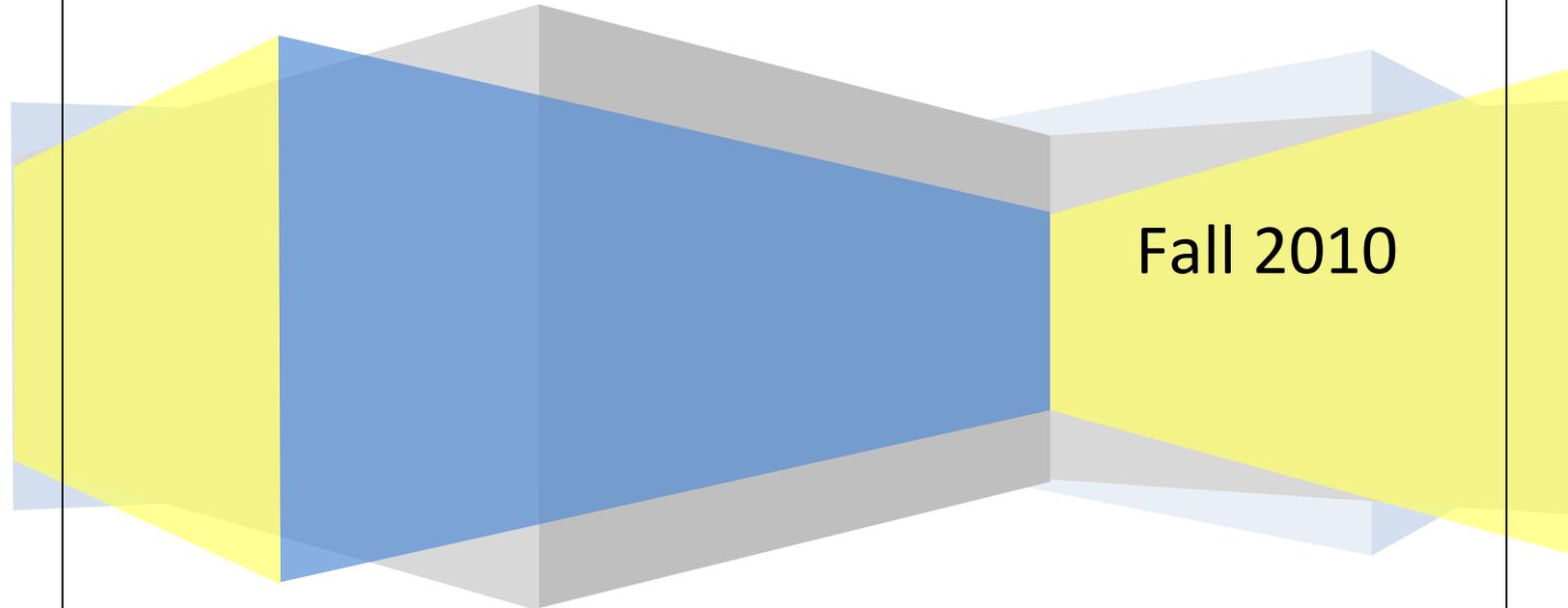


UMass Dartmouth

**University of Massachusetts Dartmouth  
Strategic Plan for Information Technology  
2010 - 2015**



Fall 2010

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## ***Introduction***

Much of the change in higher education in the coming years will be closely tied to technology. Meeting the educational challenges of the 21st century student will require planning and support of Information Technology (IT). Effective IT will be required if UMass Dartmouth is to meet its stated mission:

*The University of Massachusetts Dartmouth distinguishes itself as a vibrant public university actively engaged in personalized teaching and innovative research, and acting as an intellectual catalyst for regional and global economic, social, and cultural development.*

The UMass Dartmouth Strategic Plan for Information Technology is linked to the *UMass Dartmouth Strategic Plan*. In particular, Goal 5 and related Objectives identify technology as being a critical component:

*· An effective physical, technical, fiscal and human infrastructure is in place to support academic activities. Objectives:*

- Complete and implement the facilities master plan.
- **Develop a comprehensive safety and disaster plan for the campus.**
- Plan for the renewal of faculty lines as faculty retire.
- **Evaluate future needs for teaching, scholarship, and student service facilities that respond to the variety of learners and activities.**
- **Assure library holdings and electronic information systems are current and meeting the needs of learners.**
- **Continually monitor and upgrade technological infrastructure and services.**
- **Develop communication systems that inform the campus and external audiences of activities and opportunities.**
- **Increase fund raising activities.**

**Note:** Those items in **Bold** are areas in the Strategic Plan that are directly tied to information technology.

The most recent IT Plan was *The Computing and Information Technology Plan for the University of Massachusetts Dartmouth*. This update of a strategic IT Plan for the campus comes following the implementation of 8 of the 11 recommendations of the 1994 Plan.

The changes that have occurred at UMass Dartmouth and in IT provide the context and justification for a new strategic IT plan.

In the Spring 2010, UMass Dartmouth commenced an Information Technology planning effort that would put in place a sustainable IT Planning Process.

## ***Executive Summary***

For information technology to have a transforming impact on academic life at UMass Dartmouth, it must be consistently and widely available to students and faculty. This involves equipping all academic and common spaces to enable easy access to capabilities and resources provided by the Internet. Increasingly, this will mean providing access for mobile personal computing devices of students, faculty and staff. It also requires making teaching and learning, and associated support services, available over the Internet in ways not constrained by time or place. This environment must be carefully designed and constructed to enhance communication, foster engagement in University life and build community.

As digital citizens, our faculty, students, and staff must be equipped with 1) the knowledge and skills to use information technology to do the best possible research, scholarship, teaching, learning, service, and administration and 2) the understanding that each has not only individual but also institutional responsibilities with the management, protection, and/or availability of digital information.

With this understanding, the IT Planning Council developed the UMass Dartmouth Strategic Plan for Information Technology as a 5 year plan to be updated annually. The Plan was developed with the following guiding principles:

- 1) The Plan must be linked to the UMass Dartmouth Strategic Plan.
- 2) The Plan must be sustainable and updated annually.
- 3) The IT Planning Council must be representative of the campus community.
- 4) IT planning must be coordinated with the UMass President's Office.

Although there are a number of recommendations in the section Goals, Objectives and Implementation Strategies that begins on Page 11, the recommendations below highlight specific elements for concentration. The major components of the Plan parallel those of the Campus Strategic Plan: 1) Instruction, 2) Research, 3) Service, and 4) IT Infrastructure and Fiscal Planning.

