



Bowling Green State University

Strategic Plan for Information Technology

November 15, 2002

Prepared by

Information Technology Committee

TABLE OF CONTENTS

	Page
<u>EXECUTIVE SUMMARY</u>	i
<u>SCOPE AND PURPOSE OF DOCUMENT</u>	i
<u>ORGANIZATION OF THE STRATEGIC PLAN</u>	i
<u>FINDINGS</u>	ii
<u>STRATEGIC PLAN FOR INFORMATION TECHNOLOGY</u>	1
<u>1 INFORMATION TECHNOLOGY SYSTEM</u>	1
<u>1.1 Infrastructure, Usage and Assessment</u>	1
<u>1.2 Services</u>	2
<u>1.3 Staffing</u>	3
<u>1.4 Budgeting</u>	3
<u>1.5 Information Privacy, Security and Protection</u>	5
<u>2 SUPPORT AND TRAINING</u>	5
<u>2.1 ITS Responsibilities</u>	6
<u>2.2 Collective Campus Responsibilities</u>	6
<u>3 PRIMARY SYSTEM OPERATIONAL SERVICES</u>	7
<u>3.1 Instructional Technology Systems</u>	7
<u>3.2 Administrative Information Systems</u>	10
<u>3.3 Student Computing Environments</u>	11
<u>3.4 Research Computing Environment</u>	13
<u>GLOSSARY OF ACRONYMS</u>	15

EXECUTIVE SUMMARY

SCOPE AND PURPOSE OF DOCUMENT

The commodity nature of Information Technology (IT) requires that its elements are commonly available and broadly distributed throughout the University. This IT Strategic Plan is to guide the activities of Information Technology Services (ITS), and the activities of other campus entities that implement IT, to address the interests of the entire University. Within this document, IT is defined to be the computing technology in use on-campus and the associated network and communication infrastructures that unite them into useful interrelated systems. The depth of the document illustrates how ubiquitous IT has become in the functioning of the University, including its most basic endeavor, educating students. It is acknowledged that a portion of the document is motivated by observed deficiencies in IT as currently implemented on-campus. However, the document does not attempt to exhaustively enumerate these weaknesses nor provide an item-by-item solution. Such enumerations and solutions are not appropriate for a strategic plan. Rather, this plan sets forth goals for each major component of the IT campus experience. As the goals are reviewed, studied and achieved, it is hoped that everyone's desire of obtaining increased IT usability will result in improving the University community's satisfaction with IT services.

This plan requires cooperation and coordination among numerous groups across the entire campus involved in various aspects of information technology. ITC will solicit advice, suggestions, and concerns from any groups and individuals not directly represented on ITC.

The University Chief Information Officer (CIO), in concert with other appropriate individuals and groups, will report annually on the progress of plan implementation. It is suggested that the Information Technology Committee (ITC) be responsible for any document revisions as instructed by the University Executive Vice President (Exec. VP) or Exec. VP designees.

ORGANIZATION OF THE STRATEGIC PLAN

The document consists of three principal sections: the Information Technology System, Support and Training and Primary System Operational Services.

The Information Technology System section addresses issues of University-wide Information Technology (IT) importance, such as infrastructure usage, services, staffing, budgeting, information privacy, system security and protection.

The section devoted to Support and Training recognizes the needs and responsibilities of Information Technology Services (ITS) and the collective campus to meet University IT performance demands. It delineates the responsibility of all parties involved in these operations.

The Primary System Operational Services section is composed of four components: Instructional Technology Systems, Administrative Information Systems, Student Computing Environment and Research Computing Environment. The Instructional Technology Systems is an additional component to the traditional operational service model. This addition is justified as central to our mission to become the premier learning community in the nation.

For each section of the strategic plan specific goals are set forth. Short-range goals are to be addressed within a span of two years. Mid-range goals have a time frame of two to four years. Long-range goals may require a preparatory phase that begins in near term, but they ultimately represent a target to work towards over a three to five year span.

FINDINGS

1. Information Technology System

The Information Technology System of Bowling Green State University is a living bio-cultural entity. It is the sum of all information technology resources: people, culture, expectations, machines and software.

1.1 Infrastructure, Usage and Assessment

The recent investment in creation of a Supernet should be followed by additional investments to encourage access, use and continued improvement of this resource.

1.2 Services

ITS is a visible and influential part of the University's IT system. The symbiotic relationship between ITS and the institution at large should be a major focus of future planning and operations. Quality service should always be provided.

