devices into the curriculum and support structure.

- *Generalized Support*
 - Assess need, and evaluate the service options for student-owned laptops, cell phones, and handhelds.
- *Provisioning*
 - Assess need, and evaluate and identify a specific model to provide, support provision laptops and/or other mobile devices to students and outline curricular integration and support issues.
- *Support*
 - Assess need, then evaluate options and need for student, staff and faculty owned mobile devices support; support matrix and hardware recommendations for handhelds.
 - Evaluate the interest to providing students’ access to BES Server.
- *Provide mobile content*
 - Begin process of designing, providing and prioritizing content and services created for mobile devices.

6. Events/facilities management

The community has expressed a need to display and advertise their events electronically to attract their audience and promote the institution and departments as important events arise.

- *Request System:*
 - Upgrade and revamp UST's integrated, centralized, streamlined online tool for work requests for audio visual, food, tech desk, and facilities for events.

7. Creating a High Performance Workplace with Content, Collaboration and Community Systems

A high-performance workplace combines technologies, processes and management so workers can create more value. This area integrates multiple technology perspectives, including collaboration, information access, content and knowledge management, messaging, portals, e-learning and productivity tools.

Portals, content and collaboration (PCC) management is breaching silos and stovepipes in the workplace. Content and collaboration capabilities are evolving into services and becoming embedded in applications. This creates opportunities to use them in a growing number of processes and applications. Personalization through portals control what users see under what circumstances, and collect and configure content on demand. Collaborative content requires the right tool for the right task. The portal is intended to be a unifying force, in terms of access to content and applications, and in terms of a consistent user experience. Directions in current portal implementations in higher education are providing a portal that allows for self-service and builds relationships in addition to current portal generations providing data from disparate databases into views for disparate audiences.

Build an information and service rich portal that is driven by the requirements of the client, not by the means of communication. This information interchange will adapt to the needs of the user that includes:

- Personalization
- Single Sign-on
- Enterprise application integration
- On-line self-services, including:
 - Electronic advising
 - Tuition advising
 - Course registration/degree
 - Accounts management (food, textbooks, etc.)

8. Collaboration

- Evaluate means to collaboratively write, edit and version documents. In the future, if myUST applications and Microsoft Office (Professional) could provide relatively simple processes, such as tracking project time directly from a calendar entry, and deliver process flows across systems our clients would gain the functionality they desire and possibly achieve the productivity they require.
- Define a campus intranet and related group file (collaborative authoring) services to support information sharing, electronic work flow, and collaboration across the university

- Social networks - a social network is a social structure made of nodes (which are generally individuals or organizations) that are tied by one or more specific types of relations, such as values, visions, idea, financial exchange, friends, kinship, dislike, trade, web links, etc.
- Evaluate options to expand social network tools for UST community

9. Customer relationship management

Begin a review process for a Customer Relationship Management (CRM) “system” that acquires, establishes and retains a mutual service relationship based on knowledge the institution has acquired from client/user behavior, preferences and response. Design criteria would include a system that includes knowledge of institutional processes, insight of client behavior and establish effective communication, transaction and processing of client sessions. Include data mining techniques and predictive modeling, and how a client wants to be treated and what triggers interest.

10. Digital asset management

Select and implement a digital asset management tool for the systematic management of digital data, including text, image, audio, and video files, so that they can be reused and re-purposed. It aims to maximize the value of these assets by facilitating easy storage and retrieval while protecting and, at times, enhancing their utility.

- Enable ownership control (rights management) and security.
- Ensure the authenticity and integrity of assets.
- Create reusable content that can support both short- and long-term use.
- Ensure effective management of assets to maximize efficiency; productivity.
- Protect the integrity of data (storage and transmission requirements).
- Ensure the historical archiving.

11. Communications for External Marketing, Internal Community and Instruction

As universities grow it becomes more and more difficult to give constituents the feeling that they are part of the organization. Communication technology and tools can act as an interface for the community to feel as if they have a place where they can find information about the university and its community members. Intranets provide a place for people to communicate and can help create a feeling of community. They are rapidly becoming the ideal platforms for distributing news, connecting community members, fostering knowledge sharing and cultivating a knowledge base, and providing discussion space for projects that require cross-departmental collaboration. In addition, the following technologies are being used to distribute this communication across multiple channels and for a variety of business needs:

- Web (desktop) point to point Conferencing
 - Continued roll out and communication of Breeze and evaluation of new technologies as they arise.
- Expand Intranet:
 - Evaluate options for replacing the University’s intranet (insideust).
- Video Conferencing
 - Evaluate options for video conferencing solutions for advanced classroom technology and for administrative needs.
- Leverage VOIP infrastructure and develop two-way communication applications for its use
- Expand media capturing and distribution capabilities
 - Explore event capture services and distribution.

