

Committee Name:

**Senate Committee – Privacy, Electronic Commerce and Financial Institutions
(SC–PECFI)**

Appointments

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Record of Committee Proceedings

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1999-2001 University of Wisconsin System
Information Technology Plan

Building a Foundation for a Changing Future:
The Information Technology Infrastructure



Office of Learning and Information Technology
University of Wisconsin System Administration
Madison, Wisconsin

The University of Wisconsin System

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The 1999-2001 UW System Information Technology Plan

was prepared by:

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Executive Summary

The 1999-01 University of Wisconsin System Information Technology Plan builds upon the 1995-97 and 1997-99 IT Plans by continuing and expanding development of the Systemwide Technology Infrastructure and the Distributed Learning System (DLS). The goal is to support the teaching, research and public service mission of the University of Wisconsin. This IT Plan is divided into two major parts: Systemwide Infrastructure and Campus Infrastructure. Infrastructure is defined as a “base that is universally accessible (systemwide), potentially used by all, and has value in its ‘commonality.’” The Systemwide Infrastructure section focuses on common academic applications and administrative systems.

The University of Wisconsin is currently engaged in developing four critical academic applications. These applications are parts of the Systemwide Infrastructure because each meets the three-part definition. The first and most critical is the Web-based Learning Support System. This system is built on aggregated and distributed services and support functions, and is the foundation for both Web-enhanced courses (on-campus education) and Web-based courses (i.e., distance education). The Web-based Learning Support System is one component of the Distributed Learning System (DLS) which includes new types of library services, course redesign, hosting services, and learner support services. Key players include UW Learning Innovations, UW-Extension, UW System Administration, and many UW System institutions. The second application is distance education. Following Board of Regents approval of the “Principles for Pricing Distance Education Credit Courses, Degree and Certificate Programs,” the UW System plans to develop strategic systemwide directions for distance education technologies. The third application is the new systemwide library automation system, which will expand services dramatically for all members of the UW community. The common library system will also provide a technical architecture, which will enable the possibility of new services such as indexing and seamless access to multi-media databases. A fourth academic application is the common database licensing project which will provide anytime, anywhere access to a rich variety of full text information resources for all UW students, faculty and staff.

Many of the Administrative Systems, which the UW institutions are building in common, will directly meet faculty, student and staff needs. Although these systems provide business tools to more efficiently and effectively operate UW institutions, they also allow students to make better informed decisions about their own education, and will provide much improved student support. In the next two years,

the UW System will complete implementation of a new Common Financial System, begin implementation of a common Human Resource/Payroll System, and continue to move toward a common Student Administration System. The UW System will also move to implement a common Identification, Authentication, Authorization (Directory Services) System. One of the most innovative and critical pieces of our common systems infrastructure strategy is staff collaboration. The IT Plan endorses and supports collaborative efforts beyond the implementation of large common systems. These efforts will include a rapid implementation process for institutions putting up a common system, a common data warehouse approach for better reporting and enhanced management of business processes, the development of a software testing and upgrade facility to meet the need for large system upgrades at all UW institutions, a workflow re-engineering project, and a data security project.

All of these common system projects are discussed, prioritized, and approved within a Common Systems Review Process created by the Provosts, Institutional Business Officers and Chief Information Officers. This process, an important component of the 1999 IT Plan, will be assessed and refined, if necessary, over the next two years. Funding is derived through base reallocations and pooling of institutional resources.

The Systemwide Infrastructure is designed to allow individual institutions the flexibility to accomplish their particular teaching, research and service missions without competitive disadvantage as a result of technology deficiencies. Even more importantly, the infrastructure component sets up individual institutions to make decisions about how much they wish to participate in the new distributed learning environment and how much they wish to partner with other UW institutions in course and program creation and delivery using the BadgerNet wide area network.

In section four of the plan, "Campus Infrastructure," the fifteen institutions of the University of Wisconsin System plan programs and services that take advantage of the Systemwide Infrastructure. These include the improvement of faculty and student training in information technology, the implementation of more effective IT staffing models, increased access to technology resources in support of education, and building partnerships which leverage information technology investments beyond the university.

Additional funding is needed for many areas of the Campus Infrastructure, such as student computing and other technology needs, faculty and staff access to updated computers and other technologies, IT staff to support students, faculty and staff, and

faculty and student training in IT. In order to meet demands for new technology resources in these areas, the UW System will explore both reallocations and new funding initiatives.

I. Introduction

In the two years since the last University of Wisconsin System Information Technology Plan was submitted to the Board of Regents, the fifteen UW institutions have worked collaboratively to meet the goal of the 1997 UW System IT Plan, "Education for the 21st Century." That goal focused on building a technology-based teaching and learning infrastructure which supplemented and enhanced the bricks and mortar infrastructure built over the past 150 years. The intent was to focus UW efforts on faculty and student support to improve teaching and learning opportunities through the use of technology. While each institution worked hard to build its own base of faculty support, the UW institutions worked collectively to build an infrastructure that supported and enhanced individual institutional efforts.

Among other projects, the University of Wisconsin System has:

- Cut over to the ATM Sonet Network (BadgerNet) providing all four-year institutions with OC3 Internet access and multiple T-1 connections to UW Colleges
- Hired staff to provide leadership in promoting the campus-based Learning Technology Development Centers designed to support faculty in the use of technology for teaching
- Acquired systemwide licenses for computer based training products
- Carried out the first two systemwide surveys of faculty and students to determine needs and satisfaction with campus technology support efforts
- Acquired and began implementation of a single library automation system for all UW institutions
- Successfully promoted a multi-million dollar budget initiative to build library collections and to pursue electronic resources
- Began to address some of the staffing issues created by rapid technology growth through a student IT training program which will be funded through the 1999-2001 budget initiative.

The plan for the next two years builds on these successes by expanding the technology infrastructure in academic and administrative systems, to more closely integrate business and support functions across the UW System, and to achieve economies of scale in hardware, software and expertise. The plan calls for building a network-based distributed learning system which will provide support for all UW faculty and teaching staff and for purchasing and implementing common administrative systems including library, financial, human resources, student

information, and others which will improve service and reduce the cost of doing business.

This technology plan is both evolutionary and revolutionary for the University of Wisconsin System. It is evolutionary in the context of the previous two UW System IT plans. In 1995, the first UW System IT Plan proposed the distributed learning concept and suggested that to achieve it, the University of Wisconsin had to build a common infrastructure which promoted communication between institutions. The UW System developed that infrastructure over the next three years. The 1999 IT Plan harvests the ideas and concepts created in that first plan. However, the 1999 IT Plan is revolutionary in its proposition that the infrastructure goes well beyond hardware, wiring, database standards and operating systems to now include major academic and administrative applications. The 1999 IT Plan knits together the fifteen institutions in the UW System much more closely than ever before. Information technology has created an environment that encourages collaboration in teaching, learning, research, and business processes.

While the individual UW institutions will always retain the richness of diversity in their different missions and different identities, the 1999 IT Plan proposes a move toward commonality for many academic and administrative applications. The library project is an example of an application in which academic services are enhanced through use of a common system. By acquiring one automation system and bringing library business processes under common policies, the UW institutions enhance access to materials and services for faculty, students and staff at all institutions. Such collaboration is made possible by networked technologies supported by a common infrastructure. The 1999 IT Plan proposes similar applications in all areas of business services as well as key support services for teaching and learning.

The Systemwide Infrastructure proposed in this IT Plan will provide:

- A richer learning environment for our students
- A more stable support structure for our faculty and staff
- More responsive and cost-effective business services to all our stakeholders
- Better management tools for our administrators
- More flexible staffing and expertise acquisition for our Information Technology organizations
- An “insurance policy” against problems associated with rapid technological change for individual institutions

The 1999 IT Plan proposes a vision for the 21st Century predicated upon partnership and collaboration among UW institutions and with the public and private sector beyond the UW System. Such collaboration forces the UW System to examine how it does business and how it assesses its business. The technology infrastructure proposed here will provide the flexibility to cope with change and to leverage change to meet the mission of the UW System.

II. Vision

“Our vision is to support the core mission of the UW System – teaching, research, and public service – through the development of a dynamic systemwide technology infrastructure. The infrastructure will provide access to a critical level of current teaching and learning tools for all faculty and students, enhance support services through development of common systems based on the latest technology, facilitate communication and collaboration between all UW campuses, and ensure the most efficient use of resources in pursuit of this goal.”