1.3 Staffing

A large majority of IT services should continue to be provided by a centralized ITS. IT challenges relating to a specific unit are more effectively addressed by the unit's own support personnel. University funding of these personnel is desirable.

1.4 Budgeting

The BGSU IT System should be funded at a level sufficient to accomplish the many goals set forth in this document, as well as normal operations. A percentage of the University budget should be continually allocated to provide consistency of operations. The development of a comprehensive replacement plan for desktop/laptop systems and printers should be a very high priority.

1.5 Information Privacy, Security and Protection

The necessity of education on issues of information privacy, security and protection is essential to create a community of informed IT systems users. To optimally maintain such systems requires continual evaluation and updating of policies, and support for implementation of new and continuing privacy/security initiatives.

2. Support and Training

The support of IT systems and training issues deserve budget allocations commensurate with their importance in maintaining BGSU operations. It is the responsibility of ITS and the collective campus to provide these resources. The goal is to provide support mechanisms that are responsive, competent and professional to the end-user.

2.1 ITS Responsibilities

Given its central responsibility, ITS should promote and support formal, campus-wide efforts to integrate emerging IT capabilities with teaching, learning, research and administration. It also should identify and implement new support and training mechanisms to support those emerging capabilities. Finally, it should continually assess the IT literacy on-campus and revise support and training activities.

2.2 Collective Campus Responsibilities

Given the diffuse nature of IT, the University needs to delineate responsibilities of current IT support and training providers (ITS, RCC, Continuing Education, CTLT, etc.). The University community should seek methods of applying current IT expertise at the college, department and program levels for IT support and training issues. We should identify chronic difficulties in supplying IT support and training and develop alternate methods of meeting these needs.

3. Primary System Operational Services

To the three traditional primary IT operational services (student computing, research computing and administrative information systems), a fourth component is now added -- instructional technology systems.

3.1 Instructional Technology Systems

IT based instructional innovations must occur at the University and be supported by the University. The issues addressed in the document in relation to instructional innovation and support are (1) matching technology with curriculum, (2) incentive and reward for innovation application and (3) distance learning.

To match technology with curriculum, the current state of instructional technology at the University is to be surveyed. Opportunities must be available for faculty development to support the use of instructional technologies.

With respect to incentive and rewards, annual review, merit, tenure and promotion processes (along with other factors such as faculty load) should be changed to reflect the importance of IT instruction innovation at the University.

Distance learning encompasses a range of technologies and a range of teaching contexts. The online course concept and similar technological instructional innovations concepts should receive system-wide attention. This includes conception phases and operational phases of all such work.

3.2 Administrative Information Systems

In the near term, we should continue to expand applications available through the University's web portal. All information available through these applications should be accurate and real-time current. Where possible, we should convert to and develop digital versions of promotional and recruiting material.

Investigate the implementation of a campus-wide online data and document management system to facilitate document sharing among multiple administrative offices. Provide easy access and extended access to the online data and documents.

Our major administrative systems need to be updated with systems that utilize database technology and, where possible, systems should be maintained by the vendor to provide up-to-date technology and functionality.

3.3 Student Computing Environments

BGSU should establish a configuration of hardware and application software that will meet the needs of the greatest possible number of potential computer users within the general computing labs. As new needs are identified, ITS will work with academic departments to determine appropriate solutions (such as specialized labs, computing liaisons).

3.4 Research Computing Environment

Steps to create a research infrastructure that will attract and retain high quality faculty, graduate and undergraduate students are seen as the central focus of the learning community. It is vital that cooperation between University units improve to optimally utilize limited IT resources and be more competitive in generating additional external funding.

STRATEGIC PLAN FOR INFORMATION TECHNOLOGY

1 INFORMATION TECHNOLOGY SYSTEM

As an institution heavily dependent upon information technologies for success in its mission, we must strive to be conscious of our overall IT system and must emphasize its growth, maintenance, and evolution as an integral part of what we do.

In addition, our individual, departmental, University-wide commitments to lifelong learning are vital in empowering us to improve ourselves and the world—via information technologies in general and the specific IT services, interactions, growth opportunities and user satisfactions we provide to students, employees and the worldwide academic community. These commitments and the vital contributions of the people who offer them make our IT system a living, evolving bio-cultural entity, not just a collection of machines, wires and other similarly “hard” materials. We also must not forget that our institutional culture, attitudes and expectations with regard to information technologies are significant elements of the system. For example, “technology shock,” which may be caused by rapid evolutions in equipment and in IT paradigms, must be sensitively and effectively dealt with, just as we must also facilitate ongoing adjustments to our institutional capacity for providing IT services. Mindful, purposeful, proactive planning and training can help to reduce some of these stresses.