### **Prioritized Recommendations**

#### **Instruction**

**Instr - 1:** Provide technological and instructional development assistance and support for the expansion of Online Courses and Programs.

**Instr - 2:** Maintain up-to-date software and hardware to support teaching and learning and train faculty in state-of-the-art technology, including the expansion of classroom technology to labs and studios, implement virtual computing labs, and incorporate of lecture capture technology.

**Instr - 3:** Provide IT support for assessing student learning outcomes in majors, general education, and out-of-classroom learning experiences (e.g. service learning, experiential learning, study abroad, internships).

**Instr - 4:** Develop and support IT infrastructure for student academic support services (e.g. tutoring for writing, math and science; information literacy instruction; library access online; expanded access to discipline-based databases).

**Instr -5:** Deliver accessible multimedia content (e.g. reusable learning objects; software that simulates virtual learning experiences) collected and shared in a centralized location for use across the curriculum; support for digital asset management by creating a repository for learning objects.

## **Research**

**Rscrh - 1:** Develop a highly capable campus computing environment, which includes a Virtual Computing Lab (that will also benefit instruction), expanded licensed software offerings and access to commercial databases, adequate storage for data, expanded access to digital library resources and a plan to provide access to cloud computing services.

**Rscrh - 2:** Ensure support for High Performance Computing (HPC) including increased access to national and international research networks, appropriate physical infrastructure, and disaster recovery mechanisms for datasets.

**Rscrh - 3:** Establish a centralized resource to support the specific needs of research efforts on campus in an Office for Research Technology Support that will provide expert consultants and programmers to support researchers.

**Rscrh -4:** Leverage technology to enhance intramural/extramural collaboration among investigators to include, video conferencing/visualization laboratories, communication with remote sites, a web portal for research outreach, and a science hub platform for research groups and collaborative partners utilizing Access Grid.

**Rscrh - 5:** Increase software support for grant management such as providing an online, self-service grant application, management and budget reporting process.

## **Service**

**Srvc - 1:** Provide flexible self-service to the UMass Dartmouth campus community, making all of its services available anytime and anywhere.

**Srvc - 2:** Implement and maintain effective, just-in-time IT educational and training programs for the UMass Dartmouth campus to include a coordinated effort for University business systems, e.g. PeopleSoft, T4, ReservIT, etc.

**Srvc - 3:** Identify and implement communication and business information systems that promote campus integration of and access to information resources such as providing a UMass Dartmouth personalized portal for each member of the campus community.

**Srvc - 4:** Assess the IT organization and IT services to maintain leadership by investing in professional development for the IT staff, investing in state-of-the-art technologies, and instituting a CITS Project Prioritization Process.

**Srvc - 5:** Manage IT-related outreach initiatives in a collaborative manner with the UMass Dartmouth community to identify emerging support and service needs as it relates to community, alumni and donor outreach, as this is a vehicle with an eye towards student recruitment and retention.

### **IT Infrastructure and Fiscal Planning**

**Infra - 1:** Pursue redundancy in core IT networks and systems to promote maximum availability, reliability and performance. With the campus community becoming more mobile, it is imperative that the security of our infrastructure and data systems be state-of-the-art.

**Infra -2:** Forge strategic alliances in the University at large, community, and peers in the region and expand interconnectedness, establish a 'safe harbor' for disaster recovery and business continuity, and utilize UMD's FCC licensed broadband spectrum.

**Infra - 3:** Institute an IT Project Prioritization Process that defines and identifies projects, timelines, resources and responsibility.

**Infra - 4:** Eliminate the fragmentation and redundancy of systems, architecture, standards across the campus, provide mechanisms for education and integration of systems by sustained tiered support, and promote greater usability and security of systems.

**Infra - 5:** Promote systems integration and meaningful business reporting to support decision-making.

**Infra - 6:** Establish and maintain IT disaster recovery and business continuity plans.

## *Planning Process*

### **Overview**

The campus CIO, under the direction of the Vice Chancellor of Administration and Finance, commenced the IT planning effort in the Spring 2010. The IT Planning Council was established and charged to develop a Strategic Plan for Information Technology and develop a process for sustaining the Plan over time.

Computing and Information Technology Services (CITS) staff also participated in a parallel set of planning activities that included development of a mission statement for CITS and a Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis.

The key components of the Plan for IT at UMass Dartmouth were to include:

- Executive Summary
- Vision Statement
- SWOT Analysis
- Strategic Objectives
- Implementation Strategies

### **IT Planning Council Membership Spring 2010**

The first objective of the IT Planning Council was to ensure membership represented the University as a whole. The following list was developed with input from key University constituencies:

Magali Carrera, Associate Provost for Undergraduate Studies

Geoffrey Cowles, Assistant Professor, Fisheries and Oceanography/SMAST

Cynthia Cummings, Assistant Vice Chancellor for Student Affairs

Allison Cywin, Curator, Visual Resources Center/CVPA

Andrew Darling, Director of IT Infrastructure/CITS

Peggy Dias, Executive Director IT Service Assurance/CITS

Salvatore Filardi, Associate Vice Chancellor for Administrative and Fiscal Services/Facilities

Alex Fowler, Associate Provost for Graduate Studies

Joseph Gray, Coordinator of Information Technology/Law School

Joy Hadley, Associate Vice Chancellor of Professional and Continuing Education

Carolyn Hamel, Assistant Vice Chancellor for IT Systems and Planning

John Hoey, Assistant Chancellor of Public Relations

William Hogan, Dean, College of Arts and Sciences

Donna Massano, CIO and Associate Vice Chancellor for Information Technology, **Facilitator**

Charles McNeil, Systems & Digital Services Librarian/ Library Systems and Digital Services

William Mitchell, Associate Vice Chancellor Administrative and Fiscal Services/Finance

Grant O'Rielly, Associate Professor of Physics, Faculty Senate Representative

Robert Peck, Dean, College of Engineering

Jennette Riley, Associate Professor of English, Academic Director of Online Education,

Tracey Russo, Instructional Technology Manager/CITS  
Tammy Silva, Director of Institutional Research  
Wendy Skinner, Assistant Vice Chancellor for Corporate and Foundation Relations  
Robert Solis, Associate Vice President of Information Technology and CIO, President's Office  
Andrew Staples, Student Senate

## **IT Planning Council Meetings**

It was important for all Council members to start with a common understanding of the future trends in Higher Education (over the next several years) and how technology fits into the evolution equation. Education of the Council was a very important part of the planning process and was incorporated into each meeting.

