Information Technology Strategic Plan

Prepared by

Technology & Information Resources Advisory Committee

August, 1998
Third Printing
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I. Executive Summary

1.1 Introduction

As the last Information Technology Strategic Plan, 1992-1996, was drawing close to the end of its planning cycle, Provost Kay Schallenkamp instructed the Technology & Information Resources (T & IR) Advisory Committee to initiate a new strategic planning process for the development of a comprehensive institutional technology plan for UW-Whitewater. The plan is envisioned to be a document that articulates the information technology issues and needs of all segments of the university user community, establishes the institutional priorities, and recommends the implementation strategies. With the realization that technology changes rapidly, it is important to define the strategic directions rather than prescribing quick fixes. Furthermore, the strategic planning process itself is not perceived to be definitive but ongoing and evolutionary. Re-examination of priorities needs to take place regularly to ensure relevancy and best utilization of university resources. However, to provide a reasonable longitudinal framework for this strategic planning process, a window period of three years, 1997-98 to 1999-2000, is established.

1.2 The Planning Assumptions

The publication of the UW-Whitewater Strategic Plan, September, 1996 has established the overarching guiding principles for all other campus strategic planning activities, and the strategic plan developed subsequently by any campus unit is in essence the articulation and elaboration of action steps leading toward the implementation of the university-wide strategic plan. As such, the Vision Statement, the Strategic Planning Assumptions, the Six Priorities of the Strategic Plan, and the Goal Statements of the UW-Whitewater Strategic Plan have defined both the general context and the specific framework for the development of the information technology strategic plan. The planning assumptions of this plan are derivative of the University Strategic Plan, and these are:

- Integration of technology into all facets of the university is critical for accomplishing the university’s vision.

- The improvement of the quality of workspace and the enhancement of productivity require the investment in technology, facilities, furnishings, and equipment.
• State of the art instructional technology is to be utilized whenever possible for enhancing student learning.

• Completion of campus wiring and network project is essential for providing timely access to information and sharing of resources.

• The changing needs of learning, teaching, and administrative activities require the upgrade of campus access to the Internet.

• End-user access to institutional data needs to be improved for assessment, budgeting, reporting, and daily operational functions.

• Technical support, training, and encouragement to students, faculty, and staff for creative use of information technology must be provided.

• The use of information technology needs to be extended and its innovative application to be pursued in meeting institutional advancement goals.

• The sharing of technical expertise and the reduction in duplication of effort require collaboration with other institutions.

1.3 The Process

As charged by Provost Schallenkamp, the T & IR Advisory Committee serves as the coordinating body for the university-wide information technology strategic planning process. The eight members of this advisory committee consist of representatives appointed by the university division heads and the college deans, and a student representative for the Whitewater Student Government. It is chaired by the Assistant Vice Chancellor for Technology & Information Resources. The four directors of the service units of the T & IR—Information Systems and Operational Services (ISOS), Library Services (LS), Networking and Telecommunications Services (NTS), and User Training and Support Services (UTSS), serve as the resource persons of the T & IR Advisory Committee.

Five working groups are established to address specific aspects of information technology issues. These are working groups on 1) Administrative Information Systems; 2) Funding; 3) Infrastructure/Technical Support; 4) Instructional Technology; 5) Networking. Each working group is chaired by a member of the T & IR Advisory Committee, and the membership is drawn from both academic and administrative units to provide a broad university perspective on issues and resolutions. The T & IR service directors serve as resource persons for the working groups when it is appropriate.
In September of 1996, each working group received its charge from the chair of the T & IR Advisory Committee to complete the following: 1) review the current status of its assigned area of investigation; 2) articulate where we want to be (goals and objectives); 3) identify options on how to achieve the goals objectives; and 4) make recommendations.

In order to synchronize the information technology strategic planning process with the university budgetary cycle, the working groups had to complete their tasks within a very tight time frame, as the targeted completion date of the plan was February, 1997. Throughout the months during the fall semester of 1996, the working groups met frequently on a weekly basis to develop their reports. The chairs of the working groups made their progress reports to the T & IR Advisory Committee regularly, and they presented their first draft reports to the committee in mid-December. The final draft reports were reviewed by the committee in January 1997.

Numerous important issues emerged during the planning process, and many recommendations were formulated by each working group. In order to define the information technology strategic direction for the university, the chairs of the working groups prioritized their respective recommendations. Then, the T & IR Advisory Committee as a group identified four most critical priorities for the university to address during the next three-year time period. Based on the findings of the working groups for the specific functional areas and the strategic priorities adopted by the T & IR Advisory Committee, the Funding Group proceeded to develop the funding recommendations for the implementation of these priorities.

1.4 Issues and Challenges

In spite of the fact that there are four working groups examining different aspects of information technology, the level of commonality that has emerged in terms of the identified critical issues should by no means be a surprise to anyone. Information technology in whatever form it may assume, be it networking infrastructure, or multimedia, or desktop workstations, or administrative information system, is in itself only an instrument utilized to accomplish a task, either academic or administrative in nature. As such, the major issues revolved around the selection and deployment of information technology, ongoing support and maintenance, capacity management, interaction between technology and people (user access, support, training, and coordination, etc.), and allocation of resources. Almost all working groups have touched upon these issues in greater or lesser degree.
The most commonly articulated issues are:

- Direct and easy user access to university data and information resources at any time and any place with proper security and authentication control when appropriate.

- Establishment of hardware and software standards while allowing flexibility for special needs.

- Adequate support and training in the use of technology for faculty, staff, and students.

- Ubiquitous access to networking services independent platform, location, and data format.

- Managed approach to equipment obsolescence to align application-driven needs with hardware capacity.

- Faculty access to current technology as a key element of successful infusion of instructional technology throughout the curriculum.

- Realignment of staffing and financial resources at either the unit level or university level to meet the technology-related needs.

1.5 The Recommended Strategic Priorities

Recognizing the importance of all issues identified by the working groups, at the same time the T & IR Advisory Committee is keenly cognizant of the need to establish the strategic priorities in order to provide a focus and direction for the university’s information technology initiatives. As the first step, the chairpersons of the working groups deliberated on the prioritized their respective recommendations. Then, the Advisory Committee as a group deliberated on the prioritized working group recommendations. A consensus was reached in the establishment of the strategic priorities for the university during the next three-year planning period as follows:

- Acquisition and implementation of an integrated administrative information systems.

- Enhanced support and training services for faculty, staff, and students.
• Adequate network capacity for both campus and Internet access to meet the ever-increasing academic and administrative demands.

• Improvement of faculty access to current technologies.

1.6 Implementation Strategies

It has been broadly recognized and accepted by the university community that information technology plays a pivotal role in the development, maintenance, and delivery of services critical to the mission of the university. This fact is borne out by the recent campus-wide survey conducted by the Strategic Planning and Budget Committee (SPBC) on the priorities for the implementation of the UW-Whitewater Strategic Plan. Priority 2, Goal 2.3 “A current technological and physical infrastructure that effectively supports academic programs, support services, and outreach activities” is ranked number two of the three most urgent goals for the university to address.

To maintain a technological environment that is conducive to learning, teaching, research, and service, the university’s information technology infrastructure including hardware, software, and support, requires adequate and predictable funding. All too often, one-time investments are made in the acquisition of technology, i.e., the purchase of workstations and software for offices, the establishment of high-tech classrooms and computer labs etc., without adequate attention or consideration given to issues such as equipment obsolescence, maintenance and support. Such neglect is unfortunately a widespread phenomenon among colleges and universities based on the 1996 annual national Campus Computing Survey conducted by the Claremont Graduate School (cgreen@earthlink.net). Less than a third of the institutions of higher education has a financial plan. On the other hand, the cumulative experiences in the dire consequences of the absence of replacement planning have persuaded university administrators to recognize the urgent need to begin addressing the financing and replacement issues up front. The concept of “life cycle budgeting” is now being introduced into funding and management of information technology.

The 1996 Claremont survey has also identified that “providing adequate user support” and “assisting faculty integrate technology into instruction” are the “single most important” information technology issues for colleges and universities across the nation. The reports of our own information technology strategic planning working groups have substantiated the Claremont findings. With such recognized needs, the concept of treating information technology as “utility”, same as the telephone service, has also emerged. Along with this
concept of utility, there are two concomitant prerequisites, namely universal access and dependable service.

The principles of "life cycle budgeting" and disseminating information technology as "utility" are what we as a campus should progressively and aggressively strive for. At the same time, the deployment of information technology should be justified in terms of its value to enhanced learning, teaching, research, academic support services, work process improvement, and administrative effectiveness. The implementation strategies outlined below are incremental steps leading toward a more conducive and sustainable technological environment for UW-Whitewater.

The following four strategic action steps are directly linked to the University Strategic Plan, Priority 2, "UW-Whitewater will deliver state of the art programs and services"; Goal 2.3, "A current technological and physical infrastructure that effectively supports academic programs, support services, and outreach activities."

- Acquisition and implementation of an integrated university information systems.

During the last two decades, the university has primarily operated in a mainframe computing environment to support various administrative information functions. Many of the information system applications have been developed in-house, and these are applications are supplemented by the commercial, off-the-shelf products, such as Dun and Bradstreet for accounting and SAM from Sigma Systems for student financial aid, to name but a few. While such an operational mode has provided a stable milieu, the rapidly changing external factors have rendered it inadequate and obsolete. First, the increasing demand for quick access to accurate and current institutional data from multiple administrative units can no longer be met with compartmentalized databases that do not even allow direct user access. The requirement for a programmer's intervention in order to extract the needed data from CICS database is wasteful, time consuming, ineffective, and costly. Second, in the last twenty-some years, only a few improvements have been made in the area of administrative computing in the terms of adopting newer technologies for either application development or data access. Basically, the in-house developed management information applications continue to be written in Cobol language, and the databases are maintained in flat files or hierarchical structures, while the rest of the world has long moved on to the 4 th or even 5 th generation of programming languages to support an object an object-oriented, relational database that is web-enabled with GUI (graphic user interface) capability for easy and direct user access to institutional data.
This technological gap has left ISOS (Information Systems and Operational Services) in an extremely unenviable situation. It will require the staff and the services that they provide to do some major leapfrogging in the next three years in order to avoid a major institutional disaster in administrative computing. In addition, the impending march into a new millennium has created an added difficulty commonly dubbed as the “Year 2000” problem which will further exacerbate the severity of our administrative computing inadequacies.

Various options have been carefully examined by the Administrative Information Systems Working Group. In the end, the group recommends: 1) a multi-tiered architectural environment that will allow users to extrapolate institutional data without programming assistance; 2) vendor-developed management information systems that can offset the staffing limitations of ISOS and also can offer the university an opportunity to adopt new enhancements and technologies; and 3) an integrated management information systems from a single vendor for student information, financials, human resources, student financial aid, and other functional areas that will provide reliable, timely, and consistent information for improved decision making. The implementation of this initiative will be a bold departure from the past and current practices of the university. At the same time, this is a necessary step to move the university from its current state of semi-paralysis into a future where administrative functions can be supported by the capabilities of truly modern technology.

By selecting a product that meets the criteria recommended by the Administrative Information Systems Working Group, the university will be able to move forward with this strategic initiative. At this juncture, timing is of the utmost critical importance. There are approximately 1,500 in-house written programs that must be modified to become Year 2000 compliant. In addition, all the purchased legacy systems such as General Ledger, Accounts Payable, and Financial Aid must also be dealt with. By purchasing the Year 2000 compliant and integrated information systems, the total number of programs that require modification can be drastically reduced to about 700 of local programs. The estimated cost savings is approximately between $450,000 to $700,000. This is especially significant, because such modification costs are essentially non-value-added. To accomplish this, the university has a window period of less than three years. This is an extremely tight implementation schedule. The action plan calls for the immediate procurement of the necessary hardware and software for the installation of General Ledger and Accounts Payable in the spring of 1997 with a production date of July 1, 1998. The installation of Student Information System can begin in November 1997 in order to move it into production in the fall of 1998 for
new student admissions. It seems possible that Purchasing and Human Resources (excluding Payroll, pension and benefits administration) can be put into production by July 1, 1999. However, to pursue and implement such an aggressive plan requires: 1) end-users’ full commitment; and 2) adequate resources to provide training and support for both users and IT staff during the installation and early production phases of implementation. The budget data for both one-time and on-going costs and implementation are attached in the Appendices section.

By implementing this strategic action step, the campus will accomplish the University Strategic Plan, Priority 2, Goal 2.3.a, Goal 2.3.e, Goal 2.3.i and Goal 2.3.k (For goal statements, see Appendix 1.)

- **Enhanced support and training services for faculty, staff, and students.**

During the last two years, the T & IR had dramatically increased the support services to the campus. The General Access Computing has increased from 240 workstations to 400 workstations with the addition of the Andersen Computing Lab. High tech classrooms equipped with multimedia capable computers, sound systems, and data/video projectors have jumped from 10 to 25 in number. It is anticipated that during the next two years, there will be nearly 40 such classrooms on campus. Prior to the restructuring of the T & IR, no support service was provided for college computer labs with the exception of the classrooms located in McGraw building. Now, T & IR supports nearly 30 such labs across the campus. In addition, demand for desktop support has increased dramatically due to the new campus network on the one hand, and a failing Gandalf network on the other. The exponential growth on the Internet and the extreme popularity of the World Wide Web has led to an increase in demand for training in new software applications, HTML (hypertext markup language) development, and the creation and maintenance of a Web-based CWIS (campus wide information system). Also related to the phenomenal growth of the Internet is the widespread acceptance of electronic mails as the most convenient mode of communication both on and off campus. In the last two years, UW-Whitewater has moved from a campus where only a few used e-mail to one in which virtually everyone does. The increasing preponderance of Microsoft in the microcomputer operating system and the application software market has necessitated the escalating demand for user training in the new desktop applications and operating systems. Last but not least, the increasing availability of the multimedia-ready high tech classrooms has spurred the interest of faculty, staff and students in learning the use of multimedia development tools. The T & IR has been in the forefront in providing leadership, consultation, training, and support.
The burden for meeting these increases in demand for existing as well as new services fall primarily on UTSS (User Training and Support Services), and to some extent on NTS (Networking and Telecommunications Services). It is important to note that T & IR has strived for meeting the enormous increase in demand for services without any increase in staffing. What has been accomplished in meeting the increase in support needs is done primarily through internal personnel realignment by shifting responsibilities whenever necessary and feasible to meet the most pressing demands. However, the support capacities of the T & R staff cannot be stretched any further even under the current circumstances. As we look to the future, it is predictable that more new and emerging technologies will require more support. With no adequate increase in staffing, the T & RI will be compelled to establish service limits in order to preserve a core of basic services. This approach will directly run counter to the widely expressed need for T & IR to enhance its support and training for the faculty, staff, and students of this university.