In short, this University’s IT system is the sum of all its information technology resources, in whatever form these resources might exist. The remainder of this section defines several key components of our IT infrastructure and lists short-range, mid-range and long-range action recommendations for these components. Other sections of this IT Strategic Plan make recommendations of greater specificity or more localized sphere of influence.

1.1 Infrastructure, Usage and Assessment

The BG Supernet Infrastructure Project prominently exhibits the University’s commitment to reliable, convenient IT access for its constituents. We are confident that the University will capitalize on this investment and continuously improve the entire environment.

The overall IT system is only as good as its infrastructure and its effective use in mission-related activities. Therefore, there should be formal procedures for use assessment as an ongoing and vital component of IT systems. The results of these assessments may indicate the need for additional investment, development and training.

Short-Range Goals

- Following completion of the BGSU Supernet project, encourage the advanced technological uses enabled by its existence, such as ongoing efforts in video streaming technology.

Mid-Range Goals

- Begin comparison study of useful access levels for University constituents and how/to what extent levels of access might be optimized via institutional means.
- In the above sense, begin efforts toward a realistic plan for relatively ubiquitous computing access (in space and time) for University constituents.
- Continue to analyze the interface between our local information access devices and backbone network systems to optimize usability and to prevent problems.

Long-Range Goals

- Establish a long-term plan for collaboration between institution and individuals, aimed at securing and controlling user-level access device costs (for example, partnership in purchase and/or maintenance of personally owned IT devices).
- Develop assessment plans for IT use in University units and/or functional areas aimed at realistic evaluation of IT-related resources and activities.
- Develop regularly updated IT goals and expectations for University units and/or functional areas. Establish cross-dissemination of these plans and procedures for inter-unit collaboration. Ideally, there should be collaboration across the entire University regarding achievement of articulated goals.

1.2 Services

Information Technology Services is our most visible and influential manifestation of the University IT system. With this in mind, their success is our success: the efficacy of their organization is mirrored in every area of BGSU. As types and levels of services change, the allocation of resources should provide the quantity and quality of staffing needed to be responsive to the new goals and objectives.

Short-Range Goals

- Continue recent changes in ITS that have proven effective in improving services, such as the building technology representative program.
- Provide support for the Chief Information Officer for continuing our momentum toward a more effective IT Services department.

Mid-Range Goals

- The symbiotic relationship between IT Services and the institution at large should be one focus, if not the major focus, of IT planning. The planning process should include representatives from the broad spectrum of the University community.
- There should be fully articulated agreements between IT Services and functional units as to how their efforts will be complementary, non-redundant and sufficient (Sec 2.2).

Long-Range Goals

- To foster campus-wide collaboration, formal opportunities for IT Services' professionals to

work within other institutional venues and for students, faculty and staff to work and learn within IT Services will be encouraged.

1.3 Staffing

Staffing is recognized to include ITS and non-ITS personnel on campus. A large majority of IT services should continue to be provided by a centralized ITS to take advantage of current expertise and economies of scale and to reduce redundancies.

As IT uses throughout the University community grow increasingly sophisticated and specialized, staffing related to IT support cannot be a sole responsibility of ITS. IT challenges relating to a specific unit are more effectively addressed by the unit's own support persons more familiar with the local contexts for IT use. Accordingly, decentralization of some fraction of University-funded IT support staffing will enhance the overall quality of IT support. To supplement this effort, each unit should attempt to prioritize some portion of its resources for IT support.

Short-Range Goals

- Conduct a thorough study of IT staffing available within budget-unit areas throughout the University and of staffing correlations with area needs.
- Work to ensure that IT professionals receive competitive salaries in order to attract and retain an adequate number of highly-qualified technical staff.

Mid-Range Goals

- Assign a portion of University-funded IT personnel to each unit or group of units with an established need for localized IT support, with accountability guidelines.
- Determine whether increased utilization of student employees in some areas could help address the shortage of IT personnel.

Long-Range Goals

- Establish an acceptable level of localized IT staff support within functional areas. One workable option might be sharing a support-staff person between/among "small" (low user count) areas with similar uses and/or challenges.

1.4 Budgeting

Acknowledging that funding is crucially implicated in every element of an institutional IT plan, the monetary resources, demands and budgeting for information technologies throughout the institution are a concern. In this regard, Bowling Green State University should strive to reduce reliance upon ad hoc or one-time funding of information technologies, at any unit level.