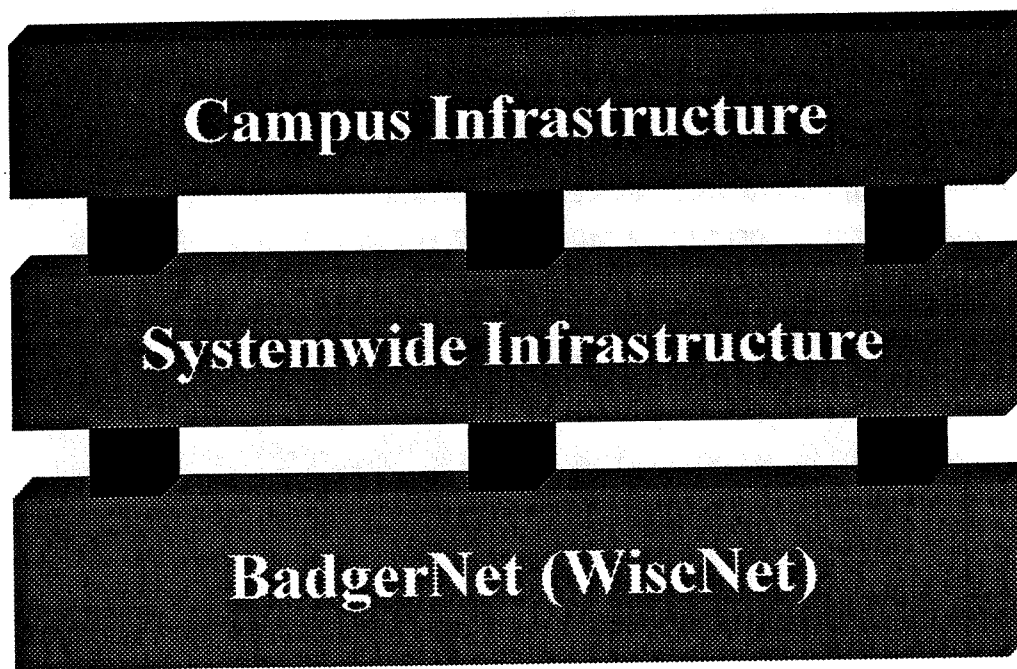
The core missions of UW System institutions (Instruction, Research and Public Service) have been dramatically enhanced by information technology. Technology has enhanced instruction by providing faculty and students with access to learning resources from around the world. Technology has also allowed faculty to better meet the varying learning styles of students through greater access to tools that use audio, video, and other interactive resources, while increasing access to learning by students anywhere in the world. Technology has enhanced research through the creation of virtual libraries, which provide access to resources that previously required researchers to travel to other countries. Technology has enhanced research and public service by allowing faculty to share ideas with colleagues from any institution.

With information technology and its use by higher education changing at an unprecedented pace, UW System institutions are faced with the problem of increasing costs associated with this changing technology. To help institutions address these changes in information technology, the UW System is establishing a Systemwide IT Infrastructure of academic applications and administrative systems. For these purposes, an infrastructure is defined as a “base that is universally accessible (systemwide), potentially used by all, and has value in its ‘commonality.’” This Systemwide IT Infrastructure is built on best business practices and enables UW System institutions to share resources and expertise and also reduce the risks associated with individual institutions having to make

individual decisions regarding major IT systems. This Systemwide IT Infrastructure, as shown in Figure 1 (below) can more easily adapt to future IT changes and also provides institutions with a solid foundation on which to build individual campus IT functions. Figure 1 shows that this Systemwide Infrastructure is network-based, built on BadgerNet. BadgerNet allows UW System institutions to share resources and eliminates many of the problems associated with the distance between UW System institutions. Campus Infrastructures are in turn built on both the Systemwide Infrastructure and BadgerNet and take advantage of both in support of their missions.

Figure 1

**Building a Foundation for a
Changing Future: The IT Infrastructure**



The University of Wisconsin System until recently followed a policy of institutional autonomy in planning and funding academic and administrative systems. Several factors (including successful development of a systemwide library support system, a collaborative instructional technology plan, flexibility of emerging technologies and the need for all institutions to ensure Y2K readiness) led members of the UW System leadership team to initiate a systemwide vision and planning process that will allow the UW System to manage technological change and ensure that technology needs are met. The key element of the initiative is the development of a Systemwide Infrastructure that will allow institutions to have access to a defined level of academic and administrative support technology without compromising institutional autonomy. This initiative is the result of collaborative efforts of provosts, business officers and chief information officers from all 15 institutions who have recognized the advantages of leveraging the economies of scale through systemwide cooperation.

There are two important advantages to this initiative. The primary advantage is to provide greater support for faculty, students and staff in meeting the UW System mission of Instruction, Research and Public Service. A secondary advantage is the efficiency and cost effectiveness of acting as a System to develop a common technology infrastructure. This is realized in the ability to negotiate favorable systemwide license agreements with technology vendors and consultants as well as the ability to create an internal support infrastructure available to install systems, train users and support common systems at all institutions. A third advantage is the successful collaboration among chief academic, business and information officers, which opens the door to additional collaborative planning initiatives on individual campuses and across the UW System.

The meeting that initiated the collaborative planning process was the Administrative Systems Summit, a meeting of all provosts, business officers and chief information officers that took place in December 1997. At that meeting, agreement was reached that commonality of support systems is desirable and should be pursued whenever possible.

Provosts, Business Officers and Chief Information Officers met together again in December 1998 to determine a process for reviewing new academic and administrative systems and building a common technology infrastructure for the UW System. The principles for this process include:

- Every UW System institution will do business within the System on a defined level.

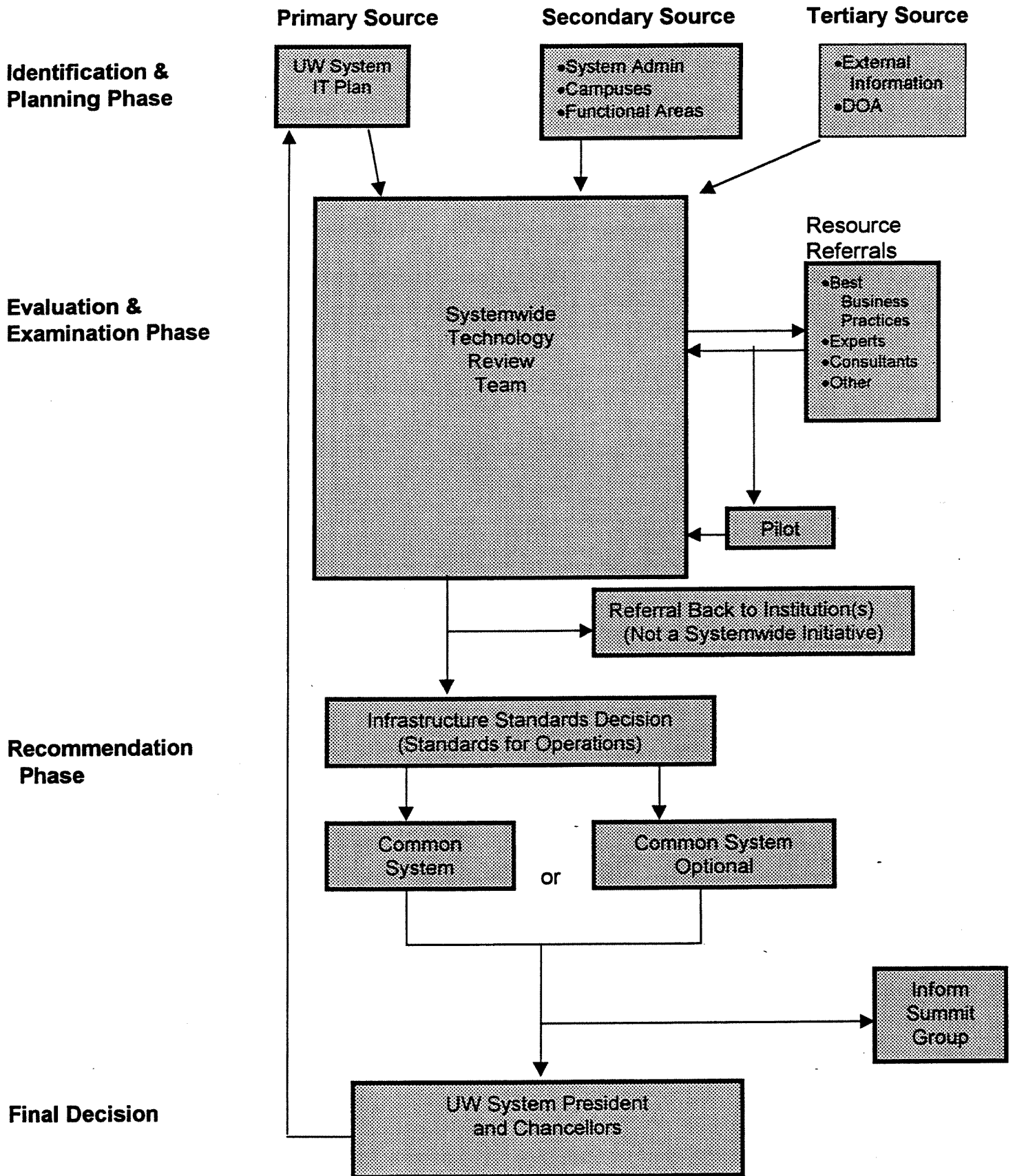
- Institutions will have discretion to determine the means to meet that level.
- When common approaches are advantageous, commonality will be encouraged through incentives.
- Specific or common technology solutions will be required only when there is a demonstrated need for common data, common services, or inter-institutional interaction and when it will be significantly cost effective.
- Decisions should include wide discussion and expert input.

A Technology Review Team, comprised of Provosts, Business Officers, and Chief Information Officers, will review potential common system initiatives and make recommendations to the President and Chancellors on:

- 1) Whether the project should be a common system,
- 2) Whether the common system should be required or optional,
- 3) Identifying a funding source, and
- 4) Assigning a priority relative to other common systems.