In setting up the format and meeting schedule, the IT Planning Council contacted Charles Patrick Kohrman, Director of Information and Instructional Technology, Services at Penn State Berks who presented a session at EduCause 2009 "No Free Lunch: A Condensed Strategic Planning Process."

In the Spring 2010 semester, there were a series of five 2 hour meetings that included an education component, brainstorming session, and discussion sessions. At the first meeting, all participants viewed a 45 minute video from the Educause 2009 Conference in November entitled the *Future of Higher Education*.

<http://educause.mediasite.com/mediasite/SilverlightPlayer/Default.aspx?peid=4306c8ffab3645dfb04f087cf94865c1>

It was also important that we use the technology in developing the IT Plan. Consequently, we utilized a Wiki and PowerPoint. Each meeting consisted of a PowerPoint presentation that included an agenda, the Wiki, and the education component, and the planning activity. The IT Planning Wiki can be viewed at <http://itplanning.umassd.wikispaces.net/>.

## **Timeline for Developing and Sustaining the IT Strategic Plan**

The timeline for the ongoing IT Planning Process is as follows:

- Spring 2010: Develop the Components of the Plan
- Summer 2010: Write the draft plan
- September 2010: Review draft plan with CITS
- October 2010: Submit draft plan to Chancellor and Vice Chancellors
- October 2010: Review draft plan with Senior Leadership
- November 2010: Review draft plan with Faculty Senate, Student Senate
- November 2010: Establish blog for UMD community
- December 2010: Review draft plan in 2 open discussion forums
- December 2010: Publish the Final Plan

To sustain the planning process, the IT Planning Council will meet once each semester:

Fall Semester: 1) Reconstitute the IT Planning Council and 2) Review current IT projects and initiatives both encompassed in the plan and other IT projects that were initiated during the course of the previous year.

Spring Semester: 1) Review and update the IT Plan and 2) Communicate updates to the Plan to the campus.

### ***Vision Statement***

Based on the goals of the [UMass Dartmouth Strategic Plan](#), the IT Planning Council developed the following Vision Statement for IT at UMass Dartmouth:

***UMass Dartmouth will have an open, secure, integrated, state-of-the-art IT environment. It will be supported by an accessible, adaptable, reliable and sustainable IT infrastructure and IT services that support excellence in teaching, scholarship, and service.***

## ***Strategic Objectives and Implementation Strategies***

The IT Planning Council established 4 Working Groups to develop the Strategic Goals, Objectives and Implementation Strategies for the following areas: 1) Instruction, 2) Research, 3) Service, 4) IT Infrastructure and Fiscal Planning.

### **1. Instruction**

#### ***Strategic Goal***

***Use IT in support of state of the art delivery and assessment of teaching and learning to create “excellent undergraduate and graduate programs that prepare students for advancement in the twenty-first century environment”.***

#### ***Strategic Objectives and Implementation Strategies***

##### **1.1 Expand Online Courses and Programs**

Expansion of online course offerings and programs requires a coordinated effort between administration and course development. IT can play a significant role in planning and executing the necessary changes.

UMass Dartmouth has developed fewer online courses and programs as compared to other UMass campuses. One of the intentions of this objective is to improve access to education for non-traditional students. Furthermore, there is the possibility of significant revenue generation via online courses and programs.

In considering *courses*, the Instruction Working Group differentiated among face-to-face (FTF) courses, blended or hybrid courses in which some of the course consists of FTF meetings and some significant component involves online learning, and online courses that do not have a FTF component and are conducted exclusively via online communications among the instructor and students.

In considering *programs*, the Instruction Working Group differentiated among programs all of whose requirements can be met via FTF courses, programs whose requirements can be made of some FTF courses, some blended courses, and some online courses, and *online programs* all of whose requirements from the time of matriculation can be met via online courses.

Online programs are frequently developed to allow completion of degrees or other programs that have been initiated prior to entry (transfer credits involved, usually FTF). Requirements from the time of entry to completion of the program may be completed via online courses. Examples are the online degree completion programs in Women's Studies and Liberal Arts in the College of Arts and Sciences.

- 1.1.1 Evolve and grow UMass Dartmouth support for a comprehensive, next generation Learning Management System and continue to work with UMass Online on its development strategy.
- 1.1.2 Enhance pedagogical support and instructional technology services to better assist faculty in applying information technology to improved teaching and learning, produce and acquire digital content, and enhance student access to instruction.

## **1.2 Train faculty and staff for state-of-the-art IT functionality.**

- 1.2.1 Establish a baseline training competency training in software tools available to faculty and staff.
- 1.2.2 As a first step, assess the state of the campus' faculty and learning programs with respect to present support and future needs (e.g. Smart boards and other touch technologies).
- 1.2.3 With status and goals in mind, develop a training plan that builds upon prior knowledge and is cumulative in nature. Seek Provost level support and sponsorship for establishing goals and incentives for reaching those goals. Expand the capacity for training by developing a better learning and experimentation space for faculty and staff.

## **1.3 Maintain currency of software and hardware to support teaching and learning.**

- 1.3.1 Continue to support and appropriately enhance technology-enabled learning spaces.
- 1.3.2 Incorporate lecture capture technology to expand the accessibility of course materials.
- 1.3.3 Expand classroom technology and include the labs and studios.
- 1.3.4 Continue to support and appropriately enhance the Faculty Instructional Laptop Program (FILP).
- 1.3.5 Investigate a mechanism to disseminate and automate course evaluations to both on-campus and online students.
- 1.3.6 Upgrade video conferencing and distance learning technology to provide high quality instruction.

## **1.4 Research future instructional technologies.**

- 1.4.1 Implement virtual computer labs that will improve access to software to students and faculty making software available anywhere, anytime.
- 1.4.2 Investigate and expand access to instructional resources through mobile

technologies (e.g iPads, cell phones, web clicker application)

**1.5 Identify and assess IT skills that will be required of students to compete successfully for graduate study opportunities and employment in the wide range of disciplines and occupations.**

1.5.1 97% of the entering Freshmen in Fall 2010 have access to a computer in their place of residence and 92% of the entering class own a laptop. Investigate whether there is a need to standardize on computer hardware and software by establishing a laptop/netbook requirement to enhance the student learning experience.