For all University units, the development of a comprehensive replacement plan for desktop/laptop systems (or a generalized network appliance or device) and printers should be a very high priority. Even staff without sophisticated computing needs must have a system that supports a University-standard operating system, word processor, spreadsheet, browsing and other productivity software. In like manner, software distribution of current versions is critical. For example, the IUC Microsoft License Agreement provides for wide availability of their software to faculty, staff and students licensed on the individual's desktop/laptop. A desktop/laptop system should be comprised of necessary hardware and current software to insure productivity and information sharing. In the case of laptops, licensing software to individual machines is a strong advantage since it allows productivity tools to travel with the user, on or off campus.

Short-Range Goals

- Conduct a thorough and realistic demand/cost analysis for information technologies across the University, with one-year, two-year and three-year budget and cost projections.
- Develop a written policy, procedure and plan for ongoing replacement of desktop/laptop computers and printers.
- Analysis should be shared with appropriate committees with IT budget responsibilities for their deliberation, and with the community for their review and comments. Purpose of sharing the cost analysis is to solicit opinions regarding IT institution priorities.
- Begin immediate institutional planning to bridge the current shortfall in the next fiscal cycle, to the extent possible. Further, communicate to the campus community (individuals, units and constituencies) a realistic projection of the University's IT support expected in upcoming funding cycles.

Mid-Range Goals

- One annual budget in advance, establish a target percentage of total institutional income for expenditures related to information technologies (both central and dispersed).
- Coupled with the above, establish ongoing reviews of the IT-related monetary demands for each University unit and a consistent, effective system of accountability for all IT-related budget requests and expenditures at BGSU. Within such a system, if units are allowed to submit IT aid requests beyond their unit operating allowance, any unit should be able to submit a single request for IT assistance and track the status of that request without difficulty until the request has been either fulfilled or formally disallowed.

Long-Range Goals

- Attempt to improve the consistency of IT budgeting timelines across the University so that institutional IT expenditures may be better predicted and so that each unit may count on a moderate level of IT-related support in a given budget cycle. If units can do long-term IT planning with confidence of support, large expenditure years can be averaged with years of far lower expenditure.

1.5 Information Privacy, Security and Protection

As our reliance upon information technologies increases, the University must insure protection of information privacy and intellectual property rights of members of the University community as they relate to information technologies. Security of the University IT system (e.g., hardware, software) must be retained as well. To address these issues, we must create rational, realistic goals and policies as an institution. Then we must communicate these goals to all potential users of BGSU information technologies and empower our University agents to enforce relevant laws, statutes and policies.

Short-Range Goals

- Increase community knowledge and consciousness of IT-related laws and ethics.
- Develop and increase awareness of intellectual property rights in electronic publishing environments.
- Monitor and improve security of electronic data and information-carrying systems.
- Establish criteria and standards to ensure preservation of electronic records, documents and data for future research and legal access.
- Develop appropriate policies to support these goals.

Mid-Range Goals

- Evaluate and update information control systems (e.g. firewalls, bandwidth management).
- Develop and assess institutional policies and procedures for collection of metadata.

Long-Range Goals

- Create review cycle for IT system policies (e.g., Acceptable Use Policy)

2 SUPPORT AND TRAINING

The University community is recognized as a heterogeneous client of IT services. Effective support of the community is beyond the resources of any single provider and that the scope of an IT campus support model must include multiple providers. Therefore, it is the mission of the University to promote effective IT support and training for the University community, and it is recognized that broad primary support and training tasks vital to the operation of the University need to be accomplished by ITS and other units.

An expert and effective ITS organization is vital to IT campus services. Its integrity must be preserved. In support and training it is important that ITS and its clients operate according to published support and training agreements. Such agreements, reached through mutual negotiation and accommodation, must communicate client and provider responsibilities so that the expectations of each party are in line with the actual service provided.

Since IT applications are increasing in scope and depth, it is recognized that the ability of ITS to meet the all campus support and training demands is impossible. In certain well defined cases the campus customer support and training model must alleviate sole ownership and burden of ownership from ITS. It is vital that both formal and informal mechanisms be created to support this desired aspect of the model.

The following goals have been identified to facilitate improved IT support and training.

2.1 ITS Responsibilities

ITS responses to the campus IT support and training are summarized by the following goals: short-range, mid-range and long-range.