Figure 2 on the following page shows the process that is used in building the Systemwide Technology Infrastructure.

Figure 2
Building the Systemwide Technology Infrastructure



Since the review process was established in January 1999, the following common systems, common standards, and aggregated services have been approved by UW System institutions:

Common Systems:

- A common financial system has been purchased (PeopleSoft) with complete changeover by 2001.
- Vendor Selection for a new common Appointments, Payroll and Benefits System (APBS) will be completed in 1999-2000.
- A new Library Automation System will be installed and implemented by January 2000.
- Study Groups will make recommendations on architecture and data issues regarding an IAA (Identification, Authentication and Authorization) systemwide directory.

Common Standards:

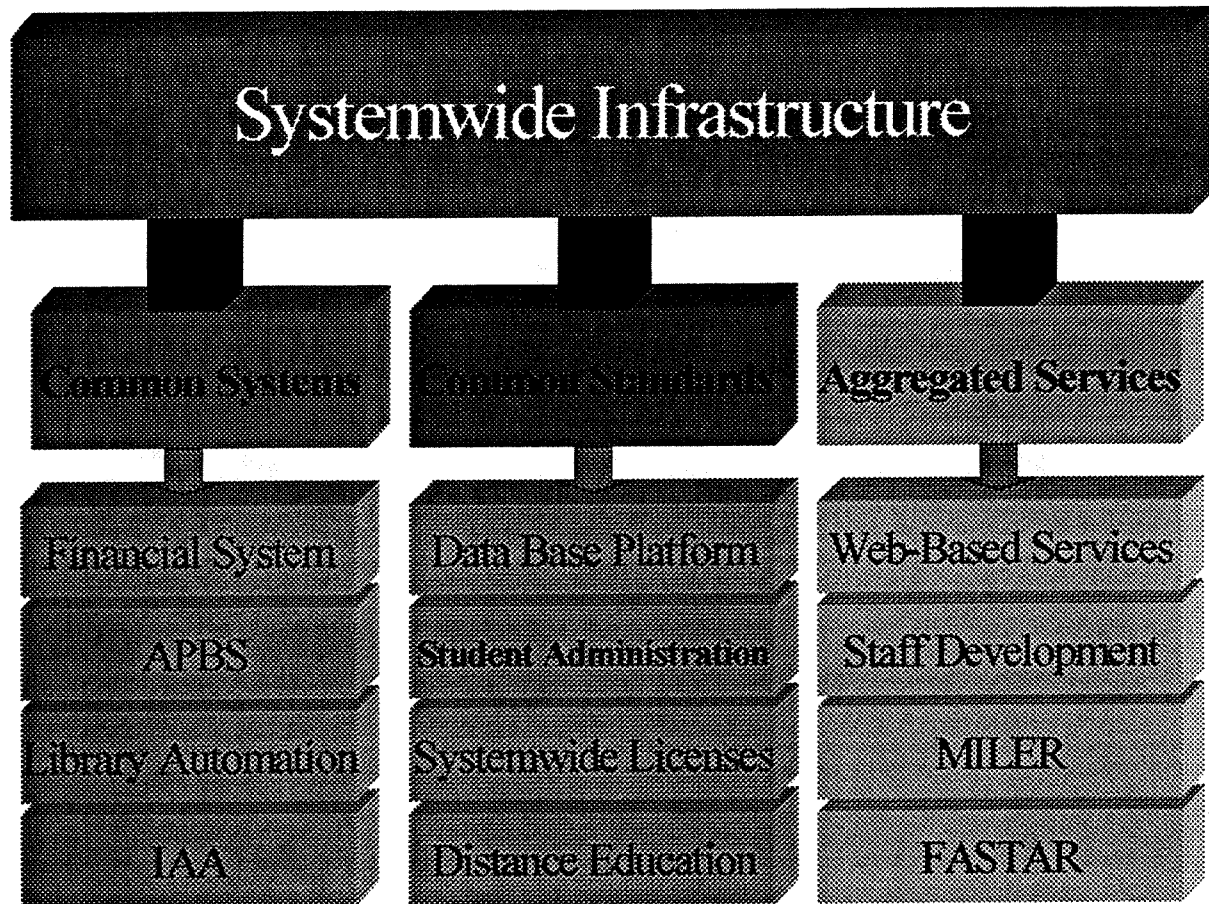
- A license has been purchased for a common systemwide data base platform (Oracle).
- A systemwide license (PeopleSoft) has been purchased for Student Administration Systems.
- The UW System has purchased and will continue to investigate opportunities for systemwide licenses and common hardware purchases.
- The Board of Regents has passed Principles for Pricing Distance Education Credit Courses, Degree and Certificate Programs.

Aggregated Services:

- A systemwide support mechanism for Web-based Learning Systems has been established.
- Staff Development has been enhanced through the sharing of expertise and resources.
- MILER (Methodology for Implementation at Lowest Effort and Resources) has been developed to strengthen the implementation and management of common systems and infrastructure.
- FASTAR (Facility of Shared Technology and Resources) has been developed to systemize upgrades and changes to the PeopleSoft Student Administration System.

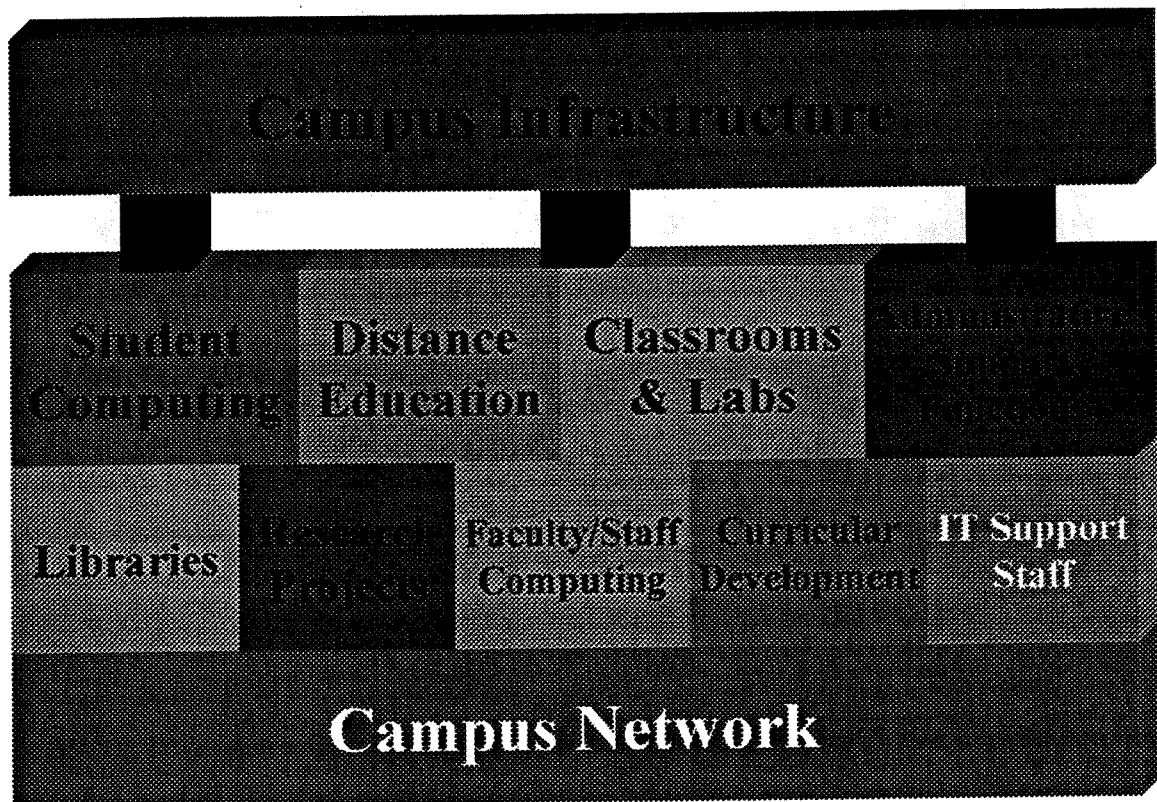
Figure 3 below is a graphical representation of the progress made in building the Systemwide Infrastructure.

Figure 3



The Campus Infrastructure represents the top level of the University of Wisconsin IT Infrastructure. Figure 4 (below) shows the wide range of IT areas that are the responsibility of each UW System institution. The components of the Campus Infrastructure are not a part of the Systemwide Infrastructure, but as shown in Figure 1, are built on the Systemwide Infrastructure. For example, each UW institution is responsible for supporting its library, but resource sharing is achieved through the Library Automation System in the Systemwide Infrastructure. Similarly, institutions have been increasing support for curricular development activities, with support provided systemwide through the Web-based Learning Support System,

Figure 4



which is part of the Systemwide IT Infrastructure. Finally, the Campus Infrastructure is built on the campus network, which depends on BadgerNet for access between campuses.