**1.6 Provide IT support for assessing student learning outcomes in majors, general education, and out of classroom learning experiences (e.g. service learning, experiential learning, study abroad, internships).**

**1.7 Develop the software, connectivity, accessibility and security for online examination of students.**

1.7.1 Develop mechanisms for online testing to secure and identify the individual test taker.

1.7.2 Assess placement effectiveness with end of semester analysis.

1.7.3 Investigate mechanisms to ensure secure online testing for the remote student.

**1.8 Explore means by which IT support may be utilized in improved academic advising with the goal of contributing to improved retention.** This must be based in each degree program. Interactive communication, online, between students and advisors is a first step, in a secure and easily accessible environment.

1.8.1 Acquire specialized advising software, e.g. Mapworks.

**1.9 Develop IT support for more individualized course content and assessment methods.**

1.9.1 Utilize language learning technologies that allow students to record voice assignments that can be evaluated by the instructor with the possibility of including comments in responses; homework assignment with a variety of evaluation of other students' work; interactive communication methods such as blogs and podcasts.

**1.10 Develop IT Support for ADA Compliance. Ensure widespread availability of assistive technology for students and faculty.**

1.10.1 Collaborate with the Center for Access and Success to identify IT needs.

**1.11 Develop and support IT infrastructure for student academic support services (e.g. tutoring for writing, math and science; information literacy instruction; library access online; expanded access to discipline-based databases).**

**1.12 Deliver accessible multimedia content (e.g. reusable learning objects; software that simulates virtual learning experiences) collected and shared in a centralized location for use across the curriculum.**

1.12.1 Support for digital asset management by creating a repository for learning objects; searchable, easily accessible for instructor and student use.

## 2. Research

### *Strategic Goal*

***Use IT to provide an environment that enables cutting-edge scholarship and research by faculty and students and enhances world-wide collaboration.***

The Internet provides access to an ever-growing array of the world's information and knowledge artifacts. Increasingly, research and scholarship are interdisciplinary, collaborative efforts. New communication and computing technologies enable researchers distributed across the globe to share costly facilities and instruments, large collections of data and information, and high-powered computational tools for analysis and synthesis. Access to this technology-enabled environment is required to enable active participation in current research and scholarly endeavors.

The needs for faculty and graduate student research are quite different than the IT needs for instruction and administration. Institutional recognition of this point and demonstrated implementation and support of relevant advanced IT infrastructure and resources will have a significant impact on actual research conductivity, professional collaboration and demonstrate investment and provide leverage for grant applications. Addressing the IT research needs is central to enhancing the UMD research enterprise and funding goals as detailed in the Strategic Plan with a system that provides access and has advanced capacity and versatility to meet diverse research needs.

### *Strategic Objectives and Implementation Strategies*

#### **2.1 Establish a centralized resource to support the specific needs of research efforts on campus.**

2.1.1 Create an Office for Research Technology Support (ORTS): The ORTS will provide expert consultants and programmers who work directly with researchers and graduate students, allowing the researchers to incorporate the most advanced research computing and visualization practices into their research work.

#### **2.2 Develop a High-Capacity Campus Computing Environment.**

2.2.1 Construct a campus-wide virtual computing lab: Establish virtual computing lab/s with accessible software for faculty and students; allow for departmental collaboration while meeting the needs of current research and graduate and undergraduate programs.

- 2.2.2 Extend the Scope of Licensed Computing Software: Consolidate and centralize licenses for core programs such as MATLAB and Mathematica and other graduate education computing software. Integrate computing software as part of the Virtual Computing Lab. Examine strategic approaches to reduce costs through employment of open-source software that could potentially enable hiring of staff for software support.
- 2.2.3 Expand access to commercial databases: Data mining tools support and enhance research in many fields including economics, biology, and nursing.
- 2.2.4 Provide Support for Data and Data Management: Maintain adequate data storage for research computing with archival capabilities.
- 2.2.5 Expand access to digital library resources: Enforce and enhance current academic processes to ensure that colleges and departments that wish to expand their curricular offerings and research areas must develop such expansion with a correlating request for investment in the budget for library collections. Continue efforts to expand access to digital library resources including licenses/subscriptions to online journals, research publications, and datasets through consortia or UMass system-wide licensing efforts.
- 2.2.6 On Demand Computing: Plan for and prototype cloud computing services for research computing or data-analysis requirements.

### **2.3 Leverage technology to enhance intramural/extramural collaboration among Investigators.**

- 2.3.1 Establish a video conferencing/visualization laboratory/ies: Equip the designated space/s with video conferencing capabilities and a visualization engine suitable for large-scale datasets. This will serve as an exceptional tool for research display, dissemination, instruction, and outreach, while maximizing interactive engagement.
- 2.3.2 Enable communications with remote sites: Research projects at remote sites depend on the ability to receive and transmit data from the field or track and control remotely deployed instruments. Mobile devices and mobile protocols are commonly used for such communications and will need support.
- 2.3.3 Build a Web Portal for research outreach: Capabilities should include a comprehensive wiki engine (e.g. mediawiki) to develop manuals for open source codes developed at UMD and support the associated coding community, software tools based on evolving protocols (e.g. thredds/dods) to serve data to outside researchers, government agencies, and the general public efficiently using a client-server approach, and safeguards to ensure availability of mission critical data.
- 2.3.4 Provide Science Hub Platforms: Provide Science Hub platforms (i.e., high-productivity research workflow systems) for research groups that depend on successful collaboration activities across campuses, among teams at multiple

universities, and in partnership with national and international research labs to include Access Grid.

## **2.4 Ensure Support for High Performance Computing (HPC) efforts.**

2.4.1 Expand links to internet backbone: Establish high-bandwidth redundant network connectivity for researchers to the national and international research network from the main campus as well as off-campus sites such as S Mast, AT&T, ATMC, and the Holyoke HPCC site (scheduled to come online in Fall 2012).

2.4.2 Infrastructure Support: Ensure that the physical infrastructure (cooling, space, power) exists on campus to support future growth of externally-funded research capacity.

2.4.3 Security of Critical Research Data: Design and implement a disaster plan to accommodate the large datasets associated with HPC efforts.

