I. EXECUTIVE SUMMARY

The purpose of information technology (IT) at Mesa State is to enhance the teaching and learning process that has become the hallmark of the institution's role and mission. IT operations currently involve the operation and maintenance of over 1000 PC's, 1300 network ports, and 15 major servers. IT provides support and operation for the Banner administrative computing system as well as for all academic systems and software. It maintains and operates all telephone and telecommunication needs, and operates the classroom audiovisual and distance learning operations of the institution.

The technology infrastructure project funded by the Legislature in 1999 is nearing completion. This project provided an upgraded infrastructure and increased access to the institution's technological resources.

The major technology issues confronting Mesa State are:

- The need for additional operational resources,
- The need for better communication between IT related functions and the rest of the institution to support and enhance its teaching and learning mission, and
- The need to respond to technological development and to provide technology in a more reliable, comprehensive, cost effective, and efficient manner throughout the institution.

The recently completed Mesa State *Academic Master Plan* defined specific goals and objectives related to IT operations. These goals and objectives relate directly to the issues confronting the institution.

The *Academic Master Plan* recognized that Mesa State's attitude toward the use of technology had changed from a "tool" to a "utility." It is now an essential part of the institution's operational capability, requiring an increasingly larger part of the institution's limited resources. Three projects have been identified that require funding:

- WebCT enhancement – a network based educational course management system project,
- Document Imaging – a project to provide storage, indexing, management, and retrieval of the voluminous quantity of paper documents in the Enrollment Management Department, and
- Technology Operations Maintenance – a life cycle project to provide replacement of IT equipment and components on a four-year basis.

These projects have a year-one cost of $689,000 with continuing yearly costs of $489,500. Mesa State's efforts to fund such projects from its own resources have been sporadic and intermittent due to lack of institutional resources. The results have been fairly successful in light of the funding issues. That process is becoming more and more difficult due to increasing demands and reliance on IT coupled with greater budgetary constraints. But the maintenance and acquisition of reliable developing technologies is essential to Mesa State as a regional education provider. As part of this *Technology Master Plan Amendment*, Mesa State requests that funding found, comparable to the continuing maintenance of buildings, for operational funding of technology.

II. MESA STATE COLLEGE – TECHNOLOGY MASTER PLAN AMENDMENT
TABLE OF CONTENTS

SECTION		PAGE
I.	Executive Summary	1
II.	Table Of Contents	2
III.	Contributors	3
IV.	Preface	5
V.	Technology Initiatives and Accomplishments	6
VI.	Information Technology Operations, Initiatives, Resources, and Issues	8
VII.	Information Technology Goals and Objectives	10
VIII.	Distance Learning	13
IX.	Information Technology Issues, Barriers, and Obstacles	14
X.	Strategies and Rationale	15
XI.	Required Financial Resources	17
XII.	Conclusions	19
Appendix “A” – History		20
Appendix “B” – Technology Survey		23

III. CONTRIBUTORS

COLORADO COMMISSION ON HIGHER EDUCATION:

Commissioner	Raymond T. Baker, Lakewood
Commissioner	Terrance L. Farina, Grand Junction
Commissioner	David E. Greenberg, Englewood
Commissioner	Robert A. Hessler, Greeley
Commissioner	Peggy Lamm, Superior
Commissioner	Ralph J. Nagel, Denver
Commissioner	Dean L. Quamme, Grand Junction
Commissioner	James M. Stewart, Colorado Springs
Commissioner	William B. Vollbracht, Denver
Executive Director	Timothy E. Foster
Director of Planning and Policy	Jeanne Adkins
Director of Academic & Student Affairs	Sharon Sampson

TRUSTEES OF THE STATE COLLEGES IN COLORADO:

Trustee, Chair	Dale Mingilton, Aurora
Trustee, Vice Chair	Ann Rice, Englewood
Trustee	John Kivimaki, Longmont
Trustee	Robert Decker, Gunnison
Trustee	James Hamilton, Grand Junction
Trustee	Bill Hanzlik, Englewood
Trustee	Timothy Walters, Alamosa
Faculty Trustee	Gene Saxe, Denver Metropolitan State College
Student Trustee	Michael Maestas, Grand Junction Mesa State College

OFFICE OF THE STATE COLLEGES IN COLORADO:

System President and Vice President For Academic and Student Affairs	Lee A. Halgren
Acting Vice President for Administration and Budget	Linda S. Curran