Short-Range Goals

- As new network installations come online, offer educational sessions relating to newly available or improved functionalities and promote similar efforts in units.
- Promote and support formal, campus-wide efforts to integrate emerging IT capabilities with teaching, learning, research and administration.

Mid-Range Goals

- Establish intra-campus ITS service agreements. This should specify level of support and the responsibilities of both client and ITS (as the server vendor).
- To reduce operating costs, eliminate and/or consolidate redundant or unnecessary service contracts for hardware and software.
- Identify and implement new support and training mechanisms for presently under-served ITS clients. An example of such a mechanism is the use of machine administration tools such as AT&T's VNC open-platform tool to provide remote interactive IT support across the Supernet.

Long-Range Goals

- Continually assess the IT literacy on campus and revise support and training activities.
- Establish links to free internet-based IT support and training sources.

2.2 Collective Campus Responsibilities

Because IT support and training service is not limited to ITS, the campus has a collective support responsibility that devolves to various academic and administrative units.

Short-Range Goals

- Delineate responsibilities of current IT support and training providers (ITS, RCC, Continuing Education, CTLT, etc.) on campus.
- Identify current IT expertise on the college, department and program levels. Seek methods of applying this expertise to IT support and training issues.
- Establish and nurture the development of IT Special Interest Groups (SIGs) on campus. Activities could include IT seminars and panel discussions. Where appropriate and feasible, the SIGs should be allocated modest resources, including workspace and budget to meet their IT goals.

Mid-Range Goals

- Devise methods to improve IT support and training for clients that have experienced ongoing IT support and training difficulties.
- Identify chronic difficulties in supplying IT support and training. Evaluate IT services in relation to the problem areas and as needed develop alternate methods of meeting these needs.

Long-Range Goals

- Encourage colleges, departments and programs to use service contracts and training seminars to provide, when feasible, support for specialized hardware and software.
- Involve successful SIGs in certain support and training activities for software or hardware within their field of interest.
- Deliver IT support and training for retirees and off-campus community.

3 PRIMARY SYSTEM OPERATIONAL SERVICES

Traditionally there were three primary University information technology operational services: student computing, research computing and administrative information systems. There now should be a fourth component—instructional technology systems. While it is true that certain instructional needs relate to Information Technology Systems, some support and training needs are outside of the administration of ITS as a unit and require ITS to arrange collaborations and connections with other units in the University. Such collaborations might include college- and department-based IT services as well as University units such as the Center for Teaching, Learning and Technology, Continuing Education, Instructional Media Services, University Libraries, and Television Learning Services. Considering the interdependence and important functions related to the teaching-learning process, it is recommended that the connections among units be formalized so that faculty, staff and students can be provided with the necessary information, access and support. It is vital that these systems be understood and the needs within these service areas be correctly identified.

3.1 Instructional Technology Systems

In order to maximize the effective integration of technology into the teaching and learning process, all units that provide technical and instructional support should work collaboratively to achieve this common goal. Individual units should clearly define the support services they offer and communicate those services through campus-wide promotional efforts. The piloting of instructional innovations must be collaboratively enabled by IT and related units in technology and teaching.

Instructional needs may be classified into the categories of system access and professional development. Access and updating of systems should be based on instructional needs and current innovations in instructional technologies. Professional development in emerging instructional technologies is essential for faculty, graduate assistants, staff and students. The various constituent groups should be provided with opportunities for initial training and ongoing support.

3.1.1 Matching Technology with Curriculum

The term “instructional technology” should be broadly defined, including face-to-face instruction in departmental and open computer labs, digital video/audio technology, wireless laptop computers, satellite/compressed video and web-based options for distance learning as well as emerging technologies. In this way, technical support will better fit specific curricular contexts regardless of instructional setting. To enable this goal, the support for various technologies on campus should be created via collaborative efforts of ITS, existing technology committees and specific user groups for a more inclusive, comprehensive view of technology needs across academic disciplines.

In addition, clear technology benchmarks should be established for graduating students, each of the colleges and the University as a whole. To ensure that our students have the knowledge, skills and attitudes to productively use information technologies, we must make hardware, software and professional IT development readily available to the University community.

Short-Range Goals

- Develop a status report of instructional technology requirements in each of the various colleges.
- Review the instructional technology in programs to develop a list of faculty needs to provide adequate instruction.

Mid-Range Goals

- Develop an ongoing plan for faculty development opportunities.
- Support technological literacy programs in the University community.
- Conduct review of technology-related learning outcomes in the various colleges and programs in order to assess ITS support.