Obviously, the major planning issue for T & IR is how to deal with current and future increase in support demand. In brief, the next two to three years will be a T & IR, specifically UTSS and NTS. The T & IR internal strategic initiatives will be: 1) to better manage support demands by developing and adopting standards in computing hardware and software; 2) to work more efficiently by installing remote access software for the diagnosis and treatment of user desktop problems; and 3) to establish priority order in resource allocation to various categories of service demands. This general plan for resource allocation will require that the colleges take an increasingly active role in the support of instructional technology. The continued expansion of college computer labs and high tech classrooms can not continue with a workable solution to the support demands for these facilities. T & IR and the colleges must enter into a dialogue to determine how the escalating college support needs can be met with cooperative measures. T & IR will undoubtedly be part of the support solution, but it can not realistically be the whole solution.

At the same time, the campus must apprise itself of what expectations it can realistically place upon a support organization that is seriously deficient in staffing. For example, DoIT (Department of Information Technology) of UW-Madison has some 640 employees. It is important to note that DoIT supports only the infrastructure, not individual departments. If UW-Whitewater had the same ratio of computing personnel to students as UW-Madison, the T & IR would have had more than 150 employees. Yet, we have only a combined total of 40 FTE in the three IT units of ISOS, NTS, and UTSS. To make it possible for the T & IR to discharge its responsibility for supporting campus
users, a reasonable and modest increase in staffing is proposed for academic and administrative desktop support. At present UTSS is approximately four FTE deficient in desktop support, and NTS one FTE. An increase to this minimum level of staffing will bring t & IR to a position where it can adequately perform its current tasks. The requested budget is attached in the Appendices section.

By implementing this strategic action step, the campus will accomplish the University Strategic Plan, Priority 2, Goal 2.3.a, Goal 2.3.f, Goal 2.3.j, Goal 2.3.k, and Goal 2.3.m. (For goal statements, see Appendix 1.)
• Adequate network capacity for both campus and Internet access to meet the ever-increasing academic and administrative demand.

As part of the first phase of the campus wiring project in 1994-95, a campus fiber backbone structure was installed, and the first six instructional and administrative buildings were rewired and connected to the campus network. The second phase of the campus wiring project now in the progress will finish by the end of March 1997 the rewiring of the remaining 11 buildings and also making them a part of the campus network. At the same time, the Student Affairs Division is aggressively pressing forward its project for rewiring all student residence halls. By the end of 1997, it is anticipated that the entire university will be a truly networked campus.

In 1996, the T & IR has increased the bandwidth of its Internet access from 56KB to a full T1 line (1.455MB) to provide efficient and adequate Internet access for campus users. Furthermore, the size of the campus modem pool has been significantly increased from 28 modems of 14.4 baud rate to include an additional 20 modems of 28.8 baud rate. The dialup telephones lines have also been increased from 28 to 48 in order to better serve faculty, staff, and students who do not have direct network connection.

In addition, in 1996, a major concerted effort by all administrative and academic units made it possible to accomplish a significant upgrade of the campus network backbone structure from the original 10 base T Ethernet (10 MB per second) to FDDI with 100 MB per second speed. Up-to-date network switching technology is adopted to maximize network bandwidth use efficiency.

All such major network improvements were accomplished at very substantial costs. It was fortunate that the two phases of the campus wiring project were basically underwritten by DOA (Wisconsin Department of Administration). However, the campus had to pay for the electronics (such as building hubs), the network interface cards for workstations, and servers for colleges and/or administrative divisions. The DOA subsidy for the first phase was $130,192 and for the second phase $396,556. The annual fee for the T1 line Internet access is about $15,000. The total cost for the network backbone upgrade was $223,607. These cost figures clearly demonstrate the significant investments in campus network made by both the state and the university.

The much needed network enhancements were made just at the right time when learning, teaching and administrative activities had become increasingly dependent on the capacity and reliability of both the campus network and the
Internet access. Teaching faculty now routinely assigns Internet-based projects to students; e-mail is an indispensable tool for faculty and staff to conduct on and off campus business; and financial and personnel data are regularly transmitted to UW system administration or to other state agencies via Internet. It is not a hyperbole to characterize the campus network and the Internet as the life lines of the university. At present, the network capacity and stability of UW-Whitewater are the envy of many other UW sister campuses. We can certainly take justifiable pride in our proactive approach in network capacity management and quality of service. At the same time, it must be pointed out that the relative capacity of both intranet and Internet is always a moving target determined by usage and network-based application requirements. It will be fool hardy to be deluded by self-complacency. The much publicized plight of America Online and MCI in meeting the voracious bandwidth demands of Internet traffic should serve as a reminder for the campus to be constantly vigilant against such a problem. Given the short life cycle of technology in general, and network technology in particular, it is predictable that within our current planning cycle of three years, the campus may very well have to upgrade its Internet access to a T3 and the campus backbone to ATM. In order to avert a crisis situation in the not too distant future, a modest reserve fund for both is proposed to ensure responsible management of the life lines of the university. Furthermore, it is absolutely essential that funding for the annual maintenance contracts for the Novell operating system and network management software on the servers be provided. These servers regulate and provide academic as well as administrative users access to the campus network and resources. In addition, annual maintenance funding should be provided for the hubs for the network backbone and all campus buildings, and for all twenty-some servers. At present, there is no budget allocation for these essential and critical network components. The requested budget is attached in the Appendices section.

By implementing this strategic action step, the campus will accomplish the University Strategic Plan, Priority 2, Goal 2.3.a, Goal 2.3.b, Goal 2.3.f, Goal 2.3.g, and Goal 2.3.h. (For goal statements, see Appendix 1.)

- **Improvement of faculty access to current technologies.**

With the emphasis on integrating technology into instruction, faculty obviously holds the key to the success of this goal. The recent survey results on Instructional Technology/Distance Education issued by UW System, Office of Learning and Information Technology reveals a serious deficiency in faculty access to the very basic computer technology. The computer ownership rate of faculty and teaching academic staff is 85% at UW-Whitewater. In other words, 15% of this group does not have any access to
computers at all. The percentage breakdown of the age of computers owned by faculty/instructional academic staff is as follows:

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<tr>
<th>Age Range</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>1 year or less</td>
<td>22%</td>
</tr>
<tr>
<td>1 to 2 years</td>
<td>33%</td>
</tr>
<tr>
<td>3 to 5 years</td>
<td>26%</td>
</tr>
<tr>
<td>5 years or older</td>
<td>19%</td>
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</table>

So, of the 85% of the faculty and instructional academic staff who has access to computers, 45% of them has computers that are three years or older. Given the increasingly short life cycle computers, almost half of the faculty and instructional staff are using obsolete or nearly obsolete equipment.

The current Faculty Computer Matching Program is funded by Chancellor Greenhill and administered by the T & IR. A total of $49,000 is made available in each fiscal year for the four colleges. Since 1991 the funds have been distributed to each college according to an allocation formula based on FTE count. For every two dollars a college receives, it has to match with one dollar of its own funding toward the purchase of a computer for faculty/academic staff. During the last several years, the College of Business and Economics has voluntarily withdrawn from this program, as that college has already accomplished a 100% faculty/staff computer ownership rate. The other three colleges have benefited from its abstention as the funds would normally be allocated to the College of Business and Economics are distributed to them instead.

This faculty computer matching program has proven to be instrumental in deploying computer-based technology amongst faculty/academic staff. With the shortened life cycle of computers, now the greater challenges are: 1) to complete the 100% faculty/staff computer ownership rate; and 2) to provide an adequate and constant funding source of the replacement and/or upgrade of obsolete computers. Otherwise, the disparity between the have's and the have not's will continue to widen. Furthermore, a broad technology base amongst faculty/academic staff is the best insurance for the effective adoption of instructional technology for teaching, learning, research and outreach. It is recommended that the funding for the Faculty Computer Matching Program be increased from its current level of $49,000 to $150,000 annually. With the college's matching funds, the total amount available for faculty PCs will be $225,000 annually. This funding stream will make it possible to establish a four-year PC replacement cycle. It will be a modest but important attempt
toward implementing the life cycle budgeting model to address the issue of equipment obsolescence.

By implementing this strategic action step, the campus will accomplish the University Strategic Plan, Priority 2, Goal 2.3.a, Goal 2.3.f, Goal 2.3.j, and Goal 2.3.k. (For goal statements, see appendix 1.)

1.7 Funding Recommendations

The Funding Working Group deliberated on the implementation of the four identified strategic action steps (or information technology priorities) by reviewing resources that are currently allocated for supporting information technology infrastructure and services, additional resources that will be required for the unmet user needs and new institutional initiatives, and the potential funding sources. Based on the careful analysis of budgetary data, the Group reviewed various funding models with a view to devising an equitable cost distribution option that would enable the University to leverage its information technology investments and to sustain current and future user demands. Specifically, the Funding Group recommends:

- Investment of approximately $5 million over the next seven years for the acquisition and implementation of integrated university information systems.

In addition to the T & IR internal reallocation, campus savings generated from tuition fees and other sources, the university needs to borrow up to $2.5 million from UW System and/or other sources to acquire the needed hardware, software, and to support staff training for the implementation of strategic action Priority One. (For specific details, refer to Attachment I of the Funding Working Group Report.)

- Conversion of networking and user support services from GPR to PR operation on a charge-back fee-based model.

Priority Two (Enhanced support and training services for faculty, staff, and students) and Priority Three (Adequate network capacity for both campus and Internet access to meet the ever increasing academic and administrative demand) are combined due to the interconnectedness of the support service operations. After the careful analysis of financial and staffing resources of the T & IR, it has become very clear to the Funding Working Group that it is impossible for the T & IR to provide the level of services the campus requires. The options are 1) to remain at the current funding and staffing level with drastic curtailment of support services in numerous areas in order to concentrate on a few basic
services; ands 2) to provide increased funding and staffing on a charge-back fee-based model so as to enhance the support services. The Group recommends the latter alternative. Of the various funding models examined, a formula of 50/50 cost distribution tied to network connection and FTE is opted. (For specific details, refer to Attachment II, Part 2, Option 3 of the Funding Working Group Report.)

- Improvement of faculty access to current technologies.

The Academic Affairs Division is urged to establish a funding plan utilizing the new technology funds from the proposed 1997-99 UW System budget, budget allocation, UW Foundation endowment funds, and other possible resources.

1.8 Implementation of Other Initiatives

In addition to the four major initiatives outlined in section 1.6, there remains a number of initiatives for the campus to pursue. The items listed below are the highest ranked ones recommended by the four working groups. The implementation of several of these initiatives is already underway.

- Determination of the best model of support for the technological needs of the campus.

In the wake of an expanded campus network and the increasing adoption of technology for teaching, learning, and administrative functions, T & IR’s ability to meet the support needs of the campus has already been strained to its utmost limit. The campus needs to determine what will be the most feasible service structure – centralized, decentralized, or some form of a hybrid, that can best support the service expectations of faculty, staff, and students. T & IR will initiate a campus-wide discussion to investigate possible strategies for addressing this crucial issue.

- Implementation of security system.

Security is a growing issue as more institutional data becomes directly accessible to users via campus network or Intranet. This concern will further be compounded as the campus moves forward to online admissions, registration, and e-currency, to name but a few. Security/confidentiality and ease of access are not necessarily mutually exclusive. However, steps must be taken to address issues of firewall, authorization, and authentication that will protect security/confidentiality while providing accessibility.
• Establishment of and support for desktop hardware and software standards.

Under the leadership of T & IR, a Hardware and Software Standards Working Group has already been constituted with representatives of all campus constituent groups. It is charged to review, evaluate, and recommend desktop-related standards for campus-wide adoption when appropriate. The purpose is to enhance the technological compatibility of administrative functions. Also, it will allow T & IR to provide more efficient user support and training.

• Development of an online information database of hardware and software pricing information.

There is a general consensus that a centralized, easily accessible database regarding hardware and software evaluation, selection, purchasing, and/or licensing will greatly help faculty, staff, and students in making the right choices. This initiative will move forward in tandem with the efforts to establish hardware and software standards. As more standards are put in place, the relevant pricing and vendor information will be posted on the UW-Whitewater Web page for general access.

• Establishment of a Teaching, Learning, and Technology Roundtable (TLTR).

In the area of instructional technology, coordination and integration of efforts is essential. To this end, the Instructional Technology Working Group recommends the establishment of a TLTR as a university-level appointed committee. The purpose of this committee is to advise the Assistant Vice Chancellor for T & IR on all issues affecting instructional technology and to act as a coordinating agent though recommendations to academic departments, colleges, Academic Development Committee, and other appropriate bodies. It will play a leadership role in coordinating the integration of instructional technology into curricula and related administrative activities. T & IR will initiate dialogue with the appropriate campus stakeholders to explore the feasibility of implementing this initiative.
UNIVERSITY OF WISCONSIN-WHITEWATER

ADMINISTRATIVE SYSTEMS WORKING GROUP

REPORT AND RECOMMENDATIONS

January 22, 1997
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Administrative Systems Working Group

Background

The Administrative Systems Working Group of the IT Strategic Planning Process received its charge in a memorandum dated September 13, 1996 from Dr. Hsi-ping Shao, Assistant Vice Chancellor of Technology and Information Resources. The committee was asked to complete the following:

1. Review the current status of campus IS' services.
2. Articulate where we want to be: goals and objectives.
3. Identify the options on how to achieve the goals and objectives with pros and cons.
4. Analyze budget and staffing implications and implementation timetable for each option.
5. Make recommendations.

The working group consisted of: Stephen Summers, Executive Director of Auxiliary Services as Chair, Debbie Dintenfass, Director of Personnel Services, Tori McGuire, Associate Director of Enrollment Services, Al Haberman, Director of Student Financial Services, and Kipp Sonnentag, Controller. Ken Lamb, the Director of Information Systems and Operations Services, served as the designated resource person for the working group from T&IR.