- Expand the capabilities for capturing classroom lectures and for desktop/on the go podcasting services.
- Establish IP based digital signage
 - Upgrade and replace Scala and provide multiple channel messaging.
 - Develop and implement a resource and organizational model to provide the service.

12. Network Security and Information Privacy

Develop increasingly clear policies and plans for information and network security, and improve institutional awareness of security, compliance, and privacy issues through the development of educational programs.

- Conduct an annual audit of systems and procedures
- Implement an Intrusion Detection system
- Implement a plan for increasing user awareness of security related issues.
- Implement Electronic Signatures
- Upgrade the current video security systems to a digital environment

13. Support Level Agreements (SLA): To promote clear understanding of university policies for information resources and technologies support, establish clear support level agreements for any major new initiatives.

Continuous improvement for operations is an important part of client support. This includes analyzing needs and negotiating any extensions or changes to the basic services and when implementing a new support solution having a good understanding of our current environment and its complexities, as well as a clearly defined plan for the changes and improvements. There are a number of administrative issues which could be addressed that would improve the operation of the University:

Seek improvements to incident, asset and knowledge management by:

- Providing simplified access to all systems for reporting and analysis
- Improving workflow processes
- Developing a better understand functionality of existing applications
- Providing application training for new employees
- Creating a support knowledge base and self-service help applications

14. IRT Staffing Issues

University of St. Thomas faces the same support issues as other colleges and universities. The problem stems from a simple fact – information resources and technologies have become an essential element of the way we work. For educators, information resources and technologies not only affect the way we run our business, but in how we design and provide instruction and services. There are several internal and external challenges related to support and staffing that will require our continuing attention, and are best described in terms of their execution:

- Continue to provide competitive salaries & work flexibility
- Maintain rigorous recruitment and selection procedures
- Maintain appropriate workload and staffing levels

- Build a learning culture that links learning to UST and IRT strategic goals by providing staff development and cross training for desired skill sets
- Utilize technology to provide staff development where applicable

Resources internal to the organization are a source of competitive advantage to the extent that they are valuable, rare, inimitable and difficult to substitute. IRT staff skills are continuing to change each year. We must provide flexible programs for work schedules and provide appropriate staffing levels and workloads. Retaining quality staff should be our highest priority. Vacant positions require months to fill and lead to lost productivity. Each time we experience staff turnover, we increase the already heavy workloads of our staff.

15. Digital Convergence Initiative (See Appendix)

The Digital Convergence Initiative infrastructure includes the following high level items:

- Upgrading the main network backbone of the university to 10 gigabytes.
- Increasing the capacity of UST's internet connection to the outside world.
- Rewiring older buildings from category 4 wiring to category 6 wiring to support increase performance speeds that are required in today's networked world.
- Increasing the bandwidth of UST's wireless network.
- Continue UST's VOIP implementation.

16. Begin plan development for a contemporary Data Center taking into account the following items:

- Moving the main network switch room
- Moving the main St. Paul Data Center
- Upgrade electrical service to handle 150% of the current Data Center and Switch room load, as well as the necessary HVAC
- Install HVAC units needed to cool the room to 68 degrees
- Build the room in a manner consistent with best practices for data center design (hot and cold zones, air circulation patterns, positive pressure, etc.)
- Install Uninterruptible Power Supply (UPS) units to carry the entire new data center (servers and HVAC) until the generators come on line
- Install generators to carry the entire new data center (servers and HVAC)

17. Replace the current Time Tracking system (Stromberg) and the associated Time Clocks (swipe devices for 'punch in' and 'punch out').

The current system continues to have issues as well as low quality vendor support. The Time Clocks are not network native devices and require untraditional modifications to the main network switch to operate. New devices should be acquired that are IP network centric and do not require modifications to the UST network to operate.