CONTRIBUTORS (Continued)

MESA STATE COLLEGE ADMINISTRATION:

President	Michael Gallagher
Vice President for Academic Affairs	Samuel Gingerich
Vice President for Financial and Administrative Services	John Fitzgibbon
Dean of Students	Richard E. Baca
Dean, School of Humanities and Social Sciences	Janine Rider
Dean, School of Natural Sciences and Mathematics	Duane Hrncir
Dean, School of Professional Studies (Interim)	David Rogers
Director of the School of Applied Technology	Kerry Youngblood
Dean of Enrollment Management	Paul Jones
Director of Physical Plant	Ron Gray
Director of Institutional Research	Erin Holmes
Director of Library	Valerie Horton
Director of Information Technology	Paul Rowan
Campus Planner	James Brock

MESA STATE COLLEGE TECHNOLOGY COUNCIL:

Michael Gizzi, Chair
Bob Mayer
Richard Vail
Paul Rowan
Valerie Horton
Mark Kasselhut
Lori Payne
Andy Rodriguez
Sam Gingerich
John Fitzgibbon

IV. PREFACE

This document summarizes the latest technology planning at Mesa State. It has been developed and is being submitted as a part of the Mesa State *Facilities Master Plan Amendment* providing for a cohesive review and approval process. This document amends the Technology Master Plan found in Volume II, Appendix "G" of the 1999 Mesa State College *Facilities Master Plan*.

The basis for revision is the recently completed and submitted 2001 Mesa State College *Academic Master Plan.* Some background information found therein has been repeated to give a frame of reference to this material.

The information provided in this document is that requested in Colorado Commission on Higher Education (CCHE) Policy, pages III-D-21 and III-D-22 as last revised on April 5, 2001.

Primary coordinators in developing this document were Paul Rowan, Director of Institutional Technology, and the members of the Mesa State Technology Council as chaired by Dr. Michael Gizzi. (See previously presented list of Contributors for membership.) The Office of Institutional Research and Planning provided survey and documentation assistance.

This document has been reviewed and approved by Mesa State President Dr. Michael Gallagher as well as by faculty representatives and senior administrative staff. It is anticipated that the Trustees of the State Colleges in Colorado will consider approval of this document in February, 2002, prior to submittal to CCHE.

V. TECHNOLOGY INITIATIVES AND ACCOMPLISHMENTS

Mesa State's involvement with information technology formally began in 1985. Its history is a story of rapid change and development, significantly impacting all areas of the institution.[1]

The latest major technological accomplishments at Mesa State are the result of the Colorado Legislature's funding of the 1999 *Technology Infrastructure Program Plan*. This document listed a series of projects which, when completed, would upgrade the technology infrastructure on the main campus and provide for increased student access to Mesa State's educational resources. The following items describe those projects and give a status report for each.

NETWORK EXPANSION WEST OF COLLEGE PLACE:

This project included installation of conduit from Wubben Hall west across College Place serving the westward main campus expansion. Both telephone and fiber optic cables were included to serve defined needs. This portion of the project is complete.

Mesa State is also in the process of expanding its network capability to include a state-of-the-art Storage Area Network (SAN). The SAN will provide reliability and extensive storage capability for the college's fifteen servers that support 1,300 PCs and printers among three campuses. Current efforts will integrate five of the main servers.

The SAN is a special network that acts in conjunction with the existing main campus network. It provides reliability by "clustering" critical servers, meaning that if a server goes down its load will be shared by the remaining servers. Storage capability is also extended with Redundant Array of Inexpensive Disks (RAID) technology. Although the disk drives themselves are not overly expensive, the quantity of drives needed and the implementation of a well-designed RAID system is expensive. This is a similar technology that provides redundant memory if a disk drive goes bad. These two technologies, "clustering" and RAID, will provide the reliability and robustness required by faculty, staff, and students to accomplish their day-to-day work in today's world that requires a system that is virtually operational at all times

ATM / GIGABIT ETHERNET NETWORK UPGRADE:

This project included an upgrade of existing network switches and the installation of three new network switches. This work increased the speed and capacity of the existing network with a one-gigabit backbone so that the anticipated computer port expansion could be accommodated. This project is complete.