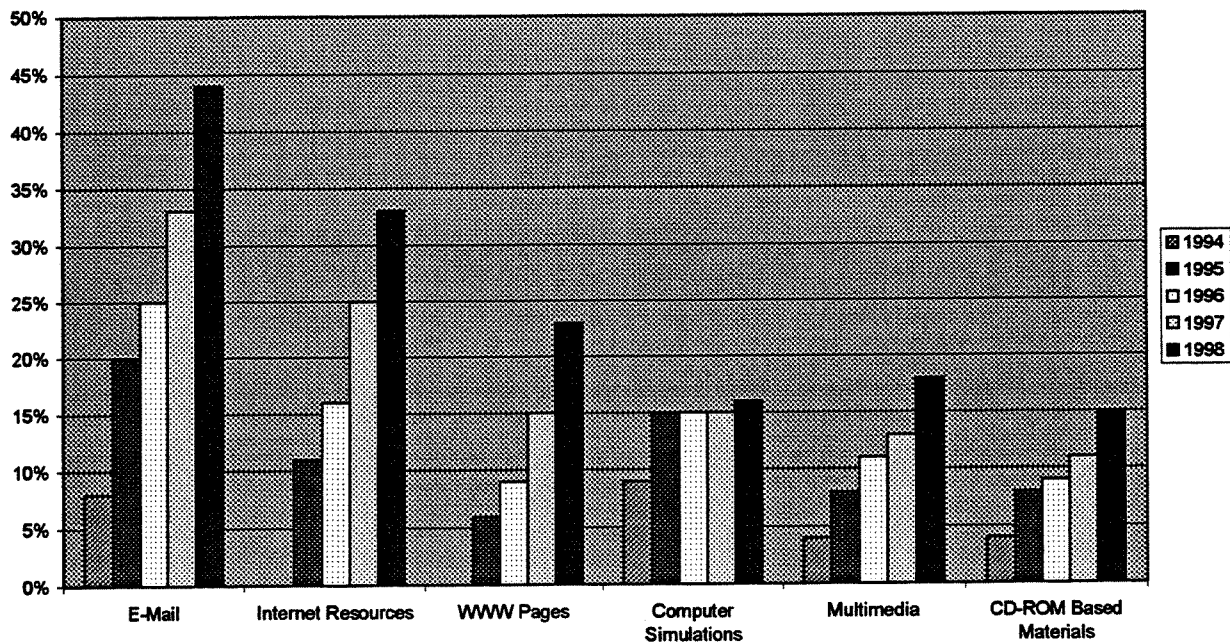
III. Systemwide Infrastructure

As explained previously, in order to increase access to education, research and public service, the University of Wisconsin System is developing a Systemwide Technology Infrastructure. This Systemwide IT Infrastructure is built on best business practices and enables UW System institutions to share resources and expertise and also reduce the risks associated with each UW System institution having to make individual decisions regarding major IT systems. For 1999-2001, the UW System will further develop this Systemwide Infrastructure through the development of Common Academic Applications and Administrative Systems.

A. Common Academic Applications

A common set of academic applications to support UW System faculty, staff and students has become increasingly important as the core missions of UW System institutions (Instruction, Research and Public Service) have been dramatically enhanced by information technology. Figure 5 (below) from Campus Computing 1998 shows the dramatic increase nationwide in the use of technology in instruction over the past five years.

Figure 5
Rising Use of Technology in Instruction



Campus Computing 1998 by Kenneth C. Green, The Campus Computing Project

The Systemwide Infrastructure is designed to allow individual UW System institutions the flexibility to accomplish their particular teaching, research and service missions without competitive disadvantage as a result of technology deficiencies. The following academic applications represent systemwide investments in support of these missions:

I. Provide a Systemwide Web-based Learning Support System (WBLSS)

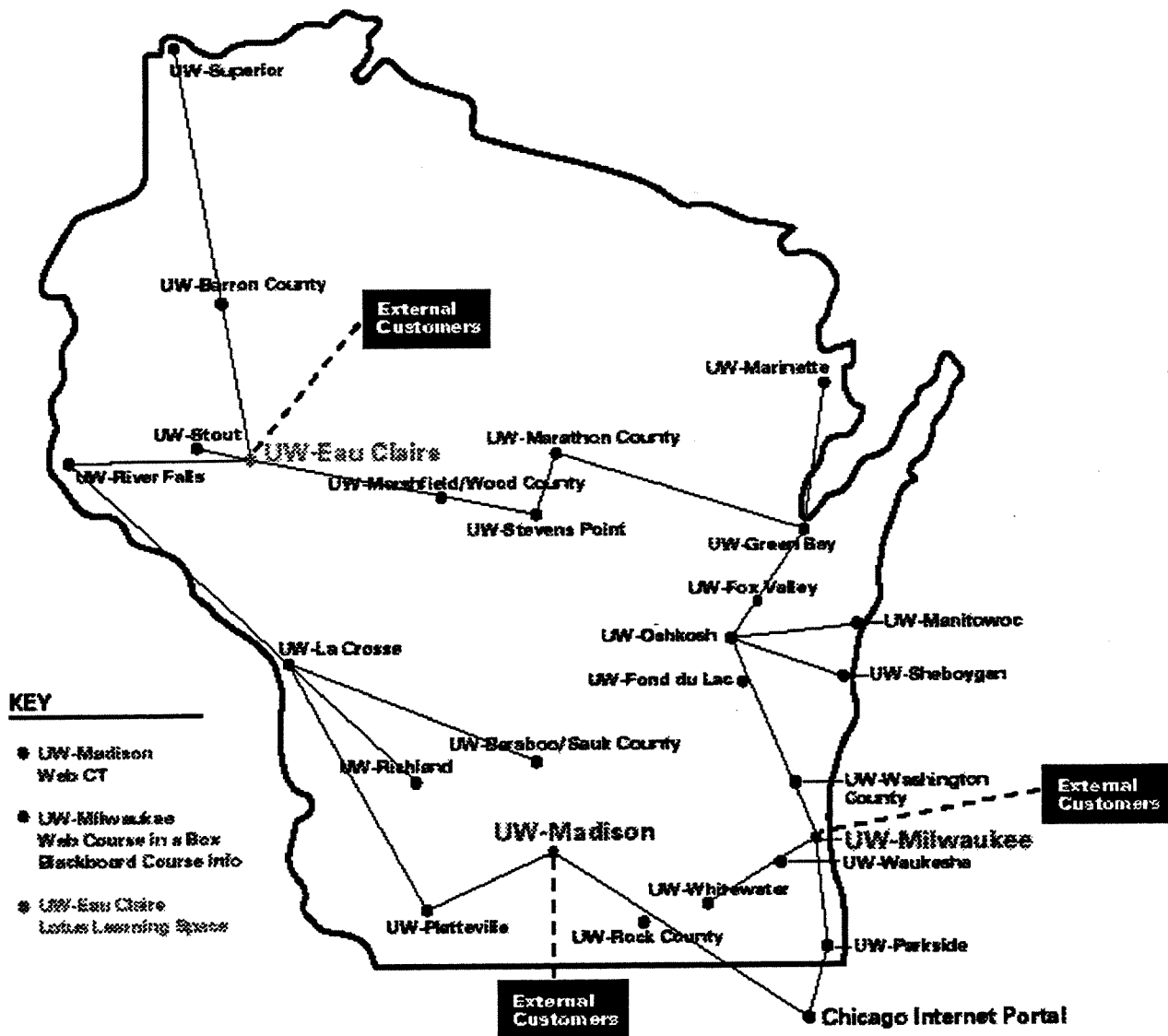
In the last several years, the emergence of sophisticated web-based learning tools allows instructional materials to be organized and on-line interaction to occur between faculty and students through the use of web-accessible software. The use of these tools has grown substantially. The *1999 UW System Survey of Computing Resources* showed that 25% of the teaching faculty and staff use the Web in a significant fashion for instructionally related activities.

In order to support the growing use of these web-based learning tools, the UW System is developing a systemwide support mechanism to aggregate services to support four of the most commonly used web-based tools at UW System institutions. These tools are Web Course in a Box, Blackboard CourseInfo, Lotus Learning Space, and WebCT. Providing support for these web-based learning tools is becoming too costly for individual institutions. By aggregating services, UW System institutions will realize efficiencies and economies of scale, improved services, and the development of a pricing model. As shown in Figure 6 (page 20), the Web-Based Learning Support System aggregates support for WebCT through UW-Madison, Web Course in a Box and Blackboard CourseInfo through UW-Milwaukee, and Lotus Learning Space through UW-Eau Claire.