Long-Range Goals

- Continue to be proactive in terms of professional development in emerging technologies.
- Develop assessment methods to determine the technological literacy of BGSU graduates.

- Provide University support for the development of instructional strategies and programmatic learning outcomes incorporating emerging technologies.

3.1.2 Incentive and Reward for Innovative Application of Technology in Teaching

If technological literacy is a goal for BGSU's graduates, faculty must be rewarded and encouraged to utilize and experiment with technology applications. The reward structure at the University should be forward looking, encouraging innovation rather than status quo.

Faculty should have ample resources on desktops, in localized lab settings and through faculty development units to better access both technological and pedagogical training. While access to technology within departments and across the University is a high priority, faculty must receive both incentive and reward for the use of technology in teaching and learning. Such incentive may include funds from various sources for technology-based learning grants. Such continuing grant programs may better enable consistent and reliable technical support, reductions in teaching load, reductions in class size and equipment and travel-encouraging and enabling "best technological practices" within disciplines. Because part of the reward process for faculty is invariably connected to tenure and promotion, colleges and departments must revisit tenure, promotion and merit guidelines to ensure that the effective use of technology in teaching and learning is appropriately recognized as curricular innovation.

Short-Range Goals

- Review existing tenure and promotion documents to identify existing rewards for innovative use of technology in teaching.
- Examine documents of universities with a culture of IT-related innovation.
- Continue finding ways to provide financial and other support for University constituents leading the way in technology instruction.

Mid-Range Goals

- Encourage academic units to revise their reward structures to better recognize innovative application of technology in teaching.
- Develop and maintain grants and other incentive programs for faculty across campus.

Long-Range Goals

- Continue to monitor and revise the reward structure based on emerging technology.

3.1.3 Distance Learning

"Distance Learning," like the term instructional technology, encompasses a range of technologies and a range of teaching contexts. Courses delivered at a distance may in fact involve various approaches (e.g., compressed video, streaming media, web-based or CD-ROM/DVD delivery and other emerging technologies). It is important the University provide faculty training and support to foster the effective use of these technologies, both in the sense of

technical skills and pedagogical practices. Online methods of course delivery will not, in and of themselves, lead to improved course quality and enhanced student learning outcomes. Course content, instructional strategies and assessment are curricular issues and remain the responsibilities of appropriate academic units and the Provost. Web-centric and web-based courses (as defined by the University¹) must also be approved by CEISP.

In the case of fully online courses, we should consider the range of student audiences for those courses from the residential student to the commuter or completely distant student. Support services such as bookstore, Bursar and Registration and Records must also be available online in order to complete the educational experience at BGSU. Reliability of access to these services and to student technical support is vital.

Short-Range Goals

- Identify learning populations as candidates for distance learning.
- Identify programs, courses and qualified faculty for distance learning.
- Provide extended technical support for distance learning.
- Establish clear policies about course ownership and intellectual property.

Mid-Range Goals

- Develop assessment measures for distance learning within departments and colleges.
- Ensure that all major administrative services are available online.

Long-Range Goals

- Encourage each college to regularly offer a range of undergraduate distance courses to reach the changing student populations.

3.2 Administrative Information Systems

Administrative offices provide services to the entire academic community (students, faculty, staff) as well as to external populations. Administrative services are essential in supporting all facets of University functionality. From the key function of the maintenance and responsible utilization of data on all aspects of student academic progress to payroll activity for all employees to inter- and intra-office communications and record keeping, efficiency and accuracy are essential. Information systems contribute to the ability of administrative offices and administrative users to work accurately, effectively and efficiently.

Administrative offices currently have the following information systems needs to support their work responsibilities:

¹ **Definitions from the blue Curriculum Modification Form:** Web-centric courses require at least one class meeting, but web materials are used to substitute for at least half of the regularly scheduled class meetings. Web-based courses are 100% online—students do not meet in the traditional classroom setting.

- University-wide integrated applications.
- Software to allow quick and accurate data entry and updating.
- Software to allow generation of needed reports.
- Software that allows clients to have web access to data, where appropriate.
- General productivity software (e.g., word processors, spreadsheets, databases, web editing).
- Hardware sufficiently powerful to execute current versions of supported software.
- Training to allow effective use of hardware and software.

Highly commendable pockets of progress in computing exist in a variety of programs and areas. However, the challenge is to work toward a more integrated and informed sharing of applications and information. Overall, institutional support of information, training, funding and execution should recognize a continuum from the professionals within Information Technology Services to the end-user.

