



MSU Information Technology Strategic Plan

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Goal: To enable Montana State University to effectively use information technology to accomplish its mission.

I. Charter

The committee will develop a draft of a strategic plan that identifies what IT services should be provided on the MSU campus to achieve the institution's mission.

1. Identify which of the current base IT services will need to be maintained into the future.
2. Identify enhancements to current IT services that will be required to meet currently unmet needs.
3. Identify additions to IT services required to meet future needs. In each case, the committee should consider the priority of existing services, new additions and enhancements.

We take as our key premises

- *Information technology infrastructure and the associated personnel are a strategic asset, not a cost burden, and the university should invest accordingly. Failure to do so would lead to a failure of this plan and jeopardize achievement of the university's mission*
- *The MSU information technology environment will encourage and facilitate effective student, faculty and staff engagement in teaching, learning, research and the import/export of knowledge.*
- *IT infrastructure planning must be conducted with consideration of all university goals and the realities of fiscal constraints.*

II. Key Recommendations

Our key recommendations are itemized below. Each recommendation is assigned to an actionable category corresponding to the elements of the committee charter.

1. Continue as is
2. Enhance
3. New
4. Devalue
5. Eliminate

These action categories provide a means of assigning priorities and working within the realities of resource constraints. We assume that the responsibility for setting priorities, planning, budgeting, executing and evaluating the outcomes of these recommendations lies with the CIO and its supporting staff, governance council and committees.

Governance

- *Clarify the relationships among the CIO, assistant CIO for academic affairs, ITC management, the IT Governance Council (ITGC) and the IT Governance Committees, and assign well defined and measurable roles and responsibilities.(new, enhance)*
- *Empower the ITGC with a strong leadership role at the highest level of MSU, engaged in the activities of the IT governance (ITG) committees while ensuring adherence to this IT strategic plan. Identify/clarify the specific responsibilities, role and scope of the existing ITGC committees. (enhance)*
- *Develop and maintain an IT capital plan and associated funding consistent with these IT Plan goals, university priorities and the realities of fiscal constraints.(continue, enhance)*
- *Institute policies and procedures to assure that centralized IT staff and autonomous unit IT service providers will be accountable and responsible for achieving the goals of the IT Strategic Plan.(continue, enhance)*
- *Establish a mechanism to periodically evaluate IT infrastructure and services and make recommendations regarding areas for emphasis and de-emphasis with a goal of improving efficiency and effectiveness.(new)*

Infrastructure

- *Evaluate and as appropriate, commit to the increased availability and use of information technologies in the classroom and other learning spaces, research and enterprise infrastructure along with associated operations, maintenance support and training. (continue, enhance)*
- *Allocate appropriate resources to ensure safeguards are in place to secure all MSU computing and information assets.(continue, enhance)*

- *Provide centralized IT services where common needs offer economies of scale.(continue)*
- *Accommodate and adapt to decentralized IT infrastructure operations by autonomous IT units to meet specialized needs.(continue, enhance)*
- *Establish policies to assure that the maintenance and regulation of campus-wide IT infrastructure that is open and transparent to users.(new)*
- *Pursue and support grants and other funding opportunities that enable the development of infrastructure for regional and national scale collaborative academic and research programs that align, support, and strengthen the long term IT infrastructure strategic plan.(new, enhance)*
- *Examine multi-campus, MUS and statewide opportunities to leverage IT to meet increased outreach goals.(continue, enhance)*

III. Approach

This IT strategic plan uses the MSU Bozeman Five Year Vision (See Appendix 1) as a starting point, identifying the items in that plan that have IT implications and establishing the policies, strategies and priorities needed for achievement of IT-related goals identified in the five-year vision. The committee has also considered the recommendations of the 2005 campus IT reviews, as well as inputs from ITC, UTAC, ATAC ETAC, Faculty Council, ASMSU, the Service Provider's Group and others in developing this plan. The committee has gathered data on MSU IT investment to establish a baseline and has used data from peer campuses, available from Educause, to benchmark our current and planned IT environment.

The MSU IT governance structure has undergone considerable reorganization in the past eighteen months and has still not reached steady state. Our recommendations are based on the assumption that IT will be directed by a CIO and supported by an assistant CIO and director of academic computing and ITC management. The IT Governance Council and the IT Governance Committees will provide input and oversight to the governance process. Appendix 5 provides further definition of this organizational structure. Clarification of roles and responsibilities must be given highest priority.

We have used benchmarking to establish how well MSU is proceeding toward its own self-imposed goals, as well as how MSU compares to its peer campuses. Appendix 2 contains a detailed assessment of MSU's progress in meeting each of the items in the Five-year Vision, prepared by the Office of Planning and Analysis. We note that there has been significant progress in key areas, including research contracts, growth in the MSU Foundation endowment, engagement of students in creative activities and invention disclosures.

Data that we have collected regarding MSU's IT environment and investments are provided in Appendix 3. We have summarized the ITC capital budget, EFAC and CFAC expenditures, wireless network, interactive video and WebCT usage. As shown in Appendix 4, MSU annual IT expenditures per FTE student are approximately 50% of that of comparable universities and have remained relatively unchanged over the past five years (see Appendix 3).