## **2.5 Increase software support for grant management.**

2.5.1 Provide online, self-service grant application, management and budget reporting processes.

### 3. Service

#### *Strategic Goal*

***Provide the highest quality service for IT systems to UMass Dartmouth students, faculty and staff. Ensure that all systems and services are accessible and responsive to the UMass Dartmouth community.***

#### *Strategic Objectives and Implementation Strategies*

##### **3.1 Provide flexible self-service environment to the UMass Dartmouth community, making services available anytime and anywhere.**

3.1.1 Establish a UMass Dartmouth Portal environment to promote engagement, communication, and retention in the student community. The student portal should be utilized as a two-way communication vehicle targeting student messages while also making services available in a virtual environment.

3.1.2 Provide services and related training in a reduced paper environment.

3.1.3 Provide an easy to use mechanism for submitting campus-wide communication.

##### **3.2 Implement and maintain effective, just-in-time IT educational and training programs for the UMass Dartmouth campus.**

3.2.1 Migrate training to an online format, increasing access to all members of the UMass Dartmouth community, e.g. Microsoft suite; business systems such as PeopleSoft: COIN, HR Attendance Reporting, and Finance; ReservIT.

3.2.2 Provide access to secure, standardized, cost effective, and easy-to-use technology tools consistent with the identified research, academic, and business needs of the UMass Dartmouth campus community. The tools need to be a coordinated with campus IT, the data owners (e.g. Registrar), and the UMass system.

##### **3.3 Identify and implement systems that promote campus integration of and access to information resources.**

3.3.2 Implement the Web interface to help desk ticketing system.

3.3.3 Implement a document imaging system to improve business and information processes.

**3.4 Manage IT-related outreach initiatives in a collaborative manner as it relates to community, alumni and donor outreach as a vehicle with an eye towards student recruitment and retention.**

**3.5 Maintain IT Leadership.**

3.5.1 Review and assess annually the IT organization and delivery of IT services.

3.5.2 Institute communication mechanisms that systematically inform the campus community of IT-related information.

3.5.2.1 Standardize all IT correspondence to the campus community utilizing the already established CITS Communications Committee.

3.5.2.2 Schedule all IT periodic correspondence utilizing the UMass Dartmouth calendar system.

3.5.2.3 Inform the campus community of available software.

3.5.2.4 Work with appropriate departments and inform the campus community of the available technology services for the entire campus.

3.5.3 Utilize assessment data to identify needs to develop and maintain quality IT tools and services. Ensure that tools and services are accessible and responsive to the diverse and constantly changing needs of the UMass Dartmouth community. Services should foster easy and transparent transition to and efficient use of emerging technologies in support of the UMass Dartmouth strategic plan.

3.5.3.1 Assess and upgrade software suites and UMD toolsets.

3.5.3.2 Undertake periodic assessment of continuing IT services.

3.5.3.3 Implement an annual survey of IT services and catalog.

3.5.3.4 Update CITS Online Service Catalog annually.

3.5.4 Ensure that high quality of IT is maintained.

3.5.4.1 Invest in IT staff professional development to ensure high quality technologies are implemented.

3.5.4.2 Foster continuous development of “service culture” among IT Staff.

3.5.4.3 Continue investment in state of the art technologies with a focus on communications delivery systems.

3.5.4.5 Work with the President's Office, UMass Campuses, CONNECT campuses, and other regional partners to synergize the development of IT services for UMass Dartmouth based on the UMass Dartmouth and Information Technology strategic goals.

## **4. IT Infrastructure**

### *Strategic Goal*

*Maximize the power and accessibility of IT systems and services while maintaining the highest levels of security, and efficiently utilize resources, fiscal, physical, and human.*

### *Strategic Objectives and Implementation Strategies*

- 4.1 Perform a periodic review and assessment of infrastructure and, considering future needs and the availability of funds and resources.**
- 4.2 Reach out to the University at large, community, and peers in the region for strategic alliances for the benefit of all concerned.**
  - 4.2.1 Expand the Wide Area Network (WAN) footprint to interconnect within UMass, remote campuses, OpenCape, Connect, OSHEAN and other regional partners.
  - 4.2.2 Establish an affordable “Safe Harbor” site for DR/BC systems hosting in partnership with peer institutions.
  - 4.2.3 Establish regional wireless (WiMax) networks utilizing UMass Dartmouth’s licensed spectrum.
- 4.3 Seek ways to drive costs down by engaging in virtual, cloud, collaborative technologies where pooling resources provides increased capacities at attainable costs.**
- 4.4 Pursue redundancy in core IT networks and systems to promote maximum availability, reliability and performance.**
  - 4.4.2. Continue to invest in the security of the campus network and data systems.
- 4.5 Establish and maintain IT disaster recovery and business continuity plans.**
- 4.6 Be responsive to students’ “quality of life” technology demands in a timely, collaborative, secure manner.**
- 4.7 Establish and promote governance structures for shared systems and resources to ensure local voice and input.**

- 4.8 Establish ongoing professional development of employees to ensure a broad knowledge base on organizational policy issues and the use of hardware and software.**
- 4.9 Eliminate the fragmentation and redundancy of systems, architecture, and standards across the campus. Provide mechanisms for education and integration of systems by sustained tiered support.**
- 4.10 Promote systems integration and meaningful business reporting to support decision-making.**  
4.10.1 Promote tools to allow real time access to ERP data at campus locations.
- 4.11 Continue to evolve and upgrade key technologies to promote ubiquitous access to systems.**
- 4.12 Promote greater usability and security of systems with key facets such as reduced sign-on with Identity and Access Management.**
- 4.12.1 Perform periodic assessment of the UMass Dartmouth network with a focus on information security.
- 4.12.2 Perform periodic access assessments to campus information and communication systems.
- 4.12.3 Ensure that state-of-the-art intrusion detection and prevention hardware and software are in place.
- 4.12.4 Ensure that UMass Dartmouth computer assets, systems and information are protected and compliant with all state and federal regulations.
- 4.13 Ensure that policies regarding IT and data are well known and that compliance is mandated.**
- 4.13.1 Ensure that all PCI regulations are followed anywhere on the network.
- 4.14 Expand support for hosting High Performance Computing (HPC) both on campus and remotely.**
- 4.15 Continue to incorporate state of the art “green” power, HVAC, and security support systems in the Data Center.**
- 4.16 Explore ways to make advanced IT Infrastructure evergreen.**
- 4.17 Institute an IT Project Prioritization Process that defines and identifies projects, timelines, resources and responsibility.**

## ***IT Organization***

More than other administrative offices, information technology (IT) organizations must be able to respond rapidly to technology's ever-changing environment. Therefore, Computing and Information Technology Services (CITS) is organized around a flexible team structure that ensures the ability to adapt to diverse and evolving campus IT needs. It is imperative that CITS assess and consider reorganization annually.