18. Implement security systems and practices. Items include:

- Conduct an annual audit of IT systems and procedures
- Implement an Intrusion Detection system
- Implement a plan for increasing user awareness of security related issues
- Implement Electronic Signatures

- Upgrade the current video security systems to a digital environment

19. Upgrade the CBord CS Gold swipe devices for door access, vending, and cash register.

The swipe devices are not network native devices and require a DECC terminal server between the device and UST's IP network. Network native devices should be acquired. This may also allow devices to interact with the system via the wireless network reducing rewiring costs. UST should also standardize to 1 system for door access instead of the current 4 systems that UST has in place.

20. Upgrade the Minneapolis Data Center to support Disaster Recovery (DR) efforts.

UST has planned and begun the development of a second location to support a DR site as part of its property. IRT currently has a small Data Center in the School of Law building in downtown Minneapolis. Significant upgrades need to be done to this data center to support it as a DR location. Items include:

- Conduct a study to determine the best approach and solution for UST's DR needs. Create an implementation plan for UST's DR needs.
- Purchase a network data connection between the St. Paul Data Center and the Minneapolis Data Center for mirroring data as well as moving back ups.
- Install an internet point of presence on the Minneapolis campus that would allow UST to continue to operate if the St. Paul presence failed.
- Upgrade the electrical service.
- Install the needed UPSs.
- Upgrade the HVAC units in the Minneapolis Data Center.
- Increase the height of the raised floor to 12 inches.
- Verify generator power can provide power for the Minneapolis Data Center when it is in use under DR situations.
- Mirror key systems' data between St. Paul and Minneapolis.
- Copy system back ups between St. Paul and Minneapolis for important systems not mirrored.
- Have virtual servers ready to go in Minneapolis in support of DR.

21. Virtualization

Take advantage of current technologies by creating virtual servers.

22. Data Storage

Data Storage needs continue to grow at exponential rates. As of the summer of 2007 UST had 15 terabytes of data, and estimates that will double within the next 2-3 years. Data Storage needs include:

- Increasing the amount of storage available to the UST community
- Implementing a tiered storage solution
- Implementing a data storage dashboard
- Creating a new FTE for data storage management

23. Audio-Video Upgrades

UST currently have a number of audio and video productions that it supports every year, however the technology used to support those activities is in need of upgrades.

- Convert the current TV Studio to a Digital TV Studio.
- Convert the OEC auditorium to use digital equipment. Install state of the art equipment for lighting, camera drops, and audio drops in support of large media productions.
- Connect the OEC auditorium with the TV Studio in the basement of OEC. Allow the TV Studio to remotely control most audio/video equipment in OEC auditorium.
- Move to a High Definition production environment including TV Studio, Cameras, Production equipment, TV Monitors, and the use of BlueRay technology.
- Ability to support more streaming events including additional field equipment, studio equipment, encoding/streaming equipment, and increasing UST's internet bandwidth or off site hosting.
- Upgrade the headend of the video environment and network to digital end-to-end.

24. Academic use of audio/video equipment

- Create a digital classroom/newsroom for the Communication and Journalism department that allows feeds to the TV studio for newscast production and script creation.
- Create a relationship between the Aquin, the TV Studio, and the Radio Station. Possibly move the radio and TV station into the new Student Union.

25. Change the Bulletin Today to be more video based

26. Investigate digital preservation options for licensed/purchased/UST created scholarly content.

Currently, the libraries are investing in substantial digital collections to which UST has authorization for access in perpetuity. However, in the event of a catastrophic publisher failure, that access would disappear. In addition, the publishers provide tape or digital back up of purchased content.

27. Upgrade the Bernardi Campus

- Increase the number of wired jacks available for students.
- Implement wireless.
- Upgrade bandwidth to the Internet.
- Allow remote access to UST services including the library databases.

28. Create a system that allows, consistent with FERPA, parents ability to review student's tuition bills and other information for which the student grants privileges.

29. Implement a new Request for Services web tool and work order tracking system for internal work requests and charges.

30. Implement GPS tracking on Physical Plant vehicles to allow for better routing of technicians.

31. Environmental Responsibility

Computer equipment is responsible for a large amount of waste within the environment. Desktops and servers have a short life span and are commonly thrown into landfills when they are replaced. Additionally the amount of energy desktops and servers consume continues to rise as does the heat that they generate. UST should adopt strategies for becoming more eco-friendly as it acquires computer equipment and runs its data centers.