In comparing MSU to other campuses we have elected to use the Carnegie Foundation classifications, and have defined a cohort based on "research university with very high research activity" (top 95 universities) conditioned on "undergraduate program with professions, plus arts and sciences and high graduate coexistence". There are thirteen universities in this combined classification, as shown in Appendix 4. We note that this is a departure with prior MSU IT planning comparisons, where a more regional cohort group was defined, labeled "ITC peer group" in Appendix 4. We feel that this change is warranted as MSU's aspirations are more in line with the Carnegie peer group rather than its geographic neighbors. Note that none of the "ITC peer group" campuses are in the top tier Carnegie classification. We have used the Educause core data survey (2005 results) to compare MSU to its peers, and data for both the Carnegie and ITC peer groups are provided in Appendix 4. Generally, the MSU IT environment is more closely aligned with the ITC peer group, corresponding to where we are today, than to the Carnegie peer group, which represents MSU's aspirations.

MSU tends to be a follower in administrative IT infrastructure investment. The data in Appendix 4 show that MSU's Carnegie peers and ITC peers have generally been earlier adopters of IT systems, portals, and enterprise resource planning (ERP) systems.

IV. Specific Areas for IT Planning

1. Student Body

The MSU five-year vision anticipates only modest growth in the student population. However increased use of information technologies in teaching and other academic activities will put increased demands on the scale and scope of IT infrastructure and services.

Strategic recommendations

- 1. Encourage student computer ownership and usage on campus by providing convenient and widely available network connectivity, campus-wide software licenses, and more training. (continue, new)*
- 2. Evaluate and implement information technologies that enable new opportunities for teaching and learning. (continue, enhance)*

3. *Provide students with the information technology infrastructure, support and training to facilitate full and convenient participation in IT-enabled learning experiences. (continue, enhance)*

2. Faculty and Staff

- As MSU moves toward a more information-intensive technology model for teaching and learning, faculty will need more IT-related resources for course preparation and engagement. Greater use of information technology to improve staff productivity will necessitate more resources.

Strategic recommendations

1. *Evaluate needs and make available where appropriate state-of-the-art computing equipment for faculty and staff, commensurate with their assignments and budget for software upgrades and lifecycle replacements coordinated with increased uses of information technologies for instructional and administrative functions.(enhance)*
2. *Provide ongoing training and support of faculty and staff use of information technologies to assure productivity and efficiency gains enabled by infrastructure investments.(enhance)*

3. Curriculum

The increased use of information technologies in the classroom and other learning places will enhance the educational experience for students. In addition student expectations regarding the use of technology in receiving, researching, and creating information will continue to grow. In This increase will require increased and systematic investment in systems and infrastructure. As teaching and learning become more information technology intensive, it is essential that MSU offer convenient and widely available network connectivity.

Strategic recommendations

1. *Establish an ongoing process for selection, implementation and maintenance of a centrally-supported learning management system (LMS) recognizing the diversity of pedagogical needs and approaches. Selected systems should include the appropriate hardware, storage capacity, student, staff and faculty training. Minimum components for a LMS should include content management, assessment and testing modules, learning management, authenticated access to institutional digital resources (libraries), collaboration tools for interaction between students and instructors, and integration with the institutional student information system.(continue, enhance)*
2. *Evaluate needs and where appropriate, recognizing discipline-specific requirements, facilitate more campus wide software licenses for instructional*

applications that are beyond what might be reasonably expected for student ownership. (enhance)

3. *Evaluate needs and establish a plan to increase, upgrade and maintain technology-enhanced classrooms, labs and other learning spaces, with minimum requirements tailored to local organizational needs. (continue)*
4. *Define and put into effect a process for evaluating implementation of new educational technology tools in relation to existing systems, resources, and priorities.(new)*
5. *Determine the need and provide a network infrastructure that easily and securely accommodates student owned computers including establishing a wireless networking plan to foster access, mobility and collaborative work among students and faculty in appropriate space throughout the campus.(enhance)*
6. *Deploy an enterprise-wide mechanism for distributing network-accessible teaching and learning media. (new)*
7. *Establish an institutional repository for data, research outputs, course materials, etc. (new)*
8. *Evaluate the need for expanded on-line student services and develop an implementation plan. (new)*

4. Research and Creativity

The stated objectives of the university are to expand the size and scope of its research and creative activities and to further involve students in these activities. Most, if not all such activities make some use of the university's information technology infrastructure. Moreover, some research is significantly dependent on this infrastructure and will continue to expand only as the infrastructure does.