### ***Mission***

[CITS](#) is a service-oriented, collaborative organization that provides leadership in information technology organized to ensure a secure, sustainable, and innovative technology environment that is responsive to the research, academic, business, and outreach needs of UMass Dartmouth and the UMass system.

### ***Teams***

In the Fall 2010, there are 8 function-based teams.

In support of teaching and learning, the [Instructional Development](#) team assists faculty with technology in the classroom and online course development, while the [Learning Space Operations](#) team supports learning space hardware and software and the distance learning and video conferencing facilities.

The [IT Service Center](#) for faculty and staff, the Learning Commons for students, and Restech for residential students provide assistance to students, faculty and staff in meeting their varied IT needs.

The [Information Systems Development and Integration](#) and [Project Support and Change Management](#) teams support the development of campus-based applications, web systems and university system software implementation.

Three teams support infrastructure: [Network and Telecommunications](#), [Access Management](#), and [Enterprise Systems Administration](#).

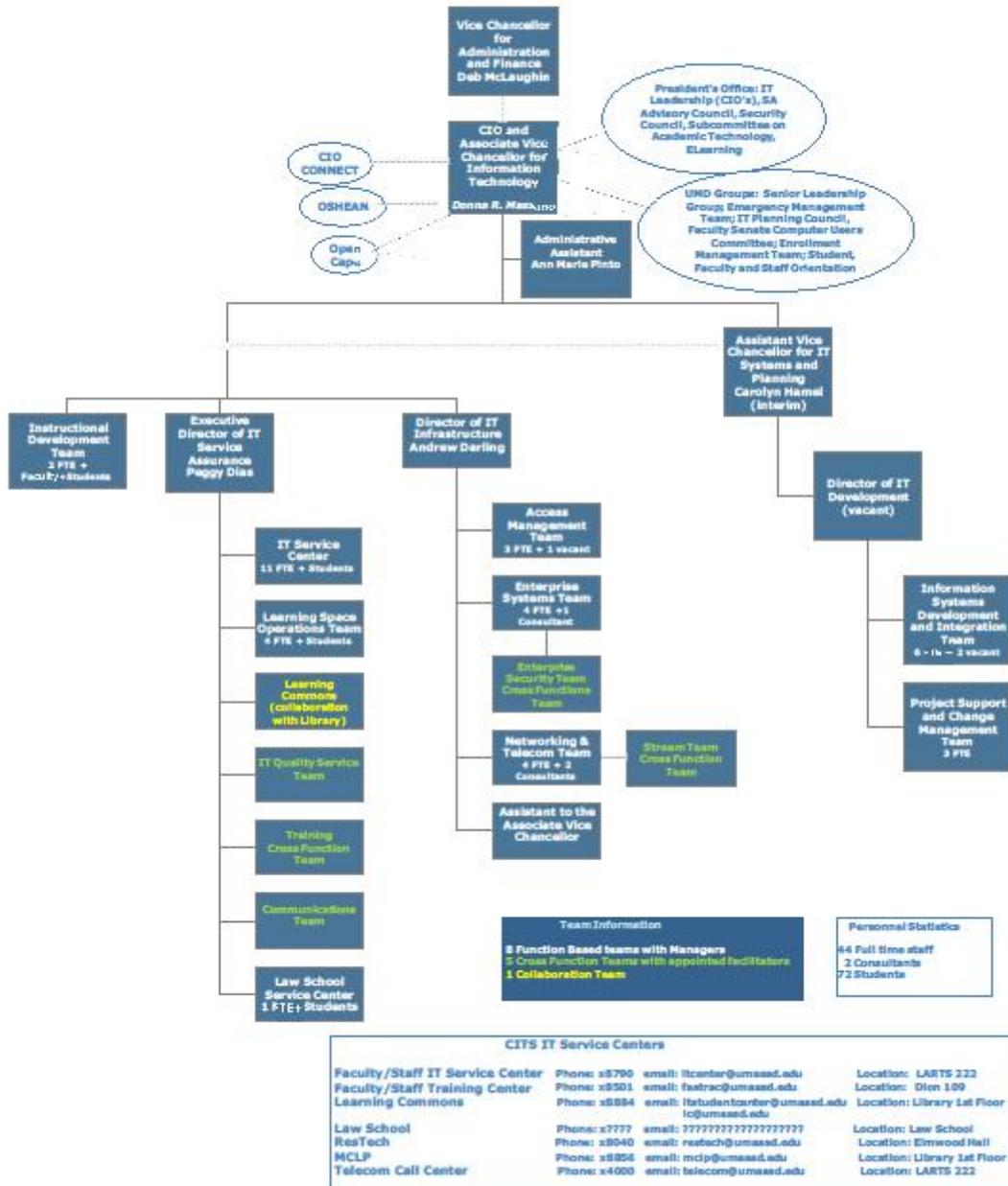
There are a number of issues that “cut across” the organization. To address issues of communication to customers and internally within IT, overall service quality, security, multi-media technical support, CITS has established cross-functional teams that include IT professionals from UMass Dartmouth.

### ***Staff***

There are 44 full time employees in CITS. There are a number of partnerships and collaborators across the campus, the UMass system, and region that are illustrated in the organization chart.

# Organization Chart

CIO Organization Chart for CITS - Fall 2010



## *Description of Services*

CITS provides support through a collection of service points for resident students, commuter students, faculty and staff. Support is available in person at the Learning Commons, Restech, IT Service Center, Faculty and Staff Training Center, through the CITS website and via email, and through training sessions. Assessment of effectiveness is through interactions with campus groups such as the Computer Users Committee, academic department chairs, and focused surveys.

UMass Dartmouth established a standard classroom technology configuration and then renovated and equipped nearly 90% of its primary classrooms. The Faculty Instructional Laptop Program (FILP) provides each faculty member a laptop for instruction. Technology in instructional laboratories and studios, however, is still not developed. CITS provides on-call support for faculty using the classroom technology (via a phone in every classroom), as well as the underlying infrastructure support.

All faculty have access through UMass Online to the Blackboard learning-management system myCourses and other online collaborative tools such as Wimba for face-to-face, blended, and fully online courses. Faculty have access to [Safe Assign](#), a web-based plagiarism detection service. In support of classroom personal response systems, the campus has adopted [IClicker](#).