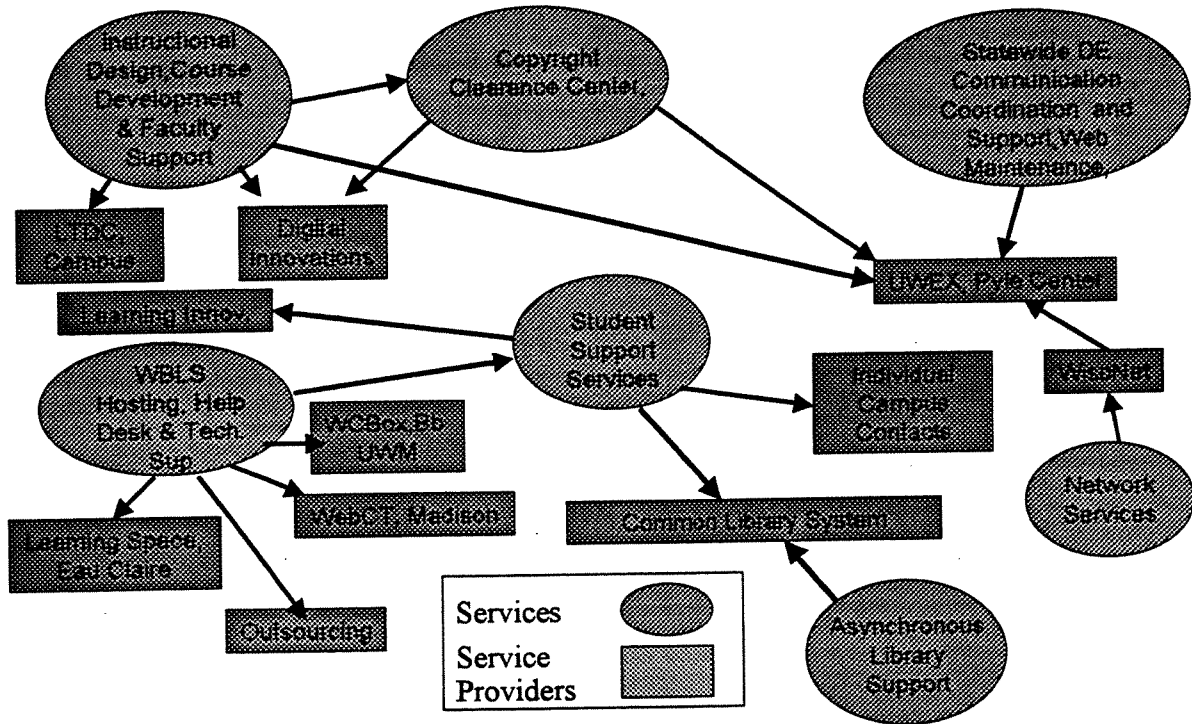
The goals of aggregating services are: 1) to provide all UW campuses with the opportunity to use web-based learning technologies to enhance teaching and learning, 2) to guarantee a teaching/learning system infrastructure (including software, hardware, and staffing) that will enable on-campus or off-campus use of web-based courseware, 3) to provide a long term model which will ensure core services to web-based tools for all UW faculty and teaching staff and provide support for the emergence of those newly identified services which address our core mission, 4) to provide a model to support new web-based learning tools, and 5) to provide fee-based support services, where possible, for education partners outside the UW System.

The funding model for this systemwide support mechanism for these web-based learning tools involves the use of pooled systemwide funds for several years in order to reduce “chargeback” overhead, encourage wide use of web-based learning tools, and build a base of enough institutional users to allow serious analysis of new models of teaching and learning.

Figure 6
Web-based Learning at UW System institutions



**Figure 7
Distributed Learning System**



The Web-based Learning Support System is but one component of the Distributed Learning System (DLS) shown above in Figure 7. DLS is “the total collection of systemwide learning resources available to faculty and students anywhere and anytime.” Additional portions of the Distributed Learning System will be tested in the next two years. Each portion must have a business plan so that costs per student are clearly understood. Important in this menu of services is UW Learning Innovations, established in 1997 to provide curricular redesign and student management services for asynchronous, Internet-based programs. Learning Innovations served as a catalyst for the organization of distributed learning systems using faculty expertise across the UW System. Learning Innovations will continue to play a pivotal role in the DLS, particularly in a student management system. The UW System will support other pieces of the DLS, including a virtual library system and a copyright clearance center. Faculty will be able to pick and choose the services they need to support their courses.

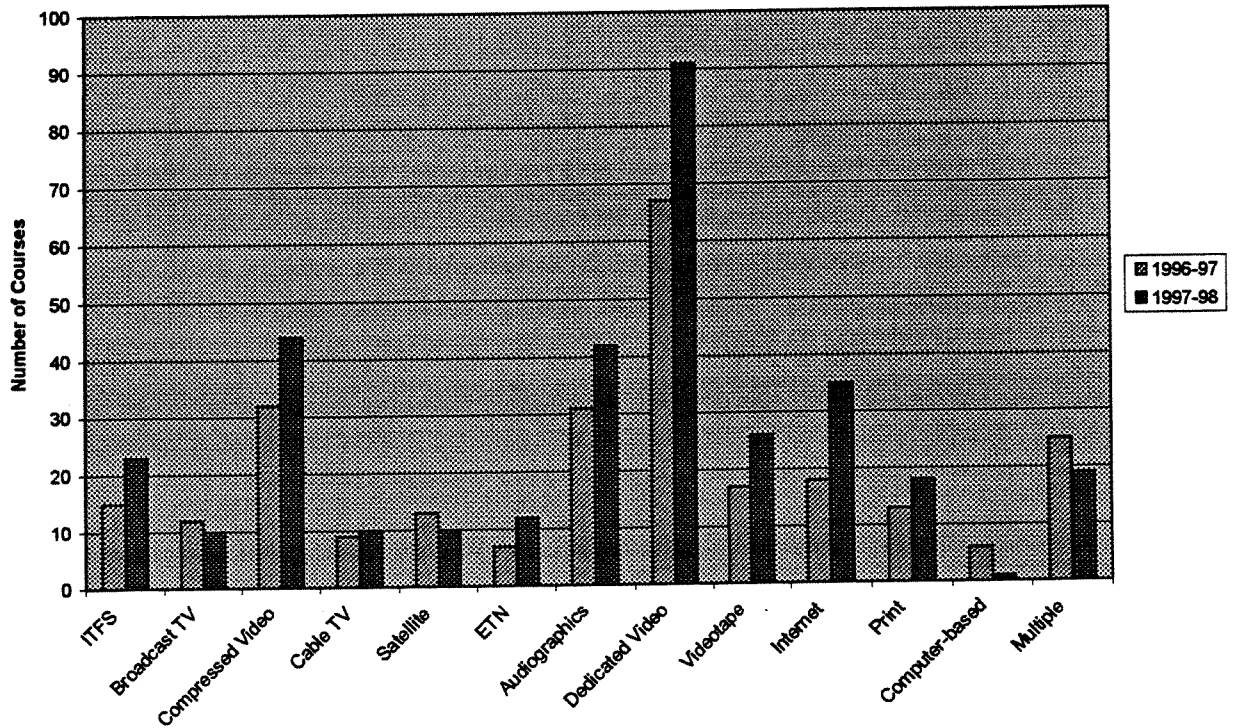
2. Develop strategic directions for distance education technologies

In June 1999, the Board of Regents passed the "Principles for Pricing Distance Education Credit Courses, Degree and Certificate Programs." These principles will provide the foundation for a new tuition model for distance education courses and programs. Furthermore, these principles will facilitate development of systemwide standards to assure quality distance education programming and a common methodology to identify distance education costs. These principles pertain to entire courses and programs offered using distance education technology; they do not pertain to on-campus technology-enhanced courses.

Table 1
Distance Education Technologies

Distance Education Technologies	Description
ITFS (Instructional Television Fixed Services)	Two-way audio (with telephone call in), one-way video.
TV Broadcast	One-way video and audio (such as courses on public television)
Compressed Video	Two-way video and audio, with all sites needing compressed video equipment
Cable TV	One-way audio and video through on-campus and consortial channels
Satellite Broadcast	Distance learning course is uplinked to satellite, where the course is then downlinked to multiple receive sites
ETN (Education Teleconference Network)	Audio only network offering courses throughout Wisconsin
Audiographics	Combines an audio teleconference with a computer-based display of graphics, documents and slides. Locations are linked through telephone lines.
Video over Dedicated Networks	Regional networks offer full-motion two-way video and two-way audio.
Video-Tape Based	Course content delivered on standard VHS video tape to students via mail.
Internet/World Wide Web	A computer network that interconnects millions of people worldwide. Use of Internet in instruction can include e-mail, WWW home pages, chat sessions, video desktop conferencing, and audio.

Figure 8
Distance Education Credit Courses by Technology



Historically, the title "distance education" has included many technologies: audiographics, VCR tapes, broadcast TV, interactive TV (two-way), etc. Table 1 (page 22) shows the array of major technologies used by UW System institutions in offering instruction to students at a distance. Figure 8 (above) lists the number of credit courses delivered by each technology. The total number of distance education credit courses has increased from 265 in 1996-97 to 341 in 1997-98, with the largest increase in Video over Dedicated Networks (67 to 91) and Internet-based courses (18 to 35). The number of Internet or Web-based courses is expected to increase dramatically in the 1999-2000 academic year due to the work of Learning Innovations and support provided by the Web-based Learning Support System. There are presently between 75 and 100 web-based courses ready for delivery by UW System institutions for the 1999-2000 academic year.

Table 2
University of Wisconsin System
Distance Education Course Headcount Enrollments

Term	Distance Education Headcount Enrollments
Fall & Spring 1996-1997	4,941
Fall & Spring 1997-1998	5,877
Fall & Spring 1998-1999	7,437

Table 2 above shows that the total number of students enrolled in distance education credit courses has increased by approximately 50% from 1996-97 to 1998-99.