Strategic recommendations

1. *Continue to accommodate and adapt to decentralized operations by autonomous IT units. (continue)*
2. *Provide campus-wide IT infrastructure that is open and transparent to users that will enable decentralized IT operation to make the optimal use of shared resources. (new)*
3. *Establish a procedure for assessing the capacities and predicting future demands on campus-wide resources helping researchers assure potential funding agencies that they will have the resources necessary to perform promised tasks.(new)*

4. *Establish procedures to facilitate experimentation and innovation in the use of information technologies in teaching, learning and research. (new)*
5. *Promote and support collaborative engagements in regional and national scale IT-based research and academic programs leveraging internal investment to secure infrastructure, academic and research funding.(continue, enhance)*
6. *Examine the costs of providing IT services and infrastructure for research and creative programs and consider whether the current cost and charge back model properly captures the value of the services provided or serves as a deterrent to the use of services and an inhibitor of creative applications. (new)*

5. Partnerships and Outreach

As educational programs, research, student populations and distance learning opportunities evolve, the four-campus MSU family will continue to become more integrated and the coordination and compatibility of IT services will be critical to a more integrated approach for serving students and faculty. In addition, as a land-grant institution MSU has responsibility for making information, programs and services continually more accessible to the citizens of Montana. The MSU Extension Service already has a strong presence throughout the state and this can be supplemented and strengthened by enhanced IT capabilities in select Extension Service offices. As information and instructional technologies continue to evolve, MSU will be positioned to take maximum advantage of these technologies to reach a growing population of non-traditional students and clientele. Lastly, the opportunities afforded to MSU through research and technology transfer require that we maximize our ability to interface with public and private sector business both in Montana, nationally and internationally.

Strategic Recommendations:

1. *Establish and maintain an integrated approach to IT systems to assure common capabilities and compatibilities for the MSU four-campus system.(new)*
2. *Collaborate with other MUS campuses, OCHE and State of MT IT services to expand distance-learning programs and to avoid parallel systems and approaches for distance learning and other IT services. (enhance)*
3. *Capitalize on MSU's existing statewide presence by establishing MSU Community Learning Centers with enhanced collaborative technology capacity in select MSU Extension offices. (new)*
4. *Continue to position IT capability to strengthen international partnerships and to use IT to explore opportunities for international student diversity and research collaboration. (new)*

6. Physical, Technological, Financial and Service Infrastructure

As research activity grows, new and renovated space will be required that includes state of the art information technology infrastructure to ensure rich collaboration between research and education activities. Similarly, as instructional programs become more IT-aware, MSU will need to improve the efficiency and effectiveness of institutional and IT systems. Increased dependence on highly integrated IT systems will necessitate that MSU proactively invest to ensure the confidentiality, integrity, and availability of information resources. Comparisons with Carnegie peers show that other campuses are moving rapidly to highly integrated, “flow through” enterprise wide information and resource management procedures and systems, spanning administrative and academic boundaries.

IT disaster planning and business continuity planning have become major issues for academic as well as corporate entities. Recent events such as Hurricane Katrina and the September 2001 attacks have raised concerns of vulnerability and the need for disaster recovery procedures. The recent campus computing survey shows that approximately 60% of college campuses have adopted IT disaster recovery plans [3]. The issue remains a major concern among CIOs.

IT security is also a major concern at virtually all universities. Network and data security was identified as the single most important IT issue over the next three years in the recent national campus IT survey, and this concern has grown in importance over the past several years [3]. The dimensions of this problem are numerous and complex, ranging from virus and spyware attacks to stolen equipment and unauthorized access to systems containing confidential data to password protection.

Strategic recommendations:

1. *Allocate resources to facilitate the planning and expansion necessary to ensure availability of information technology infrastructure through pre-disaster mitigation efforts and the development of a Disaster Recovery Plan, and a Business Continuity Plan.(continue, enhance)*
2. *Institute policies and procedures to assure that centralized IT staff and autonomous unit IT providers work collaboratively and effectively to achieve the IT Strategic Plan goals. (new)*
3. *Provide appropriate and timely provisioning of connectivity for students, researchers, faculty and staff using service level agreements.(new)*

4. *Provide adequate resources to enable IT staff to deliver a high level of client service, being flexible and responsive to diverse client needs. (enhance)*
5. *Increase productivity through improved business processes, incorporating client service principles, quality assurance principles and increased procurement and use of appropriate technological resources. (continue, enhance)*
6. *Assure security through the efficient use of technology, appropriate data stewardship, policy enforcement, and training for students, faculty, and staff.(continue, enhance)*
7. *Examine system-wide IT functionality to assure economies of scope and scale. (new)*

V. Ongoing Evaluation or Periodic Evaluation

MSU needs a mechanism to periodically evaluate IT services and infrastructure and this function should reside with the ITGC. MSU organizations frequently assess their own information technology needs and independently develop evolution plans and migration strategies, which can result in sub-optimal use of resources and poorly coordinated investments.

Strategic recommendations:

1. *Conduct periodic reviews of IT infrastructure and services with a goal of improving efficiency and effectiveness(new)*
2. *Encourage a campus-wide willingness to eliminate services of lower value/impact by providing strategies and resources to transition legacy systems to new platforms, consolidating systems with similar functions and eliminating duplications.(new)*

VI. References

1. MSU Five-year vision. <http://www.montana.edu/opa/spc/fy06-fy11.html>
2. Educause Core Data Service 2005 Survey. <http://www.educause.edu/apps/coredata/index.asp>
3. “The Campus Computing Project”, October 2006. www.campuscomputing.net

VII. Acknowledgements

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