UMass Dartmouth's business systems and Intranet systems are supported by Information Systems Development and Integration and Project Support and Change Management teams. Those systems include Zimbra Collaboration Suite (email, calendar, briefcase), major ERP systems such as COIN (student information), HR, and Finance as well as campus specific management systems such as ReservIT (space and resource management), FAMIS (facilities and work order), RMS (housing and judicial), Campus Services (one-card and dorm access management) Emergency Notification, Web Content Management, and document imaging. Development of specialized interfaces to these systems as well as creation of campus specific Intranet-based applications which may be dependent upon information housed within ERP systems is also managed by the IT Development Teams These include such systems as Placement Testing, Guest Student Registration, Housing Guest Management, National Student Clearing House, and Parking Decals and Temporary Passes. Oversight of departmental FTP and systems development within the UMass Dartmouth web site is also facilitated within this group.

The UMass Dartmouth technical infrastructure and the Data Center provide 24/7 availability to the campus network and network services, including web servers, email, collaboration tools, file services, administrative systems, learning management systems, and more, as well as to Virtual Private Network (VPN) for secure access. A natural-gas generator and room-based uninterruptable power supplies provide backup power when power to the campus is interrupted. A centralized data backup system is in place for all critical systems. This system uses virtual tape for fast backup and data recovery. Physical tape is also used to maintain a copy of backup data offsite that is refreshed weekly. Data Center access consists of redundant entry access systems utilizing proximity access (electronic key with logging), physical key access, and code-based alarm systems. There is also video surveillance with digital video recorders.

UMass Dartmouth maintains networks for data, telephone, and cable TV services to support classrooms, laboratories, research facilities, offices and residence halls on the main campus. These systems are distributed campus-wide over an extensive fiber optic (single and multimode) and copper (CAT 3-6) cable plant. The University maintains similar networks at all 6 off-site instructional locations. Each location connects into [UMass Dartmouth's Metropolitan Area Network](#) (MAN) at data rates ranging from 20 to 100 Mbps (megabits per second). UMass Dartmouth is part of a \$21.7 million stimulus grant received by OSHEAN that will provide fiber to the main campus, SMAST and the Fairhaven Outreach Facility over the next 2 years.

More than 14,000 ports on over 300 switches and routers support the University's wired data network. User link speeds vary from 10 Mbps (megabits per second) in residence halls to 10 Gbps (gigabits per second) in the Data Center; these links allow campus users to connect to campus applications and the Internet. There are currently some 12,700 registered devices on the network, primarily residence hall connections (~5000) and faculty and staff connections (~3,500), with the remaining connections used for printers, scanners and other network devices. The University supports a large wireless data network (WiFi) via more than 140 access points. The [wireless coverage](#) includes all inner-ring outdoor green spaces, as well as common spaces, cafeterias, and the technology-enabled classrooms.

UMass Dartmouth possesses 8 broadband channels, WND425 G1-G4, licensed by the Federal Communication Commission; and expects to build out WiMax technology that has the capacity to enable wireless access across the campus in its Fall 2010 pilot.

The network operations center is located in the Data Center on the UMass Dartmouth main campus. The University's increasingly virtualized Data Center houses ~200 enterprise servers as well as all security and network traffic-shaping technologies for the campus. From the Data Center, all network access is aggregated to Internet and Internet2 as well as UMass intercampus access to systems such as PeopleSoft via a connection to the UMass President's Office University Information Technology Services' (UITS) state-wide network (named MITI) in Worcester. This primary link is a Verizon Ethernet leased circuit capable of supporting up to 1 Gbps of traffic. Currently, we provide access to 400 Mbps of Internet bandwidth via this link and proceeding to add redundant links to 25 Summer Street in Boston and Wheaton College in Norton via Comcast links and the BTOP fiber. The University distributes Comcast cable television programming via a hybrid fiber/coaxial campus network primarily supporting the residence halls. The University's telephony system is supported by an Avaya IP-enabled distributed PBX telephone exchange that hosts extensions for all on-campus and most remote-site extensions (Outreach Center in Fairhaven, ATMC in Fall River, the Star Store and SMAST in New Bedford and the Law School in Dartmouth). All local and long distance telephone service is aggregated over 10+ T1/PRI circuits from Verizon and AT&T.

Each member of the campus community must register on the UMass Dartmouth network prior to accessing network services, including Internet, email, file and print services, Calendar, COIN, myAlert, and any other service. Both when a new UMass Dartmouth logon account is issued and at the beginning of each academic year, all members of the UMass Dartmouth community receive an email with the link to the [UMass Dartmouth Responsible Use Policy](#); that link, in turn, provides links to the University of Massachusetts [policies](#), procedures and [security guidelines](#). CITS has established and enforces a number of [procedures and protocols](#) to ensure data integrity and security.

## *Appendix*

Appendix A: SWOT Analysis

Appendix B: IT Action Plan Worksheet

## **Appendix A – SWOT Analysis**

### **Strengths**

1. CITS team approach valuable
2. CITS responsive to changing needs and issues
3. Developing informational literacy tools for students; librarians getting involved in instructional technology and different modalities for instruction
4. Wireless system across campus with exception of dorms
5. FLIP – effective for faculty instruction
6. Computer labs and software for student learning kept current
7. Smart classrooms 88%? or more?
8. Instructional Development team effectively working to keep faculty current
9. PeopleSoft system -- while needs development, much potential in this tool
10. HR Direct system -- effective new system
11. Network speed is responsive and available
12. Acalog – academic catalog online and operational
13. As an institution, we are working to make things accessible and online
14. Library planning includes IT infrastructure needs – spaces to support academic program with more computer stations, improved layout, computer classrooms
15. Creative problem solving
16. Significant investment has been made in administrative systems and application software providing powerful centralized information resources.
17. The University has invested in a campus e-mail, calendaring and collaboration systems that enhance the personal productivity of participating members of the campus community.
18. The libraries on campus have worked to increasingly provide electronic library resources
19. Colleges and departments employ extremely talented and creative IT professionals who are able to program customized solutions to support the requirements of their clients. When working collaboratively and developing services based on software and data standards, their contributions can become a part of campus wide IT solutions.
20. Institutional strategic goals rely heavily on robust IT resources.
21. Pockets of innovation, creative thinking.
22. IT savvy group of students/faculty
23. Attention to privacy and data protection