Since the term "distance education" has inferred a variety of technologies, it is difficult to discuss strategies because it implies different things to each technology user community. In fact, a recently coined term called "e-learning" (short for electronic learning) was developed to aid communication beyond the preconceived notions that are developed around the term "distance education". One of the major reasons for this change is the growing use of the Internet/World Wide Web. Unlike the other technologies listed in Table 1 above under distance education, Internet/Web technology is the only tool that can be used for on-campus instruction as well as for instruction targeted to off-campus students. Thus, building web-based learning systems is a good investment. Figure 9 (page 25) shows that the majority of web-enhanced courses are on-campus courses, with only the small white circle representing web-based courses targeting off-campus students. Investments in web technology will meet the needs of on-campus instruction as well as the growing demand for totally Web-based courses.

Figure 9
Web-Enhanced Learning at UW System Institutions



A university system needs to provide a variety of tools to teach at a distance to meet different educational situations and different learning styles of the audience. This is reflected through the varying technologies utilized by UW System institutions. The technologies used today will likely be utilized into the foreseeable future to some degree. It is equally important that institutions continue to provide avenues to try new technologies in the ever-changing technology and education arena.

While individual UW institutions need to provide a variety of distance education tools, the Systemwide IT Infrastructure must focus on strategic systemwide directions for distance education. The UW System will form a working group to develop criteria for strategic systemwide directions for distance education. Strategies should capture the critical issues outlined by the UW Educational Media Technology Council (EMTC) including a) the development of a migration or transition plan for the evolution of various delivery technologies, b) the identification of linkages and collaborations across the UW System and beyond to help foster the development and implementation of the distributed learning system (DLS), and c) the recognition of staffing issues associated with various distance education technologies.

3. Install and implement new library automation system

In November 1998, the UW System signed a contract with Endeavor Information Systems, Inc. for a new library automation system called Voyager. The UW System purchased hardware for campuses from Sun Microsystems, Inc. to support Voyager. Installation and implementation of Voyager began in January 1999 and will be completed by January 2000. Phase 1 sites (Madison, Milwaukee, Stout, Stevens Point/Colleges) received Sun hardware for the new system, installed the Endeavor software, and have moved to full production. Phase 2 sites (Eau Claire, La Crosse, Parkside, Platteville, and River Falls) have installed the Sun hardware and Endeavor software, and began production in August 1999. Phase 3 sites (Green Bay, Oshkosh, Superior, Whitewater) installed hardware and software in August 1999 with production dates scheduled in January 2000. The new library automation system will provide the foundation for the UW virtual library. Ultimately, students, faculty and staff will no longer be place or time dependent for many library support services and for access to learning and research materials.

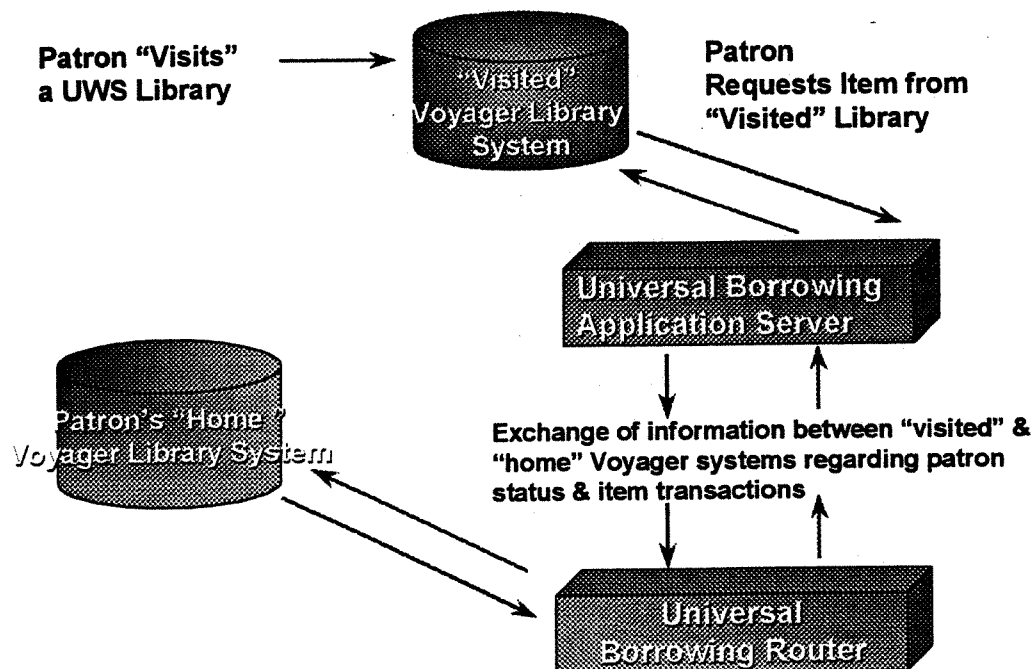
A new level of cooperation has been achieved by UW libraries in the implementation of Endeavor. Four campuses (Green Bay, Oshkosh, Platteville, and Superior) have centralized their Sun hardware configuration and contracted with UW Madison to operate and maintain the hardware. Each campus will still be responsible for maintenance and operation of the various Endeavor modules.

The following goals have been established for 1999/2000:

- Successfully implement Voyager by ensuring that each campus has operating catalog, acquisition, serials, circulation, and interlibrary loan systems.
- Plan the application and implementation of peripheral modules purchased from Endeavor.
 - Universal Borrowing: UW System and libraries will work with Endeavor over the next year on the development of a resource sharing system called Universal Borrowing. Five Wisconsin representatives have been appointed to the Endeavor Universal Borrowing Task Force. A Council of UW Librarians (CUWL) Resource Sharing Task Force has been formed to work on policies and procedures in anticipation of the Universal Borrowing System.

Through Universal Borrowing, as shown below, students and faculty will have barrier-free and timely access to the total

Endeavor Universal Borrowing



information resources of the UW System libraries. Universal Borrowing will enable UW students and faculty to place a request for an item located in any UW Voyager catalog. Endeavor's Universal Borrowing system will verify the patron at his/her home library, including status, borrowing privileges, etc. and allow the patron to designate a preferred pick-up location. The UW library owning the item will be notified of the request, pull the item from its shelf, charge the item to the remote patron, and send the item to the patron's desired pick-up location via the UW Systemwide ground courier service. Patrons will then be notified through e-mail when the item arrives at the pick-up location. The system will also synchronize borrowing and lending transactions between UW campuses.

- ImageServer: In 1999/2000, UW System and libraries will identify and begin work on a pilot project of creating a digital collection. Endeavor's ImageServer supports the scanning, indexing, accessing and printing of digital images. The ImageServer will enable library staff to scan images and create bibliographic records; thus, library print and digital images will be accessible from the UW campus Voyager catalogs. Students and faculty will be able to search, retrieve and print digital images through the Voyager online catalog. Imaging projects could include books, manuscripts, maps, music, photos, or slides. Endeavor's ImageServer could also be used to support full-text electronic reserves.

4. Address library digital licensing and use issues (e.g., copyright and fair use issues)

In Spring 1999, the Council of UW Librarians' (CUWL) Collection Development Committee adopted a core electronic collection policy statement. Using this policy, UW System libraries licensed electronic journals from American Chemical Society, Institute of Physics, JSTOR, and Science. These are some of the first titles acquired as UW libraries build an electronic journal collection accessible to all UW System students and faculty.

Building the core electronic journal collection requires attention to copyright and fair use issues. The application of the fair use principle to electronic

content is still not clearly defined. At the very least, publishers have agreed to extend fair use and interlibrary loan rights to paper copies of the electronic articles in the UW agreements. Protecting libraries' fair use rights will be an ongoing issue in negotiating future license agreements.

The following goals have been established for 1999/2000:

- \$666,600 has been recommended by the Legislature's Joint Committee on Finance for licensing electronic resources. Pending Legislative approval, UW System libraries will continue developing a core collection of electronic databases and journals accessible to all UW faculty and students.
- Work with UW librarians to further analyze UW print subscriptions, formulate a strategy and then design a customized database of core titles that is not tied to print subscriptions, nor to predetermined bundles of electronic journals packaged by publishers. (This concept is being tested by the California State University Libraries which issued an RFP in Spring 1999 and awarded a contract to a vendor who could deliver a customized package.)

B. Common Administrative Systems

Another important part of the Systemwide IT Infrastructure is the Administrative Systems, which the separate institutions of the University of Wisconsin System are building in common. These Administrative Systems will directly meet faculty, student and staff needs. Although these systems provide business tools to more efficiently and effectively operate UW institutions, they also allow students to make better informed decisions about their own education, and will provide much improved student support. As part of the Systemwide Infrastructure, these Administrative Systems allow individual UW System institutions the ability to provide support services for faculty, students and staff without competitive disadvantage as a result of technology deficiencies. The following Administrative Systems represent systemwide investments in support of faculty, students and staff and the mission of the UW System:

1. Develop Student Administration Systems at UW System Institutions

Through the process developed in December 1998 for building the UW System Technology Infrastructure, the UW System selected the PeopleSoft Student Administration System as the administrative system of choice for those institutions that choose to move to a new student administration system. A total of ten institutions are presently moving down the path of a common system for student administration.

UW-Madison, UW-Platteville, and UW-Oshkosh have now successfully implemented the first phases of the new PeopleSoft Student Administration System (PeopleSoft SA). The functional user communities together with information technology staff, UW System Administration staff and the vendors (especially PeopleSoft and Cambridge Technology Partners) have worked together to achieve a major forward step in quality and functionality for student systems on these three campuses.