Short-Range Goals

- Continue to expand applications available through the University's web portal.
- Changes to the University online directory should be near real-time.
- Enhance usage and availability of web-based forms and reports.
- Develop expanded education and training options so that staff can take advantage of available software capabilities.
- Study feasibility of print accounting in the student labs and other areas of campus.
- Where possible, convert to and develop web and/or CD/DVD versions of promotional and recruiting material.
- For the very general reasons of convenience, access and security, the University should move aggressively to initiate a "campus card" or similar concept.

Mid-Range Goals

- Continue transfer of resources to assist the migration to desktop from mainframe.
- Provide easy access to CICS and SIS report information.
- Provide 24-hour query access to the student information database.
- Accelerate efforts at utilizing relational database technology for core institutional data (AFIN, HRS, SIS), with considerations for security and, at the same time, easy access for authorized users.

Long-Range Goals

- Investigate the implementation of a campus-wide online document management system to facilitate document sharing among multiple administrative offices.

3.3 Student Computing Environments

The primary ITS priority is to meet the computing needs of users by providing software, hardware and support staff. General access computing labs currently meet the needs of the vast majority of computer users at BGSU. These labs are conveniently located in academic units, Jerome library, the Bowen-Thompson Student Union, residence halls and other academic

buildings. However, the ever-changing nature of technology necessitates further study of alternative student access models.

At a minimum, ITS shall provide software for online instruction, internet access and email, as well as productivity (e.g., word processing, spreadsheets, and presentation) software. To the extent possible, given budgetary constraints and staff, ITS shall provide additional software resources to as many labs across campus as possible. Examples include, but are not limited to, computer programming languages, database software, statistical packages, etc. The software installed on general access laboratory systems should be no older than the version immediately prior to the currently marketed version.

In general, computers in labs should be desktop systems for ergonomic reasons (better monitors, keyboards, internet connections, etc.). Computers should exhibit current hardware, operating systems and applications software. The operating system used on laboratory systems should be no older than the version immediately prior to the currently marketed version. If laptops form a part of a laboratory, they should minimally have easy access to the internet (through wireless access or a simple connection) and should have the ability to store files on removable media. Hardware should be maintained on a regular replacement cycle of three or four years.

ITS shall provide staff to monitor and maintain the general state of the labs to ensure optimal operation of all equipment. Staff should be trained to assist students with general needs.

It is understood, however, that many academic units have specialized computing needs that go beyond the general computing resources provided by ITS through the general access labs. These needs are varied and may require special hardware, software, peripherals or other technology support not normally provided in the general access labs. To this end, ITS must allow for specialized needs to be incorporated into general access labs as resources permit. By providing students the widest possible access to specialized computing resources in the general access labs, BGSU can better provide the technological base required by a premier learning institution.

Specialized software may be incorporated to expand the palette of computing resources in the general labs. Academic units may propose the inclusion of such specialized software within the general access laboratory systems. The primary constraints on addition of new software will be that (1) the software is well behaved, (2) the hardware resources present in the laboratory meet the requirements of the software application and (3) prescribed vendor licensing limitations are obeyed. ITS shall assess the feasibility of such requests and distribute such needs as widely as resources permit. Specialized software may be available in all general computing labs or only a few designated locations. As possible, staff with training in specific specialized software will be assigned to those labs.

The addition of specialized labs may be required when general laboratory systems cannot meet specialized needs. In this instance, ITS will enter into negotiations with the academic unit to define the role of ITS and of the academic unit's IT personnel in setting up and maintaining a specialized lab. ITS will always attempt to provide the greatest possible amount of specialized resources (hardware, software, etc.) to students through the general access labs.

Short-Range Goals

- Establish a configuration of hardware and application software that will meet the needs of the greatest possible number of potential computer users.
- Weigh the advantages and disadvantages of new developments in IT hardware and software that could better meet the needs of users or meet needs at the current level, but more economically.

Mid-Range Goals

- Identify new needs and work with academic departments to determine if these needs can be met with the general computing lab computers.
- If a specialized lab is the only solution to delivering IT services, ITS will assign an ITS employee to serve as liaison to the department requesting the service. The liaison or a supervisor should negotiate the role of ITS and its liaison in the establishment of a lab.
- The ITS liaison should become familiar with the educational goals and possible outcomes of having a specialized computer lab. The liaison should become familiar with the kinds of hardware and software that are needed to accomplish these goals and deliver these outcomes.
- Initiate a study to determine how wireless-LAN technology could be utilized effectively in a learning environment.