### **Weaknesses**

1. Lack of standards for the web site
2. Web site is non-intuitive.
3. There is not universal acceptance that IT infrastructure is an essential utility - like electricity.
4. Campus expectations for IT are not aligned with capacity.
5. Process for assigning IT priorities is not transparent.
6. Peoplesoft – complexity and management is slow to respond to need for change, non-intuitive, slow
7. Data exists but reporting of information is lacking
8. No redundant network path to the Internet... single point of failure
9. No true individualized student/faculty/staff portal pages...no "myUMD"
10. Wireless not pervasive throughout the campus including the residence halls

11. 25% of the cable plant is outdated (most of which is in the residence halls)
12. Members campus community remain unaware of security/identity risks
13. Laboratories and studios do not have the technology-enabled classroom suite standard
14. Although considerably narrowed, the University has its own digital divide. Some departments and colleges have very good networks, applications, IT talent, and physical infrastructure; others do not.
15. Campus software and digital content standards and architecture have not been fully defined, so that it is not always possible to take advantage of the considerable IT expertise that exists on campus along with the systems, software and services that these professionals develop.
16. Fragmentation of IT infrastructure. Distributed network infrastructure leads to duplication of IT systems, e.g. computer labs/software, and services (technician support) across departments that are unreliable and not cost effective. The lack of balanced coordination between centralized and departmental IT can result in increased IT costs, duplicated efforts, non-standard solutions, decreased sharing of creative solutions, and the inability to make data and information useful across the enterprise.
17. While significant investment goes into building, utility and IT infrastructure, a proportionate investment does not typically occur to make sure that the full capabilities of the infrastructure are realized. Examples:  
The ability to capture classroom video and make it available to students exists. The demand for such services exists and is growing. But, the human resources necessary to provide these services are extremely limited, with no currently identified budget to expand these capabilities.
18. Infrastructure has not matured to allow sharing applications and content management services. Human resources necessary to support such activities are not factored into staffing levels.
19. The University needs to focus on improving the availability, timeliness, accuracy, quality, usability, documentation and overall integrity of data and information. The next step is to focus on how the information will be shared.
20. The University lacks certain critical technology and information components to support workflow for business process improvement.
21. Culture impedes synergy- collaboration is often lacking, silos, working in a vacuum
22. Is there a good mechanism for polling IT customers (faculty, administrators, students) to determine their needs?
23. Small operational scale means higher cost per user
24. Lack of confidence we will have resources to achieve IT goals

## **Opportunities**

1. Expand online instruction and degree programs to improve access
2. Provide better wireless and wired networks to assist student retention
3. Provide adequate infrastructure of connectivity for streaming video, etc.
4. Expand technology opportunities and campus infrastructure with regional partners:
  - o Open Cape
  - o OSHEAN
5. UMass Dartmouth asset - ownership of regional broadband channels with possibility of supporting WiMax for campus and regional communications
6. President's office support and University system collaboration among UMass Campuses (i.e., Virtual Computer Labs - VCL)
7. CONNECT partnership with CCCC, BCC, BSC, Mass Maritime, Massasoit
8. Campus infrastructure allows IT professionals to focus, as a team, on organizational and individual needs.

9. There is an opportunity to coordinate wireless services, cell phone use, e-mail and next generation voice services to achieve campus-wide, unified communications. To accomplish this and other goals, 'role-based' identification, authentication, authorization procedures, and digital signatures must be available to the campus community, both on and off campus.
10. The availability of online course modules that can be shared across the Internet will change the way faculty teach and students learn. More paper transactions are moving to the web providing students, faculty, and staff with materials and transactions at the time and place of their choice.
11. Personally customized managed knowledge services are possible, and can improve the instruction, advising and academic experience of our students. Information resources can be customized, individualized, and made transportable.
12. Video/multimedia -on-demand will further enhance communications and will provide rich media content for instruction and training.
13. The development and proliferation of dark fiber networks will significantly increase bandwidth resources.
14. UMD could provide networking connectivity to all public schools and other CONNECT institutions in the SouthCoast region.
15. Advocate for a UMass system grid
16. Leverage UMass system initiatives, e.g., UMD will have enhanced research capability by being a partner in the Massachusetts High Performance Computing Center initiative.
17. UMass system is positioned to build a business decision making tools, capabilities
18. UMD can extend its influence positively on the region

### **Threats**

1. Budget, budget, budget - financial resources
  - o personnel resources
  - o not keeping up with research and development
2. Keeping faculty/staff up to date with training – plan for training and provide "just in time" user training
3. Lack of assessment of changing needs of students, faculty, and staff
4. Increased use of outside/off campus services - security concerns, policy compliance
5. Lack of student resources for IT- esp hardware
6. Centralized services - need for resources to support those services- lack of autonomous implementations
7. New initiatives - lack of analysis of impact of IT resources
8. Competition from other institutions for faculty and students
9. Lack of system integration
10. Game-changing technologies disrupting plans
11. Lack of understanding of using the appropriate technologies Don't always know what they need? "What they want is not necessarily what they need"
12. No redundant connection to the Internet
13. No Safe Harbor for critical systems
14. FCC Broadband channels - if not in a pilot in spring 2011, UMD broadband channels could be relinquished to FCC
15. Funding for all higher education endeavors, including IT initiatives continues to be limited and comes from multiple sources.
16. The ability to retain quality IT staff is threatened by competition with commercial employers, especially as the economy recovers.

17. The quality, stability, and usefulness of the University's network are highly dependent on vendor products and services. IT leadership must perform a proper business case when purchasing information technology resources.
18. It should never be the intent to restrict the purchase of products and services, which may provide specific benefit to a college or department. However, it may be necessary to pool the buying power of campus organizations to lower costs, improve the quality of available services, and adopt a common architecture or infrastructure.
19. Without fully functioning networks and IT services, it will be more difficult for the University to attract quality faculty and students, and maintain its position as a leading regional research university. The University may lose faculty and the opportunity to recruit top students if competitive IT services are not available.
20. Increasingly sophisticated security threats
21. Students have more choices regarding their education. Private and public higher education institutions are providing distributed campuses, remote access to classes, and rich multi-media experiences. The University must maintain its competitiveness in this area.
22. Consumer technology will drive what new campus technologies are introduced and supported.

**Attachment B: IT Action Plan Worksheet**

Goal	Alignment College, Division, Other	Subgoal - Objective	Action Required/ Activities or Strategies	Indicator of Success/As essment Measures and Criteria	Target Completion Date	Resources Needed	Responsible Dept for Oversight	Assessmnt Outcomes and Recommend ations