The committee first met on September 13 and Dr. Shao presented to the committee the complete UW-W IT Strategic Planning Process, consisting of the five working groups. Dr. Shao elaborated on the charge to the Administrative Systems Working Group and a discussion took place regarding time lines, assessment processes, etc. The Administrative Systems Working Group then met throughout September, October and November routinely to complete the charge. A total of 12 meetings were conducted. The Administrative Systems Working Group utilized an informal assessment technique to gather data from administrative offices within each division. Administration Systems Working Group members assumed the responsibility to gather input, whether written or verbal, from their representative constituency. The committee last met on December 20 and approved the Administrative Systems Working Group report.
Section 1: Review of Current Status of Campus Information Systems Services

A. What are the current strengths?

Support:

The T&IR staff is a caring and capable staff who recognize the need for change to provide improvements to meet the changing needs of Administrative units.

Standardization:

Some progress is being made in Administrative units to catch up technologically with consistent hardware, software, and voicemail. The network infrastructure has improved recently and Internet, voicemail and e-mail capabilities are becoming more widely used on campus. Recent mainframe hardware upgrades have improved central computer performance.

Integration:

Access to student data on-line and through STAR terminals in the general access labs is complemented by a report writer (MS150) that serves some administrative users. Data are exchanged with external agencies through file transfer processes and limited usage of EDI (Electronic Data Interchange), and (Speede).

B. What are the University, Division, or Departmental unmet needs?

Support:

Staffing is inadequate to provide an expected level of service and support for the following:
- stable access to the network and the file servers,
- application development backlog,
- timely network problem resolution,
- consulting services,
- equitable services to all departments,
- desktop support,
- advise and provide support on departmentally procured application software, and
- develop and maintain plans for shared strategic technology, obsolescence, or disaster/recovery.

Training responsibilities for functional area usage of mainframe-based systems and desktop applications are not defined; thus training is deficient and knowledge is not shared among
Administrative Systems Working Group

departments to optimize utilization or to understand compatibility issues. Support has been hampered by the lack of standardization.

Standardization:

The campus rewiring project needs to be completed, desktop software standards need to be established for procurement and support, file server standards need to be established for interoperability, directories, administration, and backup/recovery, and user-friendly e-mail and voicemail need to be universal, consistent and reliable to all campus desktops. Access to e-mail without loss of messages, Internet, library and administrative systems needs to be improved from off-campus sites.

Administrative systems should have a graphical user interface and be built on relational database technology utilizing rules-based techniques to facilitate joining disparate data in dynamic ways to meet changing needs. Roles and responsibilities of the T&IR organization need definition and clarification to educate and guide the provisioning of service and support in line with staffing, priorities, and service level expectations.

Integration:

The University needs fully integrated administrative systems for Student Information System, Human Resource Management System, and Financials (including financial aid) and other systems such as room scheduling, degree audit, purchasing, facilities management, inventory, Computer Aided Design, etc. which provide real-time update and interface and universal access. Systems must be modifiable in a timely manner to meet changing institution needs. Operational data must be easily available for ad hoc reporting, transfer, analysis, trending, forecasting, and sensitivity analysis.

C. What are the issues in/for the Year 2000?

Support:

Changing over 700 programs to the year 2000 with existing staff for those systems excluding SIS, Accounting, and Sigma Financial Aids systems is a major project that will take substantial staff and software resources. A new Financial system needs to be operational no later than July 1, 1999. More importantly, the new SIS System must be operational by summer of 1998 to admit new freshman and transfer students for the 1999/2000 academic year. Assuming the procurement of new, administrative systems software, the University must commit to stay current with appropriate funding for maintenance, staffing, training and the enabling technology to protect and leverage the campus investment. Resources must be reallocated across campus to support the implementation of the IT Strategic Plan. Disciplined strategic and tactical planning is
Administrative Systems Working Group

essential to maximize the potential usage across campus.

Standardization:

Campus shared standardized office software which is compatible with integrated administrative systems for seamless access, better training and more cost-effective support. The campus should maintain administrative offices and classroom facilities with the necessary wiring and network hardware and software to provide state of the art programs and services. Infrastructure standardization will facilitate the addition of new technologies including imaging, interactive voice response systems, and smart cards. The campus should infuse application systems with adequate intelligence to cause appropriate system events to be performed in accordance with business rules, thereby increasing productivity across campus.

Integration:

The integrated administrative systems should be installed on or before January 1, 1999 to minimize the non-value added work on existing systems to prepare them for the Year 2000. Then, integration efforts should be implemented for remaining legacy systems. The integration of systems will allow efforts to build business models and decision support systems to assist the university to strengthen its leadership position as a premier comprehensive university.

Section 2: Goals and Objectives

Integration and Interfacing of Information Systems

Standardization of hardware and software is critical to achieving overall system integration and promoting efficient and effective interfaces between systems. Steps towards standardization need to be taken first where the users interact the most with software and hardware, which is at the personal computer workstation. State agencies and the UW System Administration have already taken steps to standardize personal computer software and hardware through requirements issued by the State Department of Administration. For example, the state standard for desktop software is Microsoft Office Suite. Many campus administrative departments need to interact and exchange information with UW System and the State Department of Administration. It is becoming more burdensome and time-consuming to achieve the information exchange with non-compatible software.

Standardized hardware and software can increase productivity through a more efficient transfer of information from one user to another and from one system to another. Standardized personal computer software for spreadsheets, word processing, database, and e-mail is needed for the eventual integration of all administrative systems. Identified software products should be
Mainframe and client server systems rely on the personal computer software to provide the flexibility which users demand in viewing and working with their information. For example, mainframe and client server systems process information and deliver the information to the personal computer workstation for further processing by the user. With standardized software in place, it is less costly to maintain quality support for the workstation software, and redundancy in providing the information in different formats for different workstation software is eliminated.

Once standards are established for personal computer workstation hardware and software, additional standards should be implemented for database software, at the client server and mainframe levels, which is compatible with the personal computer software. Substantial increases in efficiency and effectiveness of extracting information through query functions and exchanging information would be realized through a common database software. In addition, the implementation of a database administration system (i.e., conventions, procedures, software, etc.) would help ensure the consistent application of standards as new systems are implemented and older systems are converted over time to the new standards.

Direct User Access to Institutional Data

Standardization of software would substantially improve direct access to institutional data. A single point of entry into all campus systems could be achieved with a single sign on to a menu which contains all the authorized systems for the user. In addition, with standardized database and query software, information on all systems would be easily accessed and copied from the mainframe or client server based system to the personal computer workstation for further user specific inquiry and reporting. A key strategy in the campus strategic plan is to increase end-user access to institutional data for use in daily administrative operations. However, none of this can be accomplished without integrating new administrative systems and converting older administrative systems over time to a software standard.

Data Integrity, Maintenance, and Security

The key to ensuring data integrity and low cost maintenance is software standardization. For example, using one standard software package to control the security access to all campus systems would eliminate redundancy and provide security over access to the data. The development of one security profile for each campus user would allow for adequate control over access with minimal effort to maintain one security software package.

Adoption of New Technologies

Through standardization and integration, adoption of new technologies becomes easier and more cost effective. Implementing new technologies within an already established hardware and
software standard reduces redundancy and maintenance. For example, electronic report
distribution is a relatively new software which provides the user with the ability to view reports on
line rather than by printing them out. This software can improve the delivery time of the report to
the user, reduce paper use, and provide customized on line reports to the user. However,
implementing the electronic report distribution across several different systems with different
software becomes costly and difficult to maintain.

Other new technologies which could be implemented in a cost effective manner are:
• mainframe laser printing with appropriate templates for forms,
• electronic imaging to reduce paper and storage costs,
• telephone menu driven voice response systems for reliable and consistent processing of
inquiries by students, faculty, and the general public,
• smart card for purchasing on and off campus, and
• electronic data interchange for applications (Admissions and Financial Aid), transcripts and
vendor orders and payments.

Service Support

Adequate support for hardware and software is critical to the success of any computing
environment. Support needs to encompass:

• Ongoing user training to ensure effective use of the hardware and software and reduce
problems stemming from improper use which further taxes limited support resources.
• The transfer of knowledge from the vendors who provide packaged systems to the campus
support staff who will eventually be responsible for operating the system.
• A single point of contact for campus users experiencing hardware and software problems
which provides a resolution-based process that comes to a timely conclusion.

The limited resources for service support must be spent in the most effective manner. The
standardization of administrative hardware and software is the first step to ensuring cost effective
support and meeting the campus’s strategic plan goal of providing current technology to
effectively support administrative services. The numerous problems, delays in processing, and
down time which can result in mixing different software and hardware configurations often exceed
the support resources. Standardization helps to ensure that the limited resources are targeted
where they are most needed.

Section 3: Options to Achieve Future Goals & Objectives

Mainframe vs Client Server Computing

Analyzing the advantages and disadvantages of hardware technology requires the IS department
to move toward a standardized migration plan. The campus must allow for more efficiencies with
existing resources and install new technologies that will increase user productivity at the personal computer level.

The most realistic option calls for a three-tier architectural integration of hardware, software, and network applications. This plan would provide the opportunity for the mainframe to become a data warehouse for sharing campus-wide information which would allow the campus to move toward a file server processing environment. File servers would be defined by standardized software applications for use at the personal computer workstation.

This option would provide users many advantages over the existing processes currently in production. For example, users would have more freedom to extrapolate data from the mainframe without application programming assistance. In addition, users would be processing enterprise data without the redundancy of a data input, (i.e., debit card system). Finally, implementing this option should produce a standard management information system that reduces the need to maintain diverse systems on campus. However, converting to this model will require both a significant financial and human resources commitment.

In-House Development vs Vendor Developed Systems

Limited staff would make it impossible for the staff of Information Systems and Operations Services of T&IR Department to develop an integrated management information system and be ready by the Year 2000. The only option is to acquire a vendor developed system.

The primary advantage of vendor software is that the campus would be implementing a standardized fully integrated real time system in less time than it would take to build. Some examples of existing products are:

- Datatel: Colleague
- Software AG: Integrow
- People Soft: People Soft Financials
- Three Rivers: CAMS (Comprehensive Academic Management System)

In addition, the campus staff would have the vendor as a resource for system enhancements and customization features. Specifically, new releases would include mandated changes, such as conforming to financial aid regulatory changes. Vendors have user groups which create a global perspective which provide new functional and technological enhancements for the user community.

Finally, campus administration should be more focused on providing resources in their commitment to new technologies. The University of Wisconsin-Whitewater needs to support the maintenance costs of a vendor developed system to stay current with new product enhancements.
Integrated Information Systems vs Diverse Systems

The implementation of diverse systems cannot be considered an option for the betterment of this university. Such a practice has existed at the University of Wisconsin-Whitewater for so long that the current systems cannot adequately function. Presently systems such as General Ledger, Accounts Payable, Student Aid management, and SIS cannot communicate with each other.

An integrated management information system would ensure all users are sharing information on a campus-wide basis. In addition, an integrated real-time system will provide reliable, timely, and consistent information for improved decision making.

Section 4: Budget & Staffing Implications

Integrated, purchased applications software operating in a client server environment

The three sets of strategic options were analyzed and the optimal solution is to purchase generally available software from a single vendor who has integrated modules that minimally contain Student Information Systems, Human Resource Management Systems and Financial Systems appropriate to the University. There is also a need for a Facilities Management System that must be compatible, if not fully integrated, with the minimum three systems (see Note 4). While this solution will address many core critical university systems, there remains a large portfolio of current systems/programs that still must be modified to make them compliant with the 21st Century. Therefore, the strategic initiative before this University is one of stepping boldly into the future with new systems and architectures while taking care of the past investments to make them functional in the future environment until they can be re-engineered for improved functionality and integration with the core systems.

Current services not adequately supported

| Capital (PCs and software) | $10,000 |
| Personnel | |
| - 2 FTEs for unsupported systems & new users (annual) | $80,000 |
| Total | $90,000 |

Year 2000

| Capital | $5,000 |
| Personnel | |
| - Internal (two temp. staff for 2 years) **OR** $160,000 |
| - Outsourced |
| . with no new SIS software, or $571,000 |
| . with SIS software $240,000 |
| IT staff development/training | $1,500 |
Administrative Systems Working Group

Services and Supplies
- two temp. staff for 2 years $ 1,332
- one time cost to re-establish D&B mtnce $200,000+
if new Financials not purchased

Total $367,832—$777,332

Integrated Systems
Capital
- Software
  - SIS w/est. discount $ 408,000
  - Financials at list (GL, AP, Purchasing) $ 286,000
  - HRMS at list (HR only) $ 96,000
  - Relational DBMS at list (2 servers min.) $ 700,000
  - Miscellaneous Modules $ 200,000

- Hardware (see Note 3)
  - Servers and Operating Systems $ 750,000
  - Firewall $ 50,000
  - PCs for Appl. Tech. Consultants $ 10,000

Personnel
- Consultation/Installation $ 150,000
- User Training $ 250,000
- 3 FTE addnl. Application Technical Consultants--annual $ 126,000

IT Staff Development/Training
- Product Knowledge $ 32,400
- Development Tools $ 32,400
- Technical Support $ 10,800

Services and Supplies
- Annual Software Maintenance $ 260,000
- Annual Hardware Maintenance $ 120,000

Total $3,481,600

Grand Total (Note 1) $3,939,432—$4,348,932

Note 1: The above cost figures are estimates only. Contract negotiations and multiple module purchases could/should decrease some individual line items which, in turn could compensate for additional components not identified in this high-level look at what is needed. Without the benefit of detailed project plans and a vendor of choice to discuss minute details, it is felt these costs represent the highest-cost scenario. Vendors do vary in what functionality they include in their base systems offering. It is assumed that only
one of the financial systems options would be taken.

Note 2: Please see the Budget Table on page 10 which identifies one-time costs and on-going costs projected over a 1-3 year period.

Note 3: In addition to these costs, it is reasonable to expect that the campus PCs will need to be upgraded to effectively realize the full benefit of the newly installed integrated campus administrative systems. This cost could be as high as $2,250,000. Users of the SIS include all campus personnel and students.