In addition to these three successes, UW-Whitewater and UW-Superior are well along in their beginning implementation of this software, and UW-Milwaukee has now launched the start of its implementation. UW-Green Bay and UW-LaCrosse are in the very early phase of planning their implementations, and they will be following soon with announcement of start dates for their projects. UW-River Falls and UW Colleges have also announced that they will be going with the PeopleSoft SA product.

Other institutions are staying in touch with these implementations and their results as they examine their needs and priorities for student administration systems. Several related initiatives have emerged in conjunction with the Student Administration System implementation:

a. Data Warehousing

The UW System has launched a systemwide exploration of the needs, priorities and issues relative to data warehousing. The first step of this exploration is a pilot project at UW-Oshkosh using the UW-Madison existing data warehousing model. UW-Madison, UW-Oshkosh and UW System Administration are supporting this pilot project as an early learning curve relative to the data and information needs at UW-Oshkosh and how the UW-Madison model might meet those needs. The early results of this effort at UW-Oshkosh will be shared with all institutions in an October/November time frame as we move along this learning curve and determine next steps. The PeopleSoft Student Administration (SA) Collaterals Working Group has expressed strong interest in data warehousing. A number of these PeopleSoft SA institutions and others are interested in moving into data warehousing as soon as possible, and the origins of that interest relate to several areas of need. At present, these needs fit into three comprehensive areas:

- Improvements in reporting and information access for the new PeopleSoft SA System,
- Campus needs for data and information in decision support configurations, and
- The potential for improving the CDR (Central Data Request) data gathering and reporting process.

The second step of this exploration is the retention of a qualified consulting firm to assist the UW System in this early process of definition of goals, analysis of current status systemwide and how the CDR may fit into this total picture of data and information needs systemwide. A consulting firm has been selected and very early exploratory work is underway. A key part of this consulting effort is to

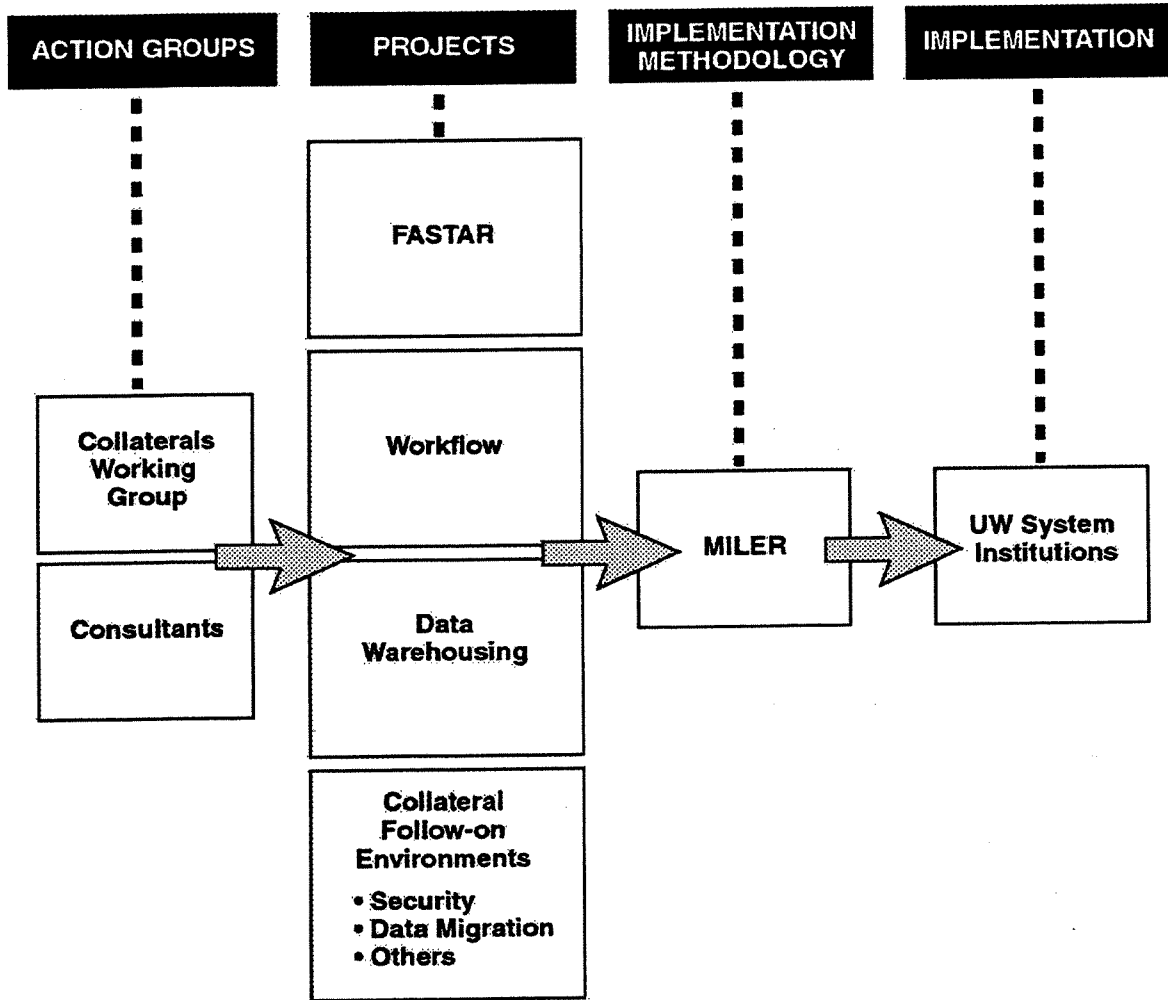
assist the UW System in defining the possible scope of a project in data warehousing and identifying the goals of such a project. As noted above, CDR data collection and reporting will be one possible area for data warehousing, but others may be included. UW System is analyzing its "non-CDR" information and data needs at the same time a number of institutions are doing the same thing. This will be an element of the consulting study as well. As soon as the first phase of this project is defined, it will be presented to the Common Systems Review Group for review. No decisions have yet been made regarding the systemwide use of data warehousing relative to CDR or any other segment.

b. Collateral Systems and Support

The UW System has established a Collaterals Working Group that is moving forward with resolutions to existing problems and challenges while exploiting new opportunities such as the FASTAR concept described below. This group is composed of all the campuses now up and running on the PeopleSoft Student Administration System plus those who have made a formal commitment to this direction. The Collaterals Working Group will move forward in the acquisition and development of new tools and systems and continue sharing resources and expertise across the campuses.

MILER Process and The Collaterals Working Group

PeopleSoft Student Administration System Implementation



c. MILER (Methodology for Implementation at Lowest Effort and Resources)

MILER is a new methodology, developed jointly by UW System and Cambridge Technology Partners, to strengthen the complex process of implementing, evolving and managing common systems and the infrastructure across the UW System. MILER is still in its early developmental phase, and will remain in a developmental status until mid-2000. The PeopleSoft Student Administration System is the first target of MILER, and it is being used at UW-Superior,

UW-Milwaukee and UW-Green Bay at their various stages of implementation.

The Collaterals Working Group is beginning early use and implementation of the MILER methodology by sharing knowledge, experience and resources to more effectively and efficiently implement and support common systems on a consistent basis across all institutions. The MILER Summit held on July 23, 1999 marks a clear acceptance of the MILER approach and a commitment to further this effort as UW-Milwaukee and UW-Green Bay implement the PeopleSoft Student Administration System.

d. FASTAR (Facility of Shared Technology and Resources)

The Collaterals Working Group is deep into the process of developing a formal proposal documenting the need and solution for a common systems approach to the following services for the PeopleSoft Student Administration System:

- Aggregation (Roll-Up), Technical Testing and Documentation of Patches/Fixes and Upgrades,
- Reporting/Tracking of Problems, and
- Common Location for Tips and Tricks.

Additional services and issues may be defined as the proposal moves to its final phase.

The current concept is that a shared central facility with hardware, software and staff support could provide these services in a much more cost effective and responsive fashion than could be accomplished at each individual campus. This proposal was presented to the Common Systems Review Group on August 25, 1999 for an initial review.

e. HelpDesk

The Collaterals Working Group is in the very first phase of developing an understanding for campus needs for a central helpdesk where problems and questions can be handled before going to PeopleSoft. This is recognized as a function of MILER and will be developed further.

2. Develop a Shared Financial System

Following a 1997 best business practices study and a recommendation to implement a common financial system for all UW System institutions, Phase 1 of implementing the Shared Financial System has been successfully completed. PeopleSoft financial modules for general ledger, purchasing and accounts payable are in production mode as of June 28, 1999. UW-Whitewater and UW-Platteville have now begun using all three modules as replacements for their local systems. UW-Milwaukee is using the purchasing and accounts payable modules, and the UW Colleges is using the purchasing module.

Phase 2 will introduce additional UW institutions and additional PeopleSoft financial modules. UW-Extension will go into production on the accounts receivable and billing modules early in 2000. On July 1, 2000, seven institutions will bring up general ledger, six of those institutions will go live with purchasing, and five with accounts payable. Four institutions will implement the asset management module sometime prior to the end of the 1999-2000 fiscal year.