V. IRT PLAN GOALS

A. ACCESS

Strategic Priority 2

The University will attract and retain a highly talented and diverse student body at the undergraduate and graduate levels by reducing financial barriers and improving the environment for under-represented groups on campus.

Indicators of achievement of this priority:

Technology enables student services to be more accessible and effective

- Enable accessibility to effective instructional and communications services and tools for students, faculty, staff, prospective students, and alumni through the WebSPACE initiative. The initiative provides essential access to online learning resources development and institutional and Web resources, including instructional resources, content management for the UST Web, portal technologies, Web reporting and analysis, and robust transactional Web sites.
- Enable increasing accessibility through the digital asset management systems for the organized acquisition, classification, storage, archiving and dissemination of many types of digital resources.
- Ensure security, privacy and confidentiality for UST systems and networks through development of the UST Information Security Plan and Identity Management.
- Work to improve institutional marketing and public relations capabilities through planning for customer relationship management (CRM).

B. EXCELLENCE

Strategic Priority 1

The University of St. Thomas will further develop a campus environment wherein all students are challenged to develop intellectually, personally and spiritually to remain life-long learners and morally responsible citizens.

Indicators of achievement of this priority:

Technology makes learning opportunities more varied and available

- Provide for the future of UST's network and applications environment through the Digital Convergence Initiative (DCI) for convergence of voice, data and video on a unified network and continually increasing needs for network bandwidth.
- Identify support for the Capital Campaign Plans for UST's Information Commons and for the upgrades to OEC Auditorium and the Video Studio.
- In cooperation with Academic Affairs, increase support for instructional technology planning and development, including:

- Increased support to academic departments through the Academic Technology Consultants program.
- Continuing support for specialized computing resources in labs and advanced/smart classrooms.
- Provision of a plan for necessary technology upgrades to facilities campus-wide, including instructional spaces.
- In cooperation with Academic Affairs, develop e-learning course and program support initiatives, including development and implementation of programming for the Faculty Center for E-Learning and emerging technologies pilot programs.
- In cooperation with Academic Affairs and Student Affairs, enable continuous improvement for academic quality and reporting requirements through e-portfolio, survey and assessment systems support.
- In cooperation with Student Affairs, continue development of tools and projects that provide for a rich student life experience online and responsive transactional Web services for students.
- Engage with the University Technology Advisory Committee to identify strategies to leverage the increasing mobility of computing, communications, and networking resources for teaching and learning, research, and the university's business.

C. EXCELLENCE

Strategic Priority 4

We will improve academic and administrative processes, systems, and policies to enhance effectiveness and eliminate waste and duplication; and develop budget and resource allocation strategies that reward progress toward institutional goals and priorities.

Indicators of achievement of this priority:

Human, fiscal, technological and physical resources are focused to support the institution's emphasis on excellence and its strategic plan

- Continue to support institutional decision making and strategic planning processes through development of decision support systems as part of Business Intelligence projects, Budget Planning, and UST Strategic Plan development.
- Continue to support institutional business processes and transactional systems through development of improved processes, applications and infrastructure.
- Provide for the timely replacement of enterprise and desktop equipment in support of instruction, scholarly activity and the university's business functions.
- Provide for continuing development of emergency notification, disaster recovery and business continuity planning and implementation.
- Develop a plan to address IRT human resources needs in light of growth in information resources and technologies support.
- Begin development of high level design plans for the new Lindsay Data Center.
- Improve institutional awareness of security, compliance, and privacy issues through the development of policies, communications, and educational programs.

D. CATHOLIC IDENTITY

Strategic Priority 1

The University of St. Thomas will further engage its Catholic identity by exploring the meaning and heightening the understanding of Catholic intellectual tradition throughout its curricular and co-curricular activities.

Indicators of achievement of this priority:

Search committees provide information on the Catholic identity and mission of the University to candidates and consider their potential contributions to the mission of the University.

- Ensure all employment search committees for IRT positions consider mission fit in their interview and selection process.
- Employ appropriate environmental criteria in the development of infrastructure and the acquisition of computing equipment.

VI. APPENDICES

Appendix A - UST Network Topology 2007

Appendix B – UST Systems and Applications Architecture

Appendix C – UST Digital Convergence Initiative Plan

Appendix D – IRT Annual Report 2007