Note 4: Not included above is any estimate for Facilities Management Systems which includes such functions as drawings for physical plant, preventative maintenance scheduling, engineering drawings for electrical, data, and telephone wiring. A more robust scheduling system may be required than what is in a Student Information System that includes room capacity and all accessory equipment.

Section 5: Recommendations

1. By March 31, 1997, complete a University review to reallocate resources to support the integration and implementation of Administrative Systems. By the summer of 1998, procure and install a SIS and financial system with HRMS to follow. In order to meet this deadline, the campus should choose an SIS product from a vendor who also has available integrated HRMS and Financial systems for the university which are capable of achieving the goals and benefits enumerated in this report by the Administrative Systems Working Group. For those functional needs not available from the selected vendor, the university should strive to procure systems that are fully compatible and easily interfaced with these three core systems.

2. Establish a Steering Committee to include members representing the SIS, financial, and HRMS Systems to facilitate discussion, planning, and communication with installation, implementation, and on-going administration of a real-time integrated system.

3. Increase mainframe, desktop, client-server and application software training and support programs, and implement university-wide standards in all phases of administrative computing to include integration with UWSA. Require T&IR to establish standards for support service.

4. Require every division to develop and have available each budget year an obsolescence plan for technology.

5. Conduct a review to determine institution-wide requirements for an Automated (and integrated) Facility Management System.
University of Wisconsin - Whitewater

Funding Working Group

Report and Recommendations

April, 1997
Report of Funding Working Group

The charge to the Funding Working Group is to develop financing strategies and recommendations to fund the information technology priorities identified by the function-specific working groups. These priorities are:

1. Acquisition and implementation of an integrated university information system.

2. Adequate network capacity for both campus and Internet access to meet the ever increasing academic and administrative demand.

3. Enhanced support and training services for faculty, staff, and students.

4. Improvement of faculty access to current technologies.

The achievement of these priorities will require a substantial financial investment in the years ahead. It is important to note that such an initiative is a continuation of the significant commitment the campus has made to technology in the past decade. In recent years, UW-Whitewater has expended nearly $5 million of GPR resources on the technological needs of the campus. These expenditures include $400,000 for technology in classrooms and labs in McGraw Hall, $1.2 million for the campus fiber backbone and rewiring of academic and administrative buildings, $245,000 for a Wimberley Hall technology project, $550,000 to be spend in classroom equipment in Hyer Hall, and nearly $1 million expended each year from the Classroom/Lab Modernization, Undergraduate Improvement Initiative, and General Computer Access programs.

Investments in technology and infrastructure have also been made in Program Revenue facilities. Esker and Drumlin Halls, Moraine Hall, and the University Center were upgraded to level 5 wiring. Arex residence hall wiring was also upgraded to level 5 and served as the pilot hall for the 1996-97 ResNet Project. These investments approximated $130,000. The ResNet project will be completed in May of 1997 at an estimated cost of $1,300,000. Approximately $150,000 has been invested in the Residence Life computer labs in Wells and Drumlin Halls.

All of these past and ongoing efforts are in keeping with Priority 2, Goal 2.3 of the University Strategic Plan which calls for “A current technological and physical infrastructure that effectively supports academic programs, support services and outreach activities.”
The following, therefore, outlines the four priorities and the Funding Working Group’s recommendations:

**Priority One:** Acquisition and implementation of an integrated university information system.

This priority will require an investment of nearly $5 million over the next seven years. Priority One creates a foundation for the technological infrastructure of the campus which will be necessary to provide the basic services required by students, faculty and staff. Its high cost is due to cost of software/hardware that will need to be acquired along with implementation, training and continued maintenance. As outlined in the attached budget spreadsheet, the Working Group recommends the campus utilize savings generated from tuition fees and other sources to fund approximately $300,000 of the initial costs that exceed the resources available to T&IR. In addition, the group recommends borrowing $2.5 million from UW System and/or other sources to acquire the hardware/software and retraining needed to complete Priority One. The repayment schedule (Master Lease) is defined on the attached spreadsheet (Attachment 1). Part of the required resources will come from the internal reallocation of dollars in T&IR, and the balance will be funded through institution base reallocations beginning in 1998-99.

**Priorities Two and Three:** Enhanced support and training services for faculty, staff and students; and adequate network capacity for both campus and Internet access to meet the ever increasing academic and administrative demand.

These two priorities are combined due to the interconnectedness of the support service operations. In developing the recommendation for these areas, the Working Group asked the service units to define two levels of support services. One level represents the type of support services which could be provided without any budgetary increases. The second level incorporates expanded activities to meet campus demands that are not currently met. If the first level (no budgetary increase) is adopted, the T&IR division will be required to prioritize and limit its services to the campus. Such an outcome will result in 1) decrease in the level of desktop support; 2) reduction in support of faculty/staff training; 3) elimination of research consultation; 4) elimination of support for DOS applications; 5) phasing out desktop applications development; 6) elimination of hardware support for Macintosh computers and all non-Hewlett Packard LaserJet printers; 7) severe curtailment in support instructional technology; 8) reduction in support for Web servers; 9) no funding to maintain and support the existing campus network infrastructure at all levels (building hubs, backplane equipment/software); and 10) no funding for upgrade of campus network backbone structure and Internet access line. These are only a few of the...
services which would be affected as demands increase in the unit while the budget remains unchanged. By necessity, T&IR has to re-prioritize its efforts to concentrate on a few basic but crucial service requirements of the campus.

The second level (enhanced) will: 1) enable the Help Desk to reduce its response time from days to hours; 2) increase training for faculty and staff; 3) reduce waiting time for installation of new computers; 4) increase research support; 5) provide emergency support for classrooms and labs; 6) provide a maintenance and replacement funding mechanism for the future; and 7) increase network services to academic and classroom buildings.

The attached budget spreadsheets (Attachment II) outline the expenditures which would occur with a current budget base and enhanced operation. The recommended funding mechanism is to establish an auxiliary account for the two combined priorities. The program revenue structure would allow the campus to shift the 12.70 position from GPR to PR funding which will create additional staffing flexibility for the campus GPR accounts. A charge-back fee based on a formula of 50/50 distribution tied to network connection and FTE is recommended (Attachment II, Part 2, Option 3). This fee would amount to an annual charge of approximately $920 per connection. The specific array of services would be reviewed annually by the T&IR Advisory Committee, comprised of major user groups. The Advisory Committee would also provide a recommendation on the budget and charge-back rate as part of the annual budget development process.

Priority Four: Improvement of faculty access to current technologies.

This portion of the campus technology program is an issue which is confined to the Academic Affairs Division. The division will need to establish a funding plan which will provide faculty with current desktop technology, appropriate maintenance and replacement support. The plan to be developed could incorporate a match grant process utilizing the new technology funds from the proposed 1997-99 UW System budget, budget reallocation, UW Foundation endowment funds, or other possible sources.

Special Note:
Although upgrading of administrative desktop computers is not a part of this priority, the campus will need to develop a funding plan to achieve the same goal with administrative computers as with academic computers. Possibly adding an amount on the per-connection charge and having the equipment owned and managed by T&IR is a consideration.
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(1) Assumes 20% discount if purchased as package
(2) Assumes 30% discount with three (3) schools purchasing
(3) Amortization to replace equipment
(4) FTE covered by Reallocation or Contracted
(5) Assumes maximum 8% annual increase

NOTE: Above does not include PC Desktop upgrade funding.
<table>
<thead>
<tr>
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<td></td>
<td>Internal Reallocation</td>
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<tr>
<td>GPR</td>
<td>Replace GPR for desktop &amp; networking with PR</td>
<td>500,000 (12.70 FTE)</td>
<td>500,000</td>
<td>500,000</td>
<td>500,000</td>
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<tr>
<td>T&amp;IR</td>
<td>Internal Realoc (1.0)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
<td>9,600 (1.0 FTE)</td>
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<td>OTHER</td>
<td>Instit. One-time YrEnd dollars</td>
<td>$375,725 (a)</td>
<td>$69,654 (a)</td>
<td>$71,000</td>
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<td>$71,000</td>
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<td>Instit. Base Reallocation</td>
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<tr>
<td></td>
<td>Additional Base Reallocation</td>
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<td>Base Reduction</td>
<td>92,066</td>
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<td>92,066</td>
<td>92,066</td>
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<td>FTE Reduction</td>
<td>208,000</td>
<td>283,506</td>
<td>283,506</td>
<td>213,506 (e)</td>
<td>134,532 (e)</td>
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<td>$385,225</td>
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<td>$1,684,725</td>
<td>$1,040,256</td>
<td>$1,023,607</td>
<td>$1,008,466</td>
<td>$1,124,907</td>
<td>$578,945</td>
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(a) $70,000 returned to Institutional Planning Reserve
(b) Additional $79,974 returned to Institutional Planning Reserve
(c) An additional $226,628 returned to Institutional Planning Reserve
(d) $300,000 base reallocation to Institutional Planning Reserve
(e) Additional reduction of 1.0 FTE in 2001-02 and 1.0 FTE reduction in 2002-03 for a total of 6.0 FTE reduction (Net Reduction from 1996-97 level equals 3.0 FTE)
(f) $306,071 from institutional One-time funds (Contingency, Year-end, Carryover)

NOTE: The $306,071 is split between 2 years as needed by allocating/borrowing carryover.
# Outline of Expenditures

## Current Baseline Desktop, Network, and CWIS Support

<table>
<thead>
<tr>
<th>Service or Activity</th>
<th>FTEs</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desktop</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help Desk</td>
<td>1.25</td>
<td>39,228</td>
</tr>
<tr>
<td>On-site Desktop/Network Connectivity</td>
<td>4.45</td>
<td>144,270</td>
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<tr>
<td>Training/Consultation/Document Preparation</td>
<td>1.13</td>
<td>45,626</td>
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<tr>
<td>Software Evaluation</td>
<td>0.17</td>
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<tr>
<td>Application Development</td>
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<td>Desktop Hardware Repair and Maintenance</td>
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<td>24,853</td>
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<tr>
<td>Student Assistants</td>
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<td>38,000</td>
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<tr>
<td>Staff Development</td>
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<td>5,567</td>
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<tr>
<td>Capital</td>
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<td>13,500</td>
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<tr>
<td><strong>Network</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install/Manage/Maintain Internet Access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install/Manage/Maintain E-mail Service</td>
<td></td>
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<tr>
<td>Install/Manage/Maintain Server Hardware</td>
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<td>Install/Manage/Maintain Operating Systems</td>
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<td>Install/Manage/Maintain Network Print Queues</td>
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<td>Client Consulting and Help</td>
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<td>Install/Manage/Maintain Network Infrastructure</td>
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<tr>
<td>Create and Document Backup Procedures</td>
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<td>1,807</td>
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<tr>
<td>Hub Hardware Maintenance</td>
<td></td>
<td></td>
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<tr>
<td>NetWare Software License</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Hub Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet Upgrade Fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Network Upgrade Fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CWIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain World Wide Web Access and Campuswide Information System</td>
<td>1.00</td>
<td>32,075</td>
</tr>
<tr>
<td><strong>Fringe Benefits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: Based on $495,661 @ 30%</td>
<td></td>
<td>148,698</td>
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</tbody>
</table>

**TOTALS** 12.70 $631,359
### Current Baseline Desktop, Network, and CWIS Support

**Funding Option #1**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Technology Fee</td>
<td>200,000</td>
</tr>
<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
<td></td>
</tr>
</tbody>
</table>

| Revenue Producing PR Ports      | 79,797   |
| Note: Backbone charges of $73,987 plus 70 building ports @ $83.00 per port |          |

| Total Faculty/Staff Cost Allocation | 291,562 |
| Note: $324 per FTE x 900           |         |

**TOTAL** $631,359
## Current Baseline Desktop, Network, and CWIS Support

**Funding Option #2**

**Source**

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Technology Fee</td>
<td>200,000</td>
</tr>
<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
<td></td>
</tr>
<tr>
<td>Non-Student Ports</td>
<td>371,359</td>
</tr>
<tr>
<td>Note: $380 per connection x 978</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$631,359</strong></td>
</tr>
</tbody>
</table>
Current Baseline Desktop, Network, and CWIS Support

Funding Option #3

<table>
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<th>Source</th>
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</thead>
<tbody>
<tr>
<td>Student Technology Fee</td>
<td>200,000</td>
</tr>
<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
<td></td>
</tr>
<tr>
<td>Non-Student Ports (50%)</td>
<td>185,679.50</td>
</tr>
<tr>
<td>Note: $190 per connection x 978</td>
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</tr>
<tr>
<td>Faculty/Staff FTE Base (50%)</td>
<td>185,679.50</td>
</tr>
<tr>
<td>Note: $206 per FTE x 900</td>
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</tbody>
</table>

**TOTAL**                                           **$631,359**

March 27, 1997
# Current Baseline Desktop, Network, and CWIS Support

**Funding Option #4**

<table>
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<th>Source</th>
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</thead>
<tbody>
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<td><strong>Student Technology Fee</strong></td>
<td>200,000</td>
</tr>
<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
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</tr>
<tr>
<td><strong>Non-Student Ports (75%)</strong></td>
<td>278,519.25</td>
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<tr>
<td>Note: $285 per connection x 978</td>
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<tr>
<td><strong>Faculty/Staff FTE Base (25%)</strong></td>
<td>92,839.75</td>
</tr>
<tr>
<td>Note: $103 per FTE x 900</td>
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</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$631,359</strong></td>
</tr>
</tbody>
</table>
## OUTLINE OF EXPENDITURES

### Enhanced Desktop, Network, and CWIS Support

<table>
<thead>
<tr>
<th>Service or Activity</th>
<th>FTEs</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Desktop</strong></td>
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</tr>
<tr>
<td>Help Desk</td>
<td>2.10</td>
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<td>Student Assistants</td>
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<td>Staff Development</td>
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<tr>
<td>Capital</td>
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<td><strong>Network</strong></td>
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<tr>
<td>Install/Manage/Maintain Internet Access</td>
<td>0.20</td>
<td>7,908</td>
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<td>Client Consulting and Help</td>
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<td>Hub Hardware Maintenance</td>
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<td>NetWare Software License</td>
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<td>4,200</td>
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<tr>
<td>Network Upgrade Fund</td>
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<td>60,000</td>
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<tr>
<td><strong>CWIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain World Wide Web Access and Campuswide Information System</td>
<td>1.00</td>
<td>32,075</td>
</tr>
<tr>
<td><strong>Fringe Benefits</strong></td>
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<tr>
<td>Note: Based on $730,633 @ 30%</td>
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<td><strong>TOTALS</strong></td>
<td>19.23</td>
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Enhanced Desktop, Network, and CWIS Support