RESIDENCE HALL NETWORK EXPANSION:

This project consisted of wiring the three older residence halls (Mary Rait Hall, Pinion Hall, and Tolman Hall) and Walnut Ridge Apartments so that residents will be

[1] A history of that development from 1985 until 1999 can be found in Appendix "A" of this document.

able to access Mesa State's computer network and cable television. This project is complete.

ACADEMIC COMPUTER CENTER:

This project involves the renovation of rooms in Houston Hall and in the Library for the consolidation and restructuring of IT functions and personnel. That project is currently in process.

WIRELESS ACCESS PORTS:

The use of wireless technology is a method of increasing student access to the network without having to locate and connect into an accessible wall data plug. The extent and details of this project are currently under discussion. Changes in technology and campus attitudes have raised pertinent questions that require resolution.

CLASSROOM UPGRADE:

This project upgraded technology in Mesa State's classroom facilities adding:

Data/Video Projector or Data Monitor
Multimedia Computer with network and Internet connections
VCR

It also provided for new equipment in the College's TV studio. This project is currently on schedule with completion anticipated by the summer of 2002.

MULTIMEDIA DISTRIBUTION CENTER:

This project included equipment and sufficient cabling to provide multimedia information to a limited number of classrooms in Houston Hall from Media Services located in the Library. Multimedia information acquired from satellite downloads, television studio productions, compressed video, and other sources would then be accessible for direct classroom use. This project is currently in design.

STUDENT TECHNOLOGY TRAINING CENTER:

This project involved the remodeling of room 212 in the Library to function as a Student Technology Training Center and as a Distance Learning Classroom. The project is complete.

VI. Information Technology Operations, Initiatives, Resources, and Issues

OPERATIONS:

14 FTE IT staff oversee networking, computing, and telecommunications technology for the institution. They are responsible for:

- The operation and maintenance of over 1000 PC's, 1300 network ports, and 15 major servers,
- The support and operation of the SCT Banner administrative computing system as well as all academic systems and software,
- Limited help desk support and training for end users,
- All telephone and telecommunication needs, and
- All audiovisual classroom and distance learning technology needs.

It should be noted that technological operations at Mesa State also include those of Media Services who, with 2 FTE, provide direct AV support and equipment to all classrooms as well as distance learning capability for the region.

INITIATIVES:

The primary initiatives regarding technology at Mesa State involve the goals and objectives established for the institution in its recently completed *Academic Master Plan.*[2] A listing of those goals and objectives related to technology can be found in the next section of this document. Other initiatives include:

- Working with the UTEC and Montrose campuses of Mesa State to determine a strategy for better IT and Media Services support,
- Determining an effective strategy for IT and Media Services support beyond normal administrative business hours,
- Working on a strategy for an administrative document imaging system, and
- Completing the implementation of a hardware and software inventory system.

RESOURCES:

Technology budgets have remained essentially flat for the past five years, yet more is continually being asked of the department. Budgets that were at one time adequate to provide technology in limited areas are now stretched to provide comprehensive services to all parts of the institution. (See additional discussion in the next section of this document.)

[2] Mesa State College, *Academic Master Plan*, November 2001. This document has been approved by the Trustees of the State Colleges in Colorado, and is currently under review by the Colorado Commission on Higher Education.

ISSUES:

Mesa State technology issues generally fall into the following categories:

- The need for additional operational resources,
- The need for better communication between IT related functions and the rest of the institution to support and enhance its teaching and learning mission, and
- The need to respond to technological development and to provide technology in a reliable, comprehensive, cost effective, and efficient manner throughout the institution.

VII. Information Technology Goals and Objectives

The purpose of technology at Mesa State is to enhance the teaching and learning process that has become the hallmark of the institution's role and mission. The specific goals and objectives for technology delineated in the recently completed Mesa State *Academic Master Plan* are as follows:

AREA	GOAL	OBJECTIVE
Process	To support learning through the refinement of traditional teaching methods and the use of new instructional designs and technologies.	To increase support for exploring and implementing new teaching methods and technologies to significantly improve teaching.
		To regularly survey faculty regarding opinions about the adequacy of the classrooms, other teaching facilities, and support provided.
	To expand available technology in terms of equipment, support, and expertise, along with appropriate technological support, to provide a full range of educational services.	To annually review support needed and provided at all sites to which programming is delivered by Media Services, Information Technology, and/or the Center for Teaching and Learning.
		To upgrade campus technology, equipment, and software, and to provide additional lab support staff.
Support	To recognize the infusion of technology in programs and to provide necessary resources and support.	To develop a planning strategy for additional future demands on facilities and technology as they relate to the academic mission of the College.
		To intensify the search for external technology funding.
		To conduct a study of Media Services and Information Technology and their relation to the academic community and to other College technologically based operations in order to assure efficient and economical operations and support.
	To support students' success through academic advising, career counseling, leadership and volunteer service programs, and extracurricular activities.	To provide adequate staff and hours of service, especially at night and weekends…