Long-Range Goals

- ITS and the academic unit will negotiate the degree of responsibility of the academic unit and ITS for hardware and software maintenance and support, lab monitoring, user support, supply costs, etc.
- The liaison will serve on the IT committee or computer lab committee of the academic unit so the liaison can keep abreast of new developments and advise the unit in matters involving ITS.
- The liaison will work closely with the IT personnel of the academic unit in solving IT problems.

3.4 Research Computing Environment

The quality of support for research computing will have an impact on this University's ability to attract and retain excellent faculty and graduate students. By providing a reasonable infrastructure and support of specific research computing initiatives, BGSU can continue to grow a strong research component within our learning community. Research produced by these faculty and graduate students and supported by University staff will in turn attract research grants to provide greater research opportunities to the community as a whole. Faculty can bring their expertise, ideas and enthusiasm to the University, but what happens after that will depend greatly upon the research infrastructure made available by the University. Computer resources are a major component of that infrastructure.

There are a variety of other organizations on- and-off campus that support research. Examples of on-campus resources would be the Statistical Consulting Center and the Center for Family and

Demographic Research. An off-campus example is the Ohio Supercomputer Center in Columbus. However, the primary computer research support unit on-campus is ITS.

The greatest challenges facing ITS regarding research computing are to accommodate the broad spectrum of research needs and to maintain flexibility. ITS alone cannot hope to satisfy the myriad of research needs in isolation from the academic departments and other research support services on-campus. ITS support of research computing may take many forms at different points in time. Research opportunities will arise very quickly and opportunities for the University to advance will require quick decision-making on a project-by-project basis. Not all research initiatives can be accommodated, but judicious support, where possible, can lead to great gains. In support of that effort, appropriate ITS personnel should be conscious of existing and potential research synergies and foster possible collaboration between researchers.

Once a potential project is identified, a productive way for ITS to contribute is to join the collaborative partnership of the project's research group. If research groups anticipate significant use of ITS-managed resources, then ITS must be consulted. ITS should facilitate these consultations regarding resource management. The research group should also include representatives from other appropriate research support services. ITS will lend its expertise to the groups, but it should not bear full responsibility for all IT funding, user training, hardware and software support, facilities, etc. Formal relationships and responsibilities among the diverse members of the groups should be negotiated so all members know and agree to, in detail, the parts for which they are responsible.

Some such groups might be temporary for the life of a project with a discernible end, while others might be permanent and charged with creating and maintaining a research infrastructure for a group of academic units.

An example of the type of collaboration sought by these means is the 2001-2003 University support for a research project in Physics & Astronomy allowing that research group to acquire NSF funding for Internet2 connectivity for the entire campus. Funds were not budgeted in advance to support any particular research initiative, yet funding was found to support a project that clearly benefits the community as a whole.

Short-Range Goals

- Work with the Vice Provost for Research and Dean of the Graduate College to identify groups of researchers who have needs common to each other, but distinct from other researchers, such as social science researchers, science researchers, multimedia design and performance, humanities researchers, etc.
- Work with other research services, such as the Statistical Consulting Center, the Library's Data Archive, SPAR, CTLT, and the several campus centers for research to create a coalition for the provision of services in a coordinated, united and collaborative way.

Mid-Range Goals (Conditional upon establishment of formal, institutional research groups)

- Formal groups should identify their research needs, including computing. Establish the relationships between group members so that responsibilities of ITS and other members

are well defined.

- Formal groups and ITS should plan for the provision of comprehensive research services for the group's constituents. Explore means of funding, ongoing support, training, staffing and so on.

Long-Range Goals

- Maintain a research infrastructure that will attract and retain high quality faculty and graduate students.

GLOSSARY OF ACRONYMS

AFIN	Advantage FINancial system
BGSU	Bowling Green State University
CD	Compact Disk
CEISP	Continuing Education, International, and Summer Programs
CICS	Customer Information Control System
CIO	Chief Information Officer
CTLT	Center for Teaching, Learning, and Technology
DVD	Digital Video Disk
HRS	Human Resources System
IDEAL	Interactive Distance Education for All Learners
IT	Information Technology
ITC	Information Technology Committee
ITS	Information Technology Services
NSF	National Science Foundation
OSC	Ohio Supercomputer Center
RCC	Residential Computing Connection
SIGs	Special Interest Groups
SIS	Student Information System