Funding Option #1  March 24, 1997

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<th>Source</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Student Technology Fee</td>
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<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
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</tr>
<tr>
<td>Revenue Producing PR Ports</td>
<td>79,797</td>
</tr>
<tr>
<td>Note: Backbone charges of $73,987 plus</td>
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</tr>
<tr>
<td>70 building ports @ $83.00 per port</td>
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</tr>
<tr>
<td>Total Faculty/Staff Cost Allocation</td>
<td>780,425</td>
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<tr>
<td>Note: $867 per FTE x 900</td>
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TOTAL  $1,120,222
Enhanced Desktop, Network, and CWIS Support

Funding Option #2                                      March 24, 1997

Source                                      Amount

Student Technology Fee                        200,000
Connection per Residence Hall Student         60,000
   Note: $150 per connection x 400

Non-Student Ports                            860,222
   Note: $880 per connection x 978

TOTAL                                       $1,120,222
Enhanced Desktop, Network, and CWIS Support

Funding Option #3

<table>
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<tr>
<th>Source</th>
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</thead>
<tbody>
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<td>200,000</td>
</tr>
<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
<td></td>
</tr>
<tr>
<td>Non-Student Ports (50%)</td>
<td>430,111</td>
</tr>
<tr>
<td>Note: $440 per connection x 978</td>
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</tr>
<tr>
<td>Faculty/Staff FTE Base (50%)</td>
<td>430,111</td>
</tr>
<tr>
<td>Note: $477.90 per FTE x 900</td>
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TOTAL $1,120,222

March 24, 1997
### Enhanced Desktop, Network, and CWIS Support

**Funding Option #4**

**Source**

<table>
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<tr>
<td>Connection per Residence Hall Student</td>
<td>60,000</td>
</tr>
<tr>
<td>Note: $150 per connection x 400</td>
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<tr>
<td>Non-Student Ports (75%)</td>
<td>645,167</td>
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<td>Note: $660 per connection x 978</td>
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<tr>
<td>Faculty/Staff FTE Base (25%)</td>
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<td>Note: $238.95 per FTE x 900</td>
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</table>

**TOTAL** $1,120,222
University of Wisconsin-Whitewater

Infrastructure/Technical Support Group

Report and Recommendations

January 15, 1997
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<th>Page</th>
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<td>Background</td>
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</tr>
<tr>
<td>Report</td>
<td></td>
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<tr>
<td>Global Concerns</td>
<td>4</td>
</tr>
<tr>
<td>Specific Concerns</td>
<td>6</td>
</tr>
<tr>
<td>Budget &amp; Staffing Implications</td>
<td>7</td>
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<tr>
<td>Recommendations</td>
<td>8</td>
</tr>
<tr>
<td>University Infrastructure/Technical Support Foundation Diagram</td>
<td>Appendix A</td>
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Infrastructure/Technical Support Working Group

Background

The group began by reviewing the current campus infrastructure-technical support environment, (its adequacy, hardware and software standards, and training) along with possible future trends. Infrastructure was defined as the organizational and physical elements that provide support for information services at the University of Wisconsin-Whitewater.

During its discussions, the group formulated a “University of Wisconsin-Whitewater Infrastructure/Technical Support Foundation Diagram” (see attached). This graphic attempts to provide a conceptualized outline of who the campus services with the infrastructure.

Don Chruciel, Administrative Services
Pat Casey, Education
Denis Dale, Arts & Communications
Bob Schramm, Business & Economics
Steve Vincent, Letters & Science
Lyle Hunter, T&IR
Charles Cottle, T&IR

Susan Moss, Administrative Services
Rollie Woodbeck, Student Affairs
Section 1: GLOBAL CONCERNS

The University infrastructure is extremely dynamic and needs ongoing, periodic review. Moreover, the infrastructure is part of the overall university culture that needs to be nurtured/developed and refined over time.

Currently the technology acquisition process requires the Assistant Chancellor for Technology & Information Resources’s review of all materials that pass through the campus purchasing central office. T&IR is also establishing a staging area where new incoming hardware may first be outfitted, setup, tested, and then routed to the home unit/end user(s). However, changes in the capital property threshold and campus procurement process may seriously affect these efforts.

Currently many questions concerning the oversight of campus technology resources are inadequately addressed. These include, but are not limited to, concerns about the acquisition, installation, and use of individual and unit computers; the design, maintenance, and supervision of computer labs, network servers, and mainframe computers; and the establishment of “Best Business” practices concerning software use, replacement/upgrade policies, backup strategies, and the promotion of a paperless communication environment.

The University must remain poised to become an active partner as existing technology evolves and new technology emerges. An infrastructure must be developed and maintained to access the Internet allowing for voice, data, video, interactive chat, shared whiteboard, and so on... The continued interest in asynchronous transmission mode (ATM) along with the projected increase in demand for high speed communications off campus will require an upgrade to the existing T1 capabilities in the near future.

A. Security

Two basic types of security systems are used to gain access to the University infrastructure: one that is site/machine specific, and one that relies upon authentication via login/password. Security systems will increasingly be used in the future, and therefore will become a more pressing infrastructure concern.

B. Standards

The group recognizes the need for both hardware and software standards without stifling exploration/experimentation. It is suggested that there is a difference of need for standards
between the administrative and academic units. In the administrative area, the suggestion of standardization is viewed as a greater need. It is also recognized that a standard for administrative users will influence academic users. Standards need to address how the university can gain the greatest flexibility and versatility without imposing barriers. They must also deal with internal preferences and external influences/demands as well as be open for review and change.

T&IR has, by default, attempted to publish the mandatory minimum and the recommended hardware configurations as campus standards. On the other hand, software standards are harder to control. There is product proliferation from multiple quadrants (new faculty, new vendors, peers/colleagues, ...)

Five (5) categories were suggested for software:

1. Generally accepted campus applications (T&IR install & teach use) and will receive full support.
2. Software that is migrating towards category #1 but not recognized as the campus standard. Support may or may not be provided depending upon available resources.
3. Special turnkey applications, will receive technical support as appropriate.
4. Tolerated but not encouraged, allow on systems and T&IR will attempt to support
5. Actively take off systems, highly recommend against installing, no support

It is envisioned that a forum, allowing for ample representation and campus community input, be charged with the establishment of the University of Wisconsin-Whitewater standards in both hardware and software. It is recognized that this process is ongoing and that the forum not only be timely, but recognize that resources are invested to provide the support and that changes are inevitable within the limited resource base.

C. Support

Note: 45% of help desk calls currently involve an application problem
55% are hardware/network related

Estimated help calls indicate that there is a continued need for assistance at all levels of application usage of which training could address.

Only upon full review and acceptance of a prescribed support structure should the campus undertake the task of determining the necessary resource base to commit. This is done in conjunction with other campus technology issues and priorities. It is recognized that the University has some unique hidden resources that could be tapped /incorporated into both its tactical and strategic plans.
D. Training

The training of all members within the University of Wisconsin-Whitewater family is and continues to be a major concern. In order to encourage better utilization of both the infrastructure and technical support, it becomes urgent that overall training for the campus community be addressed. There is also a need for just-in-time training, timely training provided as equipment/software is received by the end-user.

It is recognized that past practices demonstrate the best gains from training with the best results coming from unit/department initiated rather than participant solicitations. It was also noted that more training modules along with possible other forums do need to be explored and used.

Section 2: SPECIFIC CONCERNS

A. Residence Hall Support

Residential halls are scheduled to be wired during the upcoming months. Technical support for students is ostensibly under the office of Residential Life, but in practice involves students calling the “Help Desk” with problems. Demands on the “Help Desk” will increase as students increase their use of computers from the residential halls. No system currently exists to encourage students to acquire and use computers, and student access to the University Infrastructure will be under-utilized initially. Other UW campuses have experienced only a 10% increase in usage after rewiring.

B. Common Areas

Common areas should encourage and support the use of portable computing. These sites should be identified as “easy access” connection areas. Some general campus locations are identified as, University Center, Library, and each Classroom Building.

C. General Access and Discipline Specific Labs

It is recognized that the distinction between a computer laboratory and computer networked classrooms is becoming fuzzier. Trends seem to indicate that the laboratory is giving way to the electronic classroom. Currently the classroom is viewed as having limited equipment by multi-users, where a lab has ‘server’ controlled applications and installations. The team identified the two major types of computer laboratories on campus; "College" and "General Access". It was recognized that the funding for each along with the initial intended usage determines the existence of each individual laboratory. After the establishment of a computer laboratory, the question of ongoing future support etc. does not seem to be spelled out.

The campus must look at possible collaboration/coordination in putting together computer labs.
Infrastructure/Technical Support Working Group

Plans for computing labs need to encourage stretching limited resources to realize maximum long-term gains. These plans need to take into account the use of resources wisely while factoring in future funding needs into the life-cycle of the facility. The guidelines/rules for the use of funds in setting up computer labs must be looked at, and if possible be negotiated to be more accommodating.

D. Off Campus-Local & Long Distance

The absence of graphical Internet access for off campus users is currently a weakness in the University Infrastructure. This affects approximately 6,000 students, and those staff and faculty who seek connection from off campus. There are multiple ways of providing access, and access technology is evolving with cable connections possible in the not-too-distant future.

Communications beyond the campus borders is controlled by external forces which are beyond the University's control. However, this does not prevent the campus from staying cognizant of external happenings whereby the University can mutually benefit from these happenings. For clarification purposes, Local is defined as (414)472—, (414)473—, (414)563—, (414)495—, (414)568—, and (414/608)883—. All others fall into the Long Distance category.

Section 3: BUDGET & STAFFING IMPLICATIONS

The following cost projections provide two scenarios for campus technology support and services. The first column, “Current Model,” projects cost of the existing service model with no explanation of services/support. The second column, “Expanded Model,” provides for the explanation of current services/support. For additional information on recommended services in the expanded model as well as details on the budget breakdown, please see appendix B.
University Technology Support and Services (UTSS) Costs:

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Capital as defined in these figures includes the costs of micro computers which are not considered capital equipment under the University Capital Property Policy. This figure takes into account the annual replacement of one-hundred (100) computer workstations at an estimated cost of $2100/computer along with $20,000 expended to replace and retire lab printers and servers.

Projections of costs for budgets in future years has been increased by a 4-5% inflation factor where it is deemed appropriate.

Section 4: RECOMMENDATIONS

1. In dealing with the global concerns the campus should:
   a. take into account within our strategic plan continued support to maintain an alert status regarding pending actions in technology, to nurture potential partnerships and when feasible to do so, to take a leadership role.
b. The campus should designate a specified entity whose responsibility is to continuously
gauge the campus preparedness to take advantage of pending opportunities. These
opportunities include but are not limited to UW System and State of Wisconsin initiatives.
c. Develop a strategy that recognizes the potential for inter-institutional, divisional,
departmental, ... cooperative effort opportunities. Confront the territorial need to exercise
control which often discourages collaborative efforts and the sharing of resources between
and among academic and administrative units.

2. The campus needs to recognize security/access as a growing issue and determine if
login/password security rather than site specific is a viable option.

3. Chart a clear course (suite of software) making sure that straying off course is ill advised.
Make it known that there will be no active support of non-course applications outside of this
suite.

4. Establish and support a set of University software standards for non-course applications
covering a designated number of versions (up and down the application's life cycle) per
application. The standards are to be published.

5. The campus as a whole must take an aggressive approach to coordinate if not control the
deployment of equipment within campus boundaries. Although minimum and recommended
standards are published, there is no current effort to match the end-user's needs with the right
match of equipment. The efforts to establish a staging area for new equipment is seen as a step in
the right direction but should not be viewed as a complete solution. It is recognized that the
current mode of decentralization of budgets does not promote collaborative efforts in acquiring
technology.

6. Determine the preferred type of support (centralized, decentralized, or some hybrid).
However, it is recognized that the effort and the infrastructure does need to be centrally
coordinated. Supporting/complementing functions, e.g. training, acquisition, repair, setup, etc. all
need to be centrally coordinated but do not necessarily need to be controlled or provided
exclusively from a central unit. Emphasis on self-help (read manuals) needs to be encouraged
along with any other avenues which will allow individuals to obtain the necessary training to use
the technology tools set before them.

7. Investigate the establishment of a pool of student interns for support from either or both the
campus “Business Education & Office Support Department” and “Management Computing
Systems Department”. Look into the feasibility of cycling state-of-the-art technology into the
hands of the most knowledgeable end-users allowing for the re-deployment of usable equipment
to flow down into the hands of the next generation moving up the scale. Determine whether
computer laboratory equipment can be factored into this schema. Establish a “Technology
Project Consulting Group.” This group will, working with the owners, plan, design, and manage
the implementation of technology projects.

8. Specific units on campus must be identified to assess the current levels of the end-users. A computer proficiency test might be given (on-line, classroom administered, self-administered, etc.). This would not only allow for a more concentrated training efforts in what we lack but also provide the campus with a skills inventory and serve as pre-requisites for further training both on/off campus. It could also serve as the basis for acquisition and redeployment of equipment. A sensitive approach and promotion of a computer literacy assessment program would allow for “advanced” literacy to become the benchmark in meeting the University’s technological literacy requirement. It is also recognized that there are multiple ways individuals learn how to use the technology (independent study, working groups, video, classroom, etc.), the establishment of any preferred approach should not be exclusive.

9. With the completion of the wiring projects as scheduled, promote utilization of computing access and encourage student acquisition of computers through guidance and other promotional efforts. Establish minimum standards for both major personal computing platforms in order to insure optimal functionality and technical support. Provide students with access to networked common and discipline-specific academic software in order to promote the most efficient use of technical support resources.

10. Common areas should be identified and given “easy access” connection capabilities. Future re-wiring projects should include sites for common areas in the facilities to provide network access.

11. Provide for a steady revenue/funding stream to address staffing, upkeep/upgrade of facility, software availability, etc. while looking at the feasibility of phasing Labs into Classrooms.