Phase 3 will see the end of the legacy accounting system on July 1, 2001. An additional four institutions will convert to the PeopleSoft general ledger and accounts payable, and three institutions will convert to PeopleSoft purchasing. At least two more users of the accounts receivable and billing modules will come on board, and another two on the assets management module. Three institutions (UW-Eau Claire, UW-Stout and UW-Stevens Point) have opted to retain their local general ledger systems, and will interface all accounting transactions to the Shared Financial System.

When fully implemented, the Shared Financial System will place all UW System financial accounting on one data base and one software platform.

This will give the UW System the ability to ensure consistent entity-wide data and afford more efficient financial reporting. Data entry and data storage redundancy will be reduced, and optimum institutional flexibility will be achieved through the establishment of separate business units within the PeopleSoft environment. Existing core systems and peripheral systems can be efficiently interfaced to the Shared Financial System, and future advances in technology can be readily applied to the system.

3. Develop a new Systemwide Appointments, Payroll and Benefits System (APBS)

During the 1998-99 academic year, the Best Business Practices Committee charged a subcommittee to examine Best Business Practices for an Appointment, Payroll and Benefits System (APBS). Their review included the related areas of budget, accounting and recruitment. The team identified guiding principles and recommended practices that will be used to develop the next generation of support technology for the human resource/payroll functions. Best practices included moving to a common core system that could serve the broadest range of human resources/payroll related functions in an integrated manner while not compromising institutional culture and autonomy. The report also encouraged a vendor product or products, taking advantage of the transition to re-engineer and simplify practices.

The Best Business Practices report was accepted by the UW System Chancellors in May 1999. A Steering Committee has been formed to guide the project and an Implementation Team, representing all institutions and functional areas, has been formed to craft an RFP. A convocation of all participants (6/30/99) was the formal "kick-off" for the project. The goal is to identify a vendor product or products by the end of 1999 or early 2000. This will be a multi-phase project spread over 3-5 years.

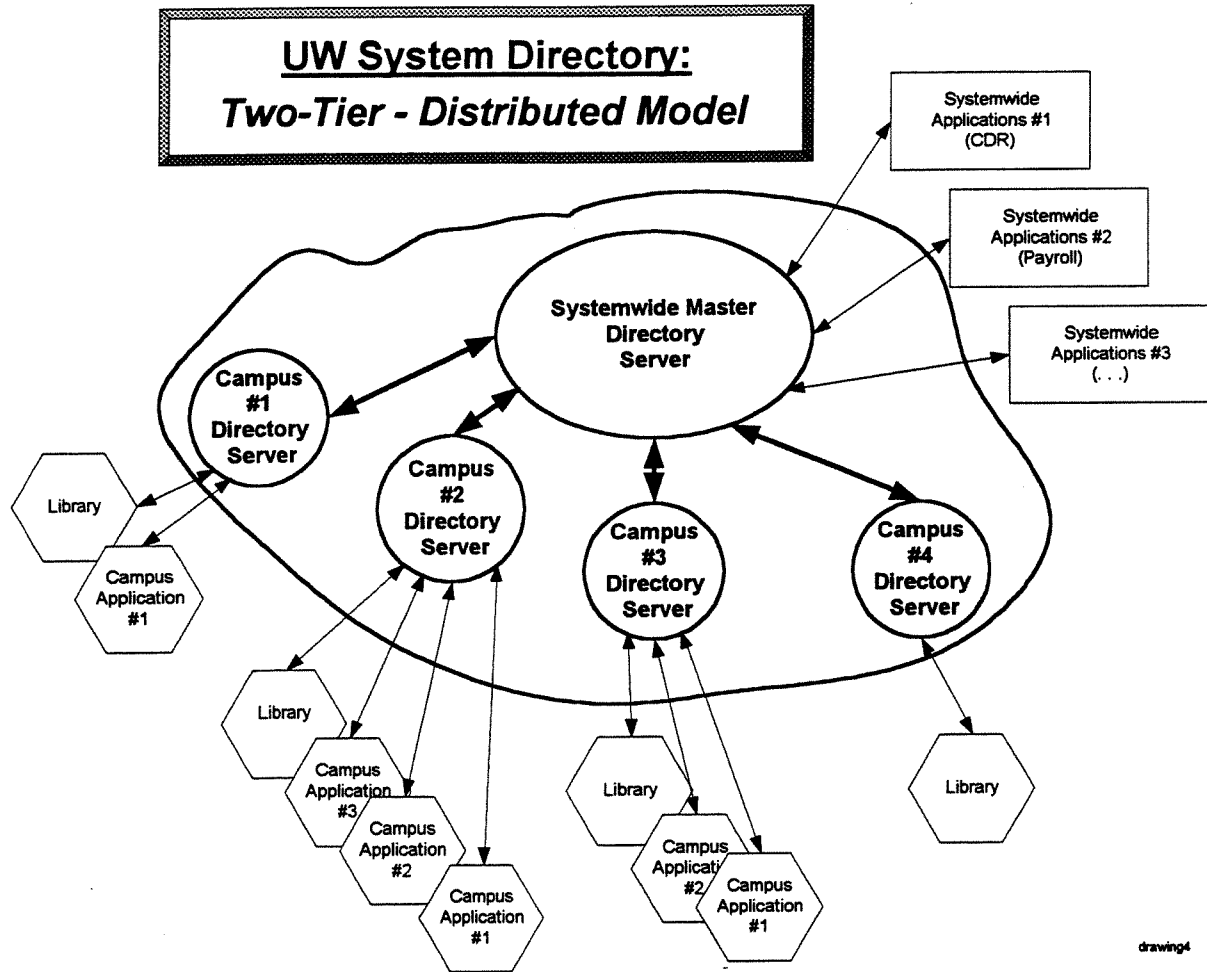
4. Develop Identification, Authentication and Authorization (IAA) Definition and Procurement

Sharing information and resources between UW System institutions will require procedures for identifying and authenticating users, and providing information to authorize access and services for faculty, staff and students. Two systemwide best business practices committees have met over the past year and developed recommendations for establishing a common format for identification numbers used by students, faculty and staff at all UW System

institutions, and for developing a systemwide directory for sharing information needed for authorizing access to information and resources systemwide.

As UW System institutions look at replacing their current ID systems, they will adopt a common format for identification numbers. This change will provide benefits in the future as institutions look at further information sharing and further utilization of electronic commerce. Further study is planned on architecture and data issues for development of an IAA systemwide directory. Such a directory will allow UW System institutions to share information on faculty, staff and students needed to provide inter-institutional services such as access to electronic resources from any location as well as the use of campus resources by students, faculty and staff from another campus. Figure 10 (page 38) shows a two-tiered model under consideration. In this model, the "request" is generated at a campus application and would be "verified" through the campus server and Master Directory.

Figure 10



drawing4

5. Take advantage of systemwide licensing opportunities and common hardware purchases

One of the advantages of creating a systemwide infrastructure is to take advantage of the size and collective purchasing power of the UW System as a whole in dealing with vendors. The UW System can save money by purchasing the same product for many or all of its institutions. Examples of such products include common software licenses for desktop and administrative systems, full-text journals, and computer hardware. While common purchases are not always possible due to different missions of institutions, different course array, different histories, and an overall lack of resources, the UW System will continue to examine opportunities for savings through these common licenses and purchases.

C. Bridging Academic and Administrative Systems

The 1999 UW System IT Plan calls for additional investments in pieces of the technology infrastructure, including both academic and administrative systems. Historically these applications have intersected on campuses when faculty performed advising functions, enrolled students in classes, verified class lists, and assigned grades. While the administrative systems tended to be large, complex and difficult to use, there were virtually no academic systems that were remotely related to the business process side of the higher education house. The network-based Distributed Learning System (DLS) built upon an infrastructure of networked servers is changing that model.

As the UW System moves toward standards-based distributed administrative systems, and begins to support standards-based distributed academic systems, the opportunity for creating linked systems increases. In the new distributed system, faculty continue to play the key role in using these distributed tools to support teaching, learning and research, but students will play an increasingly important role in gaining control of administrative and academic tools. The distributed learning system, now including the business processes (everything from student records to student work histories and time sheets), distributes an increasing amount of responsibility to students for portions of their own education.

This distribution can be seen in at least three of the UW infrastructure projects. The new library automation system, when complete, will allow students, if they choose, to bypass a host of intermediaries, and procure the information they need from around the University of Wisconsin System to complete their studies and research. The IAA (Identification, Authentication, Authorization) project will provide a structure for distributed services between UW institutions and will allow students, faculty and staff to avail themselves of teaching, learning and support services wherever they happen to be in the state. The third project encompasses both the systemwide administrative projects and the systemwide distributed learning projects. The University of Wisconsin System will explore opportunities to build bridges between these systems to allow faculty and students involved in asynchronous and other network based courseware to easily track learning progress, ask for advise and help, analyze where they are in their programs, and pay for services via e-commerce. At the same time, these systems will allow the UW institution where the student is enrolled and the faculty member is employed to more easily deal with the business support issues with a minimum of effort.

The University of Wisconsin is reaching a point where the investment in infrastructure will result in payoffs through improved services and efficient business reengineering. The library automation project, the IAA project, and the common administrative system/distributed learning system merger are examples of such payoffs.