12. The University needs to accept responsibility for providing graphical Internet access to the University Infrastructure through the university, a local provider, or other source. Explore reciprocal relationships with other universities, state agencies, school districts, etc. to allow access to University Infrastructure from remote locations. In the mean time, explore local connections based on the community one lives in. The University should assist in collecting and providing this information. The campus should lead the way, pointing out the possible directions individuals could take.
* Access is unlimited for authorized use
* Underlying structure to make this all happen is: Dynamic, cost effective, flexible, etc.
University of Wisconsin-Whitewater

Instructional Technology Working Group Report

Report and Recommendations

January, 1997
Section 1: Background & Introduction

Introduction

During the 1996 fall semester, the Instructional Technology Working Group was established as a part of an overall effort by the Technology and Information Resources Advisory Committee to review the status of instructional technology on the UWW campus and to develop a strategic plan for the campus-wide utilization of instructional technology. In her charge to the Task Force, Assistant Vice Chancellor Shao provided the following charge:

1. Review the current status of instructional technology on campus
   • Assessment of effectiveness in using instructional technology
   • Degree of coordination at college level and at University level
   • Technical support for labs and classrooms

2. Articulate where we want to be: goals and objectives
   • Adoption of new technologies
   • Equipment maintenance and obsolescence
   • Faculty training and support

3. Identify the options for achieving the goals and objectives (with pros and cons, if applicable).
   • Funding sources
   • Support services
   • Campuswide standards

The working group consisted of: Ann Riall, Chair Special Education (Working group chair); Lois Smith, Chair Marketing; Cathy Baretta, Social Work; Amy Arnt, Art, and Sibdas Ghosh, Biology. Charles Cottle, Director of User Training and Support Services; Roger Yin, Multi-media Specialist, and Stanley Smmoniewski, Coordinator of College of Education Technology Lab, provided technical assistance to the working group. The group met weekly during the months of September, October and November, and the first part of December. Members of the committee communicated through EMAIL between meetings.

Each of the members of the instructional technology working group took a section of the previous IT strategic plan and attempted to identify the extent to which the plan had been implemented (with the knowledge that the plan had never been officially adopted) in the areas of coordination, hardware and software acquisition and support, and faculty/staff training and support. The following section provides an overview of the results of each inquiry, followed by a summary and overview.
Definition of Instructional Technology

The previous Instructional Technology Strategic Plan (1994) defined instructional technology broadly to incorporate both "high tech" and "low tech" equipment. This committee as well, views instructional technology as a means to an end - that end being student learning (Priority #1: UWW Strategic Plan, 1996). The implication of this view is that Instructional Technology is a means for improving the quality of the delivery of instruction, as well as for improving the quality of the content of instruction. The parameters of instructional technology must be viewed as dynamic, changing as technology itself changes. It incorporates a wide range of applications utilizing equipment/instruments, and /or media, computer and telecommunication technologies to be used either in a stand-alone or in an integrated mode both in and out of the traditional classroom setting. As Gagné (1987) points out "(t)he technical knowledge that constitutes instructional technology includes practical procedures for using existing media to deliver instruction, and also to deliver portions of instruction that supplement the communication of an instructor. Instructional technology includes practical techniques of instructional delivery that systematically aim for effective learning, whether or not they involve the use of media. It is a basic purpose of . . . instructional technology to promote and aid the application of these known and validated procedures in the design and delivery of instruction" (p. 7). Therefore, to truly keep student learning as the paramount focus of the UWW programs and services, no effective means of delivery instruction should be abandoned in favor or other technologies just because they are new. Additionally, instructional technologies should be evaluated in terms of their effects on student outcomes.

Section 1: Review of Current Status of Campus Information Systems Services

Faculty/Staff Development/Support

The Multi-media Specialist has been on-board for two years, and as a result, the number of opportunities for faculty and staff training has increased substantially. In the short term, several efforts on campus have occurred that address the question of training for faculty and staff. These include targeting faculty improvement dollars to the core classes to develop instructional media and train faculty. Faculty development opportunities are offered regularly, both at the Instructional Media Center, and increasingly on-site. The demand for faculty/staff development continues to increase.

Faculty/Staff Technical Support

A HELP desk has been deployed as a single point of contact. After a somewhat rocky start, the current average response time is less than a day. They continue, however, to be understaffed. Technical support for instructional technologies remain primarily the responsibility of departments and colleges. Few if any departments and colleges have dedicated technical support staff. Most currently rely strongly on certain faculty by default, although the HELP desk is improving this situation. As new equipment is acquired, the demand for technical support is likely to increase significantly.
Coordination and Information Sharing:

Successful implementation of cutting-edge instructional technology campus-wide at UW-Whitewater, requires a well coordinated implementation of all aspects of instructional technology, including hardware, software, systematic attention to equipment obsolescence and maintenance, faculty/staff development and support, technical support, campus networking, and intramural and extramural funding. Coordination is often interpreted as a top-down function. This committee views coordination as more a sharing of information both from the top down, and from the grass-roots up to the overall benefit to the institution and the institutional mission.

Current Status of Coordination

Coordination remains limited and uneven. Although in principle each college reviews requests for Computing and Information Technology with the final approval provided by the Assistant Vice Chancellor for Technology and Information Resources, the reality is that individual faculty/staff direct the purchase of software and hardware, and participate in training opportunities individually, with little attention to the benefits to be derived from coordinated purchases and participation in training. There is no centralized, easily accessed database of information regarding hardware and software evaluation, selection, purchase site-licensing, hardware and software maintenance, and faculty/staff development.

According to the 1994 IT Strategic Plan, no one person or committee provided overall leadership in the coordination and integration of instructional technology on campus. This remains essentially true, although there is movement in this direction through the establishment of the office of the Assistant Vice Chancellor for Technology and Information Resources. Hardware and software evaluation, selection, purchase, and maintenance, as well as faculty/staff development and support remain uncoordinated. These fragmented efforts continue to be economically unsound and detrimental to faculty, staff, and student efforts at teaching and learning.

There are three existing bodies (User Training and Support Services, Networking and Telecommunications under the auspices of the Assistant Vice Chancellor for Technology and Information Resources).

Hardware and Software

( NOTE: Hardware and software are components of the infrastructure, and therefore not addressed here in detail except where they affect the efficient and effective delivery of instruction.)

Hardware: Current Status

Because of the lack of an easily-accessed centralized data-base of hardware inventory, it is difficult to provide accurate data regarding hardware. Instructional hardware acquisition among colleges and departments historically has been largely uncoordinated. Two notable actions leading to more coordinated acquisition of hardware are:
1. In September of 1996, Technology and Information Resource published a memorandum specifying hardware standards for computer and printer purchases on campus. These standards enhance compatibility, quality of performance, and technical support availability.

2. A committee composed of lab and technology directors across the campus is in the developmental stages.

Classroom technology is expanding rapidly. Approximately 13% of faculty and staff have computers with multimedia capability. Across campus, roughly 24 classrooms could be considered “high-tech,” and that number grows each semester.

The Multimedia Center has six PC and six Macintosh computers capable of creating multimedia-assisted class presentations.

The campus has 25 computer labs in operation available for students.

A significant number of faculty have desk-top computers that are outdated and therefore unable to effectively use the Internet, particularly the World Wide Web either for communication or for instructional purposes.

**Software - Current status**

Colleges and departments are using a wide variety of software on a variety of hardware platforms. If problems develop in using one-of-a-kind software packages, it is likely that little or no help can he found on campus. The lack of standardization and compatibility of software purchases is widespread.

The general access computer laboratories all have Perfect Office and Microsoft Office software. In college labs, perhaps an additional 100 software applications exist. Students experience problems when they begin a project in a college lab and then attempt to finish it in a different lab where the software that they used initially is not available.

The student technology fee has provided for the purchase of services for students but its use is limited to new services.

Upgrading of existing software is an ongoing problem. A companion issue is that when software is upgraded, aging computers may not be able to run the newer versions.

User Training and Support Services has requested funding for universal software acquisition.

**Current Status of Equipment Obsolescence/Maintenance Procedures:**

The University currently has a sizable investment in instructional technology and the magnitude of that investment is sure to increase in dramatic fashion. Any investment of this size by an organization requires sound and careful management, particularly in times of budget uncertainties and hardships. Especially challenging are the problems of a short
life span/replacement cycle for computing equipment, usually five years or less, and the occasional need for expensive maintenance.

Technology has become so pervasive in the educational process that, despite this large investment, there continue to exist technologically impoverished academic areas within the university that lack sufficient budgetary resources to provide students with training and exposure to the mainstream technology of their fields.

Currently, needs are established and equipment is purchased in an ad hoc, random fashion as funding becomes available. There is no ongoing, permanent funding source and only informal mechanisms for equipment redistribution.

What Are Our Stakeholders’ Needs?

The primary stakeholders for instructional technology are faculty/instructional staff and students. The following section will delineate the needs of faculty viz. instructional technology, the needs of students, and the needs afforded by learning environments (i.e. classrooms [on and off campus], labs, clinical/practicum sites, web-based courses, Internet-based courses, etc.)

**General Needs of all Stakeholders**

- User-friendly access - transparent
- Site-based technical assistance -
- Discipline-specific assistance
- Decentralized decision-making within a coordinated framework

**Students**

- Ready, reliable access to computers in their dorms, at designated labs on campus, at the library, and in discipline specific applications in the classroom/lab
- Applications which cross-over from course to course, i.e. sufficient campus distribution of most commonly used applications
- Students need more ready access to hardware

**Faculty**

- Desktop access to communication, and sufficient power to produce most instructional products (e.g. Powerpoint/Astound, Inspiration)
- Site-Based training and technical assistance based on individual, and small group needs
- Ready, reliable technical assistance
- Reward systems which promote innovative use of instructional technology

**Learning Environments**

- A variety of technology-supported learning environments, (e.g. classrooms with Internet connections, classrooms with projection devices ....)
- Ready, reliable technical assistance at all times classes are offered (including nights and weekends)
Section 2: Goals and Objectives

The successful adoption of the widespread use of instructional technology will require the implementation of a series of specific recommendations concerning coordination, hardware, software, equipment obsolescence and maintenance, faculty/staff development and support, technical support, campus networking, and funding. These specific measures, when considered as a whole, constitute an Instructional Technology Plan for the University of Wisconsin-Whitewater. The plan and its recommendations are outlined below.

Faculty/Staff Development and Support:

Faculty/Staff development and support is a critical component of successful infusion of Instructional Technology methodology throughout UW-Whitewater. We have placed “Faculty/Staff Develop and Support” first because this is the keystone to effective implementation of best-practice instructional technology. Faculty/staff need encouragement and support for their efforts with incorporating instructional technology. A variety of incentives should be available to promote use of technology. For example faculty development grants, release time, summer stipends for course development, assistance in applying for extramural support, one-on-one mentoring are methods which have demonstrated effectiveness.

Each college should employ at least one full-time Instructional Technology Coordinator, utilizing the models established by the College of Education and the College of Business. This person would work closely with the Instructional Technology Specialist to provide discipline-specific support to faculty/staff.

Each college (and perhaps each department) should develop an Instructional Technology Strategic Plan to assist in setting priorities for employment of technology which best meets their specific needs.

The content of faculty/staff training should be determined by the trainees based on perceived need. Information regarding potential areas for training should be provided by the Instructional Technology Specialist to assist departments, small groups and individuals to determine the areas of training which will have the greatest impact.

Instructional Technology should be considered as one component of an overall goal of excellence in instruction. Therefore, the activities of faculty development in instructional technology, and in general teaching enhancement should be coordinated. Current status:
Goal: A system of faculty development and support that is responsive to the perceived needs of the faculty at the basic and advanced levels.

Objective 1: Design and implement a system for site-based training, provided in a discipline specific context

Objective 2: Employ at least one full-time Coordinator for Instructional Technology in each College.

Objective 3: Promote College/Department-based Mentoring Systems.
(Note: The College of the Arts as the result of a grant has developed a successful peer mentoring system which could serve as a model for other colleges).

Objective 4: The Instructional Technology Specialist will continue to organize and conduct training sessions and workshops as necessary to achieve these goals. In addition, knowledgeable faculty and staff as well as representatives from software vendors will be requested to participate in the training process.

Objective 5: The University will lend support to faculty and academic staff in the production of hypermedia/multimedia materials through the allocation of faculty development funds, release time programs and in-house grants to these efforts. The Graduate School will provide proactive support in the quest for extramural funds to pursue these activities.

Objective 6 Departments, colleges, and reappointment, tenure, and promotion committees will recognize development and use of instructional/information technology, worthy of recognition in merit exercises and deliberations.

Objective 7: A concurrent usage model will be adopted where possible to provide software access to faculty and staff for presentation and courseware development. The distribution of a limited number of copies of software across networks will greatly reduce initial software startup costs.

Implementing Strategies for Faculty Development and Support:

The College Instructional Technology Coordinators will work closely with the Multi-media Specialist (Roger Yin), and be a member of the Teaching/Learning Roundtable (and other appropriate coordinating groups). This person will have discipline-specific knowledge to assist faculty in the utilization of instructional technology within their own college and department.

The Instructional Technology Specialist will disseminate information regarding the availability of site-based training and develop a process by which departments and small groups can request site-based training.
The new policy for criterion-referenced, departmental-based standards for promotion provides an excellent opportunity for departments to explicitly recognize efforts to infuse technology into instruction. Because these standards are currently under development, it is difficult to determine the extent to which performance related to technology is being included as a part of the proposed criteria, standards, and procedures.

Faculty/Staff Technical Support:

Any movement toward increased use of equipment and advanced technology for instructional purposes requires focused planning for implementation as well as careful management of both technical and informational resources. The need for providing technical support at any level assumes that a comprehensive long term plan for instructional technology is in place. This plan will identify all implementation procedures and time tables required as it addresses the funding of instructional technologies, training and development of instructional faculty and staff, and must outline as well the qualitative goals and benefits to faculty and students.

UW-W instructional programs will improve as faculty spend valuable time teaching rather than repairing, and as they use well equipped and maintained facilities to their best educational ends. An environment should be created where faculty and staff are encouraged to pursue the development of new instructional materials unfettered by technical problems which detract from teaching effectiveness.

Goal: Equipment, hardware, and software technical support will be provided in an efficient and user-friendly manner

Objective 1: Equipment, hardware, and software technical support will be provided through a coordinated university group with the combined resources of the Computer Center and Instructional Technology Center. This group will offer campus faculty and staff on-site assistance and technical information services.

Objective 2: Increase use of student help to provide technical support to faculty/staff

Implementing Strategies

Colleges will review internal technical support needs, establish instructional technology goals and develop needs reports considering short (2 year) and long (5 year) time frames which will be used in creating funding justifications and for planning the centralized support and HELP line services. Colleges will contribute partial funding to this service but the major burden for equipment, implementation costs, and personnel will come from other intramural sources. Efforts to consolidate system-wide needs into successful DIN funding requests must be pursued as we are not the only campus with this expanding need.
Regular equipment maintenance is a critical concern for faculty and staff as they must rely on equipment to be fully functional on demand. The University may wish to review existing personnel lines for reassignment to this area, or consider new positions while looking at solutions that might also include the use of student help. (Note: cost analysis for this action should be addressed by the Infrastructure working group)

Coordination

Fragmentation remains an issue which cuts across all aspects of instructional technology. We must have a balance between the discipline-specific needs of individual faculty, departments and colleges, and the need to provide efficient and effective support in a timely and cost effective manner. The core of any plan for coordination is effective communication. Because we are in a generally decentralized environment, it is critical that key stakeholders be involved in coordination efforts. Plans need to be developed for coordination across four areas: coordination of priorities, coordination of purchase of hardware, coordination of purchase of software, and coordination of technical and instructional support services. Support services for infusion of technology into instruction should not be separated from activities related to the overall enhancement of instruction.

Goals and Objectives for Coordination

**Goal:** Effective coordination and oversight of instructional technology activities on a university-wide basis.

**Objective 1:** Establish a Teaching, Learning and Technology Roundtable

**Objective 2:** Coordinate the activities of the Teaching, Learning and Technology Roundtable with those of other similar universities. (e.g. through American Association of Higher Education, TLTR Group).

**Objective 3:** Establish Technology Committees in each of the Colleges.

**Objective 4:** Each college will develop an Instructional Technology Strategic Plan

**Objective 5:** Coordinate instructional technology activities with those of other universities in the UW system.

(Note: The working group concluded that lack of coordination of information and resources, both vertically and horizontally is a major issue across all uses of technology on the UWW campus.)

Implementing Strategies for Coordination:

For the measures outlined in this plan to succeed, coordination and integration of effort is essential. To this end a Teaching, Learning and Technology Roundtable will be
established that includes primary stakeholders. This committee will be a university-level appointed committee reporting directly to the Roundtable will act as a coordinating agent with the power to make recommendations to colleges, departments, administrative units concerning the coordination of instructional technology. Its membership should include, among others, representatives from the faculty and academic staff, and the campus instructional technology specialist.

The membership of the TLTR should include:

- Faculty who are active users of technology in their teaching (selected by College Deans)
- Faculty who have not yet, or who are just beginning to use technology in their teaching (Selected by College Deans)
- Director of User Training and Support Services
- Director of Networking and Telecommunication
- One representative from Academic Staff Assembly
- College Instructional Technology Specialists
- Director of Multimedia Technology Support Center (Roger Yin)

The TLTR will meet on a regular basis (e.g. every second week of the month during the academic year, and at least three times during the summer). The purpose of the committee is to advise the Assistance Vice Chancellor for Technology and Information Resources on all issues affecting instructional technology and act as a coordinating agent through recommendations on issues related to Information Technology to Departments, Colleges, Administrative, Units, Academic Development Committee (setting priorities for faculty improvement grants, grants related to instructional improvement, etc.) and play a leadership role in coordinating future integration of Instructional Technology into curricular and related administrative activities, and make recommendations on policy issues regarding instructional technology. The TLTR should also communicate with the American Association of Higher Education TLTR to exchange relevant information with other similar institutions. (Note: This working group recognizes that each of the working groups has recommended the development of coordinating committees. This is a reflection, we think, of the frustration generated by the current lack of coordination. The TLTR is a model which is in place at other similar universities, and is associated with a national organization of which UWW is an active member. Therefore, we recommend that a number of the necessary coordinating functions be collapsed into this or a similar structure.)

UW System is developing a structure for coordinating instructional technology activities across all of the system campuses. The specific organization of this structure is nascent at this point. It is critical that UW-Whitewater be an active member of any network which develops.

Each of the colleges should establish technology committees that serve as advisors to the Dean. The role of these committees would be to develop college-based strategic plans which are consistent with the University Strategic Plan, the University Informational Technology Strategic Plan, and also address the specific needs of the college. The specific
membership of the committee, as well as the means for selection of that membership should be established by the college. The College of Education currently has a committee appointed by the Dean, but others may choose to elect members. It is critical, however, that a variety of stakeholders are represented, and that a mixture of early and late adopters are represented. These committees should develop an Instructional Technology Strategic Plan to guide priorities for each of the colleges.

**Hardware:**

The acquisition of hardware technology on the UW-W campus should be driven by defined and identified needs that enhance instruction and improve learning. Hardware is a tool, not an end in itself. Its acquisition should be driven by applications, not by the design to pursue the ever-evolving cutting edge. Additionally, the effective use of instructional technology requires the integration, connectivity, compatibility, and expandability of systems as well as the coordination of their acquisition and use.

*Goal: A coordinated, responsive system for acquisition of hardware related to instructional technology*

**Objective 1:** A readily accessible database providing information on computers and other instructional hardware (e.g. LCD projectors, video-conference equipment, digital cameras, etc.) including evaluation of quality, competitive prices, vendors, availability of service, availability of technical assistance, etc.

**Objective 2:** The acquisition of computer hardware and other technical equipment for a variety of learning environments (e.g. classrooms, labs, remote sites, clinical/practicum sites, Internet and Web-based environments) faculty workstations, and residence halls needs to be coordinated across campus.

**Objective 3:** Increase number of servers to allow remote access to software for both students and faculty/staff.

**Objective 4:** Coordinate Hardware purchases

**Implementing Strategies:**

A data-base will be developed by (TBA) updated regularly and disseminated, perhaps through the UWW Web page. The content will include: current preferred standards for computers, peripherals, and descriptions and qualitative analysis of other instructional technology equipment such as LCD projectors, video conferencing equipment, etc. The content will also include preferred vendors, and current prices (or vendor WEB sites which provide pricing information)

Continued updates of standards for hardware acquisition provided by Technology and Information Resources will help in the effort to make hardware compatible across campus.
An active committee consisting of lab and technology directors from different areas on campus will further assist in coordinating purchase and use.

The acquisition of computer hardware and equipment for classrooms, labs, faculty development workstations, faculty offices, and the Multimedia Development Center will be coordinated to encourage standardization and compatibility between and among these different points of access to instructional technology.

The university as a whole as well as individual colleges will need to continue to acquire hypermedia/multimedia-capable instructional technology hardware for use in classrooms, labs, and faculty offices. The university and colleges will also share responsibility for adding servers that will allow remote access, giving students the opportunity to use a wide variety of software from many networked sites.

Continued expansion of existing computer labs, more lab sites, and additional computers in residences to allow ease of student access to technology. More staff will be necessary to train users and to support and maintain the additional hardware.

Colleges will provide all faculty and academic staff with computers with sufficient power to effectively utilize the Internet and to produce basic instructional media.

The University as a whole, and Colleges separately, will make a commitment to acquire the necessary hypermedia/multimedia-capable instructional technology hardware necessary for classrooms, student labs, and faculty development workstations which will be distributed geographically throughout the campus.

The University will continue to expand, upgrade and maintain the Multimedia Development Center.

**Software:**

Software programs and packages (e.g., applications, utilities, courseware, etc.) are indispensable in an integrated instructional technology system. It is critical to select software packages not only serving different end users' needs, but also meeting the compatibility requirements with the hardware either readily available or to be purchased. In addition, modern software design increasingly focuses on user-machine interface issues. The "know-how" of making the interface as transparent as possible so that the learner/user can both effectively and efficiently use the software becomes more and more important. This trend reflects the fact that many current software development efforts take cross-platform compatibility into account from very beginning of their program design.

**Implementing Strategies**

Faculty/staff preferences must drive instructional software acquisition. The campus Multi-media Specialist and the Teaching/Learning Roundtable will play a key supporting role in the identification and evaluation of appropriate software to meet these needs. In this endeavor, the instructional technology specialist will respond to, and work with, relevant multimedia user groups on campus. It may become necessary to establish a
working group of faculty to serve as an instructional software selection committee that will identify, test, and recommend instructional software for purchase.

The acquisition of software associated with instructional technology will be coordinated for compatibility with other on-going instructional projects on campus. The University will site-license required software wherever possible to include standardization and compatibility.

The Instructional Technology Coordination and Oversight Committee will assist in the coordination of these efforts between colleges and instructional units.

**Relationship of Campus Networking to Instructional Technology:**

As UW-Whitewater creates a campus-wide fiber optic backbone network, several factors must be considered to make this network amenable to transmission of computer-based instructional software, potentially incorporating text, images, audio, and video, in an efficient and effective manner to students and faculty. Requirements of the university's instructional program include accessing resources available at other locations around the world, delivering instruction at a distance, running instructional software remotely, video conferencing, and making accessible any campus resource a user is entitled to from anywhere on campus or from off campus via modem. Distance learning opportunities exist to serve those without easy access to educational programs around the state, non-traditional students, members of the business community, and in-service teachers and administrators.

The network must have bandwidth capable of transmitting interactive, real-time video, audio, and data traffic to the desktop in a seamless manner regardless of protocol. The network should appear transparent to the end user, enabling connectivity between various types of networks and the use of graphical interfaces.

**Section 3: Options to Achieve Future Goals and Objectives**

Many of the recommendations presented in this document can be accomplished with existing resources if priorities are reordered somewhat. Other recommendations, such as employing an Instructional Technology Specialist in each college will require additional funding in addition to reallocation of FTE’s.

Funding sources are limited. Exclusive reliance on intramural sources currently available for the implementation of this plan will probably not satisfy the investment necessary to accomplish its goals. Internal sources can be looked to for support in many of the plan's recommendations as we begin the implementation process but it will require aggressive extramural funding efforts and long term external support for success to be achieved in the long term.

NOTE: This section will be expanded

**Potential Intramural Sources of Funding:**
UWW Faculty Development
UW System Grants Foundation  
Academic Staff Development  
UTIC  
Summer Faculty Enhancement  
UW-W Research  
QRP 2 (Gen. ED./Teach. Exc.)  
Undergraduate DIN  
Lab/Classroom Modernization  
General Computer Access - limited source  
Valentine Fund  
Program Revenues  
Segregated Fees - Targeted initiatives  
State Wiring Project - in progress  
Fiber Optic Project - in progress  
Distance Learning Pilots - just beginning  
Technology Fees

Potential Extramural Sources of Funding:

FIPSE  
National Science Foundation  
National Endowment for the Humanities  
US Department of Education  
Corporate Sources - Partnerships with industry  
Private Foundations

Goals and Objectives:

All areas incorporating instructional technologies as a part of development and delivery of educational information will be supported. Support will include active long term funding strategies for equipment/instruments, hardware, software, instructional information resource acquisition and update as necessary, faculty/staff training and development, fully accessible networking environments, repair, technical and informational assistance at all levels.

Implementing Strategies:

Implementation at any level should try to weave all aspects of the plan as cohesively and balanced as possible. As funding is one of the greatest limitations to full implementation we must take aggressive action on a continual basis to secure the funding necessary to pay for campus initiatives. A combination of intramural and extramural sources, and the following measures will enhance the implementation and steady growth in instructional technology.

Colleges and Departments will examine instructional technology priorities and needs and will assist in funding support of instructional technology initiatives. Funds are very limited at the college level and are not to be considered as sole source for IT implementation.
Campus administration will examine program revenues and other university accounts for possible reallocation of resources for instructional technology implementation.

Create a University Corporate Advisory Board. This group can help in aligning the campus with possible sources of funding while also providing input on educational goals from industry perspectives. A primary purpose of this group will be to establish partnerships with industry to the mutual benefit of UWW and to the specific businesses.

UW-W Administration must regularly coordinate internal needs with other campuses to establish new DIN initiatives as this method of approaching the state government for funding has been successful in meeting other directed financial needs.

Where Intramural and Extramural funding is identified as available, the UW-W must aggressively participate in application procedures and take appropriate measures to facilitate grant success.

Faculty efforts to expand facilities and instructional programs through grant writing should be supported by grant development funding. These efforts should be rewarded through merit recognition and when appropriate, short term reassignment for implementation of the project. Using our expert faculty resources wisely and with flexibility will greatly increase the potential for implementation success.

Explore closer relationships with corporations and use instructional technologies and distance learning avenues as bridges for creating centers serving corporate educational needs.

Aggressive and regular public relations efforts focused on issues that affect future university initiatives will be necessary especially where tax dollars to support programs are needed so that our needs and the quality of the educational goals are understood by the public and by our state government. Using our expert resources wisely and with flexibility will greatly increase the potential for implementation success.

Section 4: Support and Access Issues

Many of the costs related recommendations in this report revolve around the issue of support. A real commitment to additional support will be needed for the upgrade and maintenance of hardware and software on campus. Continued and enhanced support for user training is equally important. Finally, our labs must have support staff to keep a variety of general access labs and decentralized college labs open and their technology accessible to users. The budget issues related to these needs are sizable, and are addressed below.
To facilitate faculty access, the faculty matching computer program needs to continue, with new focus of keeping faculty computers updated. This is the only way to involve faculty in computer based instruction in the classroom or in their own research.

Section 5: Budget and Staffing Implications

The employment of the Instructional Technology Coordinators for each college has budget implications. Because of its size, Letters and Science may require two full-time equivalent staff. At approximately $42,000 each for 3.5 additional FTE (assuming that the current 1.0 FTE for the College of Education, and .5 FTE for the College of Business continue) the budget implications for this will be $147,000 per year additional dollars. This recommendation will also require that 3.5 FTE be reallocation to these position. Each college should address the issue of this decentralized cost.

The faculty matching computer program also has a cost that needs to be covered. The College of Business currently has all of the systems they need, with half of these at or above the Pentium level. The College of Letters and Science still needs about 20 computers. The College of Education has completed its initial purchasing needs, but reports that 70 or their 85 systems are ready for an upgrade. The College of Arts and Communications needs 10 systems. At an approximate cost of $2500 each, this total $75,000 to complete the initial purchase program. We recommend a replacement of outdated systems every 4 to 5 years. The faculty matching computer program must become a permanent, ongoing commitment to keeping equipment updated. The $75,000 per year currently allocated will not meet this need for a 4 to 5 year replacement cycle.

The upgrade and maintenance of hardware and software is a growing issue of real concern on campus. The current 10% of lab modernization purchases that is set aside for maintenance is not adequate. Perhaps all hardware/software related purchases made in departments and colleges could be required to set aside 10%-12% to be kept in the department/college budgets for maintenance needs.

We currently have over 30 computer labs on campus. The staffing-support for keeping labs open should have some dollars allocation, but the dollars mount up too quickly to believe. Keeping 30 labs open 40 hours a week for a semester at $5.00 an hour totals $90,000 per semester. Alternative to hourly pay need to be investigated. Networked software across campus could solve part of this problem. Although Department of Business Education and MCS interns may supply some of the needs for student interns as monitor, some regular pay should also be available to augment the staff program. $40,000 per year is a beginning.

The User Training and Support Service (UTSS) unit is responsible for desktop support, instructional technology, the general computing access labs and the campus-wide information system (CWIS). This area is the primary support unit on campus, and it is in desperate need of an infusion of dollars. The updated November 1996 report from UTSS reports a shortage of 6.5 support staff needed to meet current needs. This Instruction Technology committee report recommends hiring these 6.5 additional staff in the areas of Desktop Support, Instructional Technology, General Computing Access Labs and CWIS.
At $42,999 per position, the total is $273,000 per year. This recommendation does not address the source of the required additional FTE. We cannot continue to acquire equipment without supporting its maintenance, upgrade and related training. Possible sources of funding for UTSS should be explored, including a maintenance contract with campus departments of colleges, and a network fee.

Sufficient multi-media classrooms should be available to support faculty infusion of technology into classroom-based instruction Each college should in its strategic plan establish a base level for development of multi-media classrooms. The current average cost for transforming a traditional classroom is $18,000. The cost for establishing a classroom/lab with multiple user stations is much greater. The support for each of these labs is an ongoing and larger cost. WE need to have enough multi-media classrooms to meet the needs of faculty using (or projected to be using) multi-media. Many faculty and many classes are best suited to non-electronic modes of instruction. If 20% of faculty plan to teach using electronic technology, 20% of our classrooms must be ready to meet that need. The campus needs to continue to support the "low tech" needs of other classroom/labs.

This proposal doesn’t directly address the purchase of groupware software. However, it is critical that when the selection is made for campus groupware, that the specific software selected be one what can support instruction as well as administrative functions.

Section 6: Summary of Recommendations

The following recommendations summarize the finding of the Instructional Technology Working Group.

- Increase technology support by addressing the growing need for maintenance and support of hardware and software
- Maintain current user training efforts, and enhance incentives for faculty involvement
- Provide user-friendly faculty support, i.e. site-based faculty development, faculty development which emphasizes use of technology to support student learning
- Employ an Instructional Technology Specialist in each College
- Develop a Teach, learning Technology Roundtable and a liaison with the American Association of Higher Education TLTR group
- Promote college-based Technology Advisory Teams
- Continue the Faculty Matching Computer Program
- Require that each college develop its own strategic plan to establish specific priorities for instructional technology development and implementation
- Develop an informational data-base on recommended standards, prices, and vendors for the purchase of hardware and software related to instructional technology
- Establish a means for coordinating faculty support, technical assistance, hardware and software purchase.
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Background

The campus is fully networked at this time. There is a functional backbone network running through campus and most building have their own local area networks which in turn are connected to the backbone. This network is functional and maintained by a knowledgeable support staff.

Since the campus network and its links to the Internet have reached a point where stability and sophistication are not major issues, it is time to focus on how the network can better serve the user population and to establish a foundation for future growth and upgrades. The university must remain poised to become an active partner as existing technology evolves and new technologies emerge. The infrastructure must be developed and maintained to allow access to technologies such as voice, data, video, interactive chat, shared white-board and other yet to be imagined technologies. The projected increase in demand for high speed communications both for on campus as well as to the Internet will have to be anticipated and budgeted for.

To really be valuable, communication systems must become ubiquitous, much like the telephone or regular mail because the utility of the resource is maximized by its widespread availability and adoption. Therefore, as an overall goal, we seek to maximize the adoption of networking services. To increase adoption by the user community, it is important to provide a array of quality services while holding down user costs.

Goals

In general we have the following goals:

1. **Ubiquity.** The rights and privileges extended to UW-W students, faculty staff and other authorized users to networking services should be available independent of platform and location.
   - Independent of platform specifically includes PC, Mac, and in the future, network computers.
   - Independent of location specifically includes classroom, office, dormitory, local community, and cyberspace.

   For example, resources whose license restricts access to UW-W students, faculty, or staff, should be accessible independent of location, e.g. off-campus.

   A second example may be the ability to access your office computer's resources, (e.g. network or local hard disk) independent of location.

2. **User rights.** Users should not be restricted or denied access for expressing or receiving constitutionally protected speech for educational and/or professional activities integral to the purpose of the university. User's access should not be changed without due process, including, but not limited to, formal notice and a means of appeal.

   Users have both the right of confidentiality and the right of privacy. The university should uphold these rights by policy, procedure, and practice. Users should be advised, however, that because security is technically difficult to achieve, electronic transactions and files could become public.

3. **Simplicity and Support.** Services provided should be very easy to install, use, and support.

   The cost of software and difficulty of installation is critical to adoption by our students, especially those off-campus where support resources are invariably limited.
Quality support for users must be available when needed. Quality support is timely, knowledgeable and platform independent. All users should be supported by a combination of E-mail, phone, and web services. Additionally, on-campus users should have on-site support.

4. **Economy.** The cost of networking services should encourage a 100% adoption rate.

5. **Applications.** Network application functionality should include, at minimum, those provided by the leading Groupware Platform providers. This functionality includes:

   - E-Mail integrated with web browser;
   - Asynchronous conferencing groupware to facilitate structured discussions;
   - Joint editing of a shared document;
   - Searchable document databases;
   - Real-time conferencing via audio, video, shared white-board, and chat;
   - Voicemail capability.

The leading groupware platform providers include: Microsoft, Lotus/IBM, Novell, and Netscape. Furthermore, the adoption of “Browser-based” applications and application framework will maximize goals 1-4 above. The benefits of networking services should encourage a 100% adoption rate.

**General Recommendations**

Because UW-W is a large and diversified organization, the Networking Group believes UW-W can benefit from any application that facilitates groups to communicate and collaborate on group activities. Towards that end we recommend that UW-W:

1. **Groupware platform.** Choose a groupware platform provider that strongly supports open standards. The utility of applications will be enhanced by supporting the following:
   - All hardware platforms, e.g. IBM, Mac, etc.
   - Full support for native, widely adopted, standard Internet protocols.

2. **Development platform.** Chooses a groupware platform provider that gives us a common programming environment, such as Netscape ONE, to use in developing our own applications. This will enable locally-developed applications to interact synergistically with commercial applications. For example:
   - Use the browser software development tools to make on-line UW-W class registration available over the Web to anyone with an appropriate browser.
   - Use browser software development tools to develop software that allows users to add money to their Universal Card used at the UW-W library, food services and bookstore.

3. **Benchmark Institutions.** Chooses a small set of institutions to use as a benchmark when measuring the progress made here at UW-W. Careful selection of the benchmark universities is very important. However, we find a rather uneven use of web technologies across universities at this time. Consequently, these institutions are to be identified in a separate document.
Specific Recommendations

Since there is only one network serving the campus, it follows that the maintenance and funding of the related infrastructure should be centralized to ensure a reasonable level of service to all users. The need for additional disk space on the servers, the need for faster hubs, and the need to add one more user to a server at capacity are examples of problems better solved by the centralized model. Not centralizing places the burden entirely on a department that may not have access to resources elsewhere on campus.

Access to the resources of the Internet by both academic and administrative offices has become a necessity. Increased use and the need for greater band width to support new applications are examples of factors that will at some point require the upgrading of the existing T1 line. Whether is use of the proposed BADGERNET or a private vendor there will be an increased cost and since there is a single point of access to the Internet, it becomes a campus wide funding issue.

In support of the General Strategies 1 & 2 above, we recommend a browser as the source of our Groupware and software development platforms. That is, we recommend the university use a browser as its groupware application suite, and also as its software development platform. Furthermore, we recommend choosing the same vendor as the source of other "servers".

The other General Strategy goals (Ubiquity, User rights, Simplicity and Support, and Economy), do require the direct expenditure of funds to implement. Since the implementation of one recommendation has minimum financial impact on the implementation of the other recommendations, we see them as all relatively equal in priority. But, we suggest the following approach since the outcome of goal #5 is the most visible:

A. Implement Goal #5 first. Begin by testing the browser in a Windows 95 environment. When it proves itself technically, and its support issues are resolved, we recommend proceeding with the deployment of the browser. Then,

B. Implement the remaining General Goals 1-4. The university should proceed to implement those goals in parallel as circumstances warrant.

Budget and Staffing Implications

Internet Connection Link Upgrade

$5,000 annually

The campus has reached the point where Internet services are critical to the functioning of both administrative and academic programs. Therefore sufficient Internet connection capacity is a necessity. At some point an upgrade to the current T1 level of service will be necessary and this will require additional funds. If it is through BADGERNET the monies are needed to cover the last mile. The requested funds are to be set aside for an upgrade reserve fund.

Network Hardware Maintenance

$57,000 annually

Since the useful life of all computing and communications hardware is relatively short, a fund needs to be created that will fund hardware upgrades as they become available and necessary. Not to do so will result in an inadequate infrastructure to support the future initiatives academic and administrative programs.

Network Hardware Upgrade Program

$60,000 annually
Since the life expectancy of hubs, servers, interfaces, routers, modems, terminal servers, etc., is relatively short, a fund needs to be created that will pay for hardware upgrades when better hardware become available and needs dictate the upgrade. Not to do this will result in the university limping along with outdated equipment while special funding requests go forward for approval for each new need.

**Network Software License and Upgrade Program**

$75,000 annually

The NOVELL software that drives the network servers on campus is not supported by any agreement that provides new releases and support. This operating system need to have the same level of support that the ALPHA, IBM mainframe and WANG have traditionally had. A site license needs to purchased and renewed annually that allows access to updates and necessary support to fully utilize their features.

**Research & Development Networking Position**

$50,000 annually

To be able to provide a near state-of-the-art network for campus requires a commitment to funding positions that are dedicated to the exploration of new technologies. Furthermore, the campus needs to proceed with technologies to support distance learning initiatives. To adequately meet this goal will require a position who will spend the majority of his/her time in research and testing. Given the nature of the position, it would seem most appropriate if this position were joint between T & IR and an academic unit.
APPENDIX
PRIORiTY 2
UW-Whitewater will deliver state of the art programs and services.

GOAL 2.1  Academic programs that are intellectually challenging, current, and dynamic.

STRATEGIES
a. Provide an array of academic programs that reflect best practice within the disciplines.
b. Conduct regular program audits and reviews to improve programs and appropriately allocate/reallocate resources.
c. Conduct periodic reviews of the curriculum to ensure efficacy and efficiency in achieving program goals and objectives.
d. Establish a four-year plan of course offerings for each undergraduate major that ensures students, who follow the plan, a four-year degree.
e. Review each major for the feasibility of a three-year degree plan.
f. Address course availability, class scheduling, and class size needs.
g. Reduce the average number of credits that students attempt while earning a baccalaureate degree to 135.
h. Engage external advisory boards to ensure relevancy and high quality of all programs.
i. Offer courses that focus on integration and application of coursework and on career information and employment strategies.
j. Require capstone experiences in all graduate programs.
k. Encourage students to lease/purchase a personal computer that meets UW-Whitewater technology standards.

GOAL 2.2  Administrative, student, and academic support services that are current, dynamic, effective, and in alignment with the institutional mission.

STRATEGIES
a. Review the University's administrative organization and functions to enhance efficiency and effectiveness.
b. Conduct regular office/program audits and reviews to improve programs and appropriately allocate/reallocate resources.
c. Realign programs and services across the University and foster collaboration and a team approach in achieving mutual goals.
d. Encourage the Wisconsin Civil Service System to become more effective in re-deploying and retraining the existing workforce to meet the needs of new and changing jobs.
e. Evaluate and consider alternatives for providing quality, cost effective support services.
f. Assure that all process review and improvement initiatives address client needs.
g. Enhance career development services for students.
GOAL 2.3  *A current technological and physical infrastructure that effectively supports academic programs, support services, and outreach activities.*

**STRATEGIES**

a. Invest in technology, facilities, furnishings, and equipment to improve the quality of workspace and tools to enhance productivity.

b. Upgrade and remodel physical facilities to encourage and facilitate student learning.

c. Implement the Campus Master Plan for physical facilities.

d. Develop a comprehensive institutional technology plan.

e. Infuse and integrate technology into appropriate aspects of administrative and support services.

f. Utilize state of the art instructional technology to enhance student learning whenever possible.

g. Complete the campus wiring and network project to provide for timely access to information and sharing of resources.

h. Upgrade the campus access to the Internet to meet the changing needs of learning, teaching, research, and administrative activities.

i. Increase end-user access to institutional data for use in assessment, budgeting, reporting, and daily operational functions.

j. Provide technical support and encouragement to students, faculty, and staff for creative use of information technology.

k. Extend the use of information technology and pursue its innovative application in meeting institutional advancement goals.

l. Collaborate with other institutions in order to share technical expertise and reduce duplication of effort.

m. Provide on-going training in the area of information technology for all faculty, staff, and students.

**PRIORITY 3**

UW-Whitewater faculty and staff will be exemplars in their fields.

**GOAL 3.1  A diverse instructional staff, nationally recognized for their achievements, who are outstanding teachers, productive scholars, and active contributors of professional, university, and community service.**

**STRATEGIES**

a. Screen candidates for instructional positions carefully for evidence or promise of excellence in teaching, research, and service - particularly in teaching.

b. Review evaluation procedures for instructional staff so that collectively they constitute an objective, integrated, consistent, and effective system.