It is significant that the technological goals and objectives delineated in the *Academic Master Plan* are found in both process and support areas of that document.[3] This *Plan* noted that the institution's attitude toward and needs for technology were changing. As stated in the conclusions section of that document:

> "The focus of technology planning is changing. In the past, most efforts dealt with infrastructure issues – networks, hardware, and accessibility issues. While future planning must consider such questions, the primary focus is now concerned with application issues – how technology can be used to enhance both teaching and learning. The attitude toward technology is changing from "tool" to "utility" – infusing programs and courses as a necessary part of the academic experience. This attitude change is impacting planning for future academic programs and courses as well as building use and design."[4]

Technology is now an essential part of the institution – both in its primary role and in the support that it provides to that mission. Students in all areas expect current technology as a part of their curriculum. Faculty expect current technology in order to deliver instruction using a full range of tools as well as to stay up-to-date with developments in their various fields. The maintenance and acquisition of reliable developing technologies is essential to Mesa State as a regional education provider. Mesa State has become dependent on technology to accomplish its role and mission, as well as its day-to-day operations.

This problem is not unique at Mesa State. In one of its latest publications, the Society for College and University Planning is talking about technology on campuses as a "digital plant", comparing it to a campus' essential physical plant of buildings and grounds.

> "Our increasing reliance on digital technologies and the rate at which they are emerging and converging are confounding the boundaries and definitions of the physical plant. In fact, the communication technologies that have become so pervasive in higher education transcend the physical plant, creating a whole new infrastructure of virtual and physical spaces and services with a different class of uses and characteristics. This new set of spaces, services and applications is the digital plant… In short, the digital plant has grown into a major enterprise in most institutions. However, in many – if not most – institutions, it has not yet become a formal, systematic organizational element in the institution's planning and budgeting processes. Life cycle considerations and funding are among the most vexing problems as these new technologies are implemented in higher education."[5]

---

[3] The process section of the *Academic Master Plan* deals with how Mesa State delivers its various programs to students – the teaching and learning process. The support section of the *Academic Master Plan* deals with how Mesa State provides assistance to students and faculty as they participate in the teaching and learning process.

[4] Mesa State College, *Academic Master Plan*, November 2001, Volume 1, page 49.

[5] Boettcher, Judith V., Mary M. Doyle, and Richard W. Jensen, Technology Driven Planning: Principles to Practice, Society for College and University Planning, Ann Arbor, 2000, page 96.

It is interesting to note that the definition of the "digital plant" is quite broad. It includes computing and communication equipment and software at all locations, levels, and locations in a 24-hour per day format.[6]

The prior quote generally describes the state of technology at Mesa State. Thanks to the previously capital funded Infrastructure Project, and because the institution has set aside significant but limited funds for technology operations, a "digital plant" is in place. This digital plant functions quite well. Mesa State retains a staff of highly qualified professionals whose purpose is to keep it operating smoothly.

But operational funding is limited and, as noted earlier, demands on IT are increasing. The digital plant cannot continue to be successful solely on the basis of an intermittent infusion of dollars for infrastructure upgrades. It must have adequate funding for both infrastructure and operations if it is to continue to be successful and meet the needs of the institution.

---

[6] Boettcher, Judith V., Mary M. Doyle, and Richard W. Jensen, Technology Driven Planning: Principles to Practice, Society for College and University Planning, Ann Arbor, 2000, page 96.

VIII. Distance Learning

Mesa State's *Academic Master Plan* delineated the institution's current directions related to distance learning:

> "Mesa State College has struggled to determine the range of roles technology can fulfill which further the educational experiences of its students and faculty. Since the first major influx of personal computers on campus in 1985, the College has been in continual discussion about how best to use technology for the benefit of all. Committees and departments have been organized and reorganized to make such decisions. One factor has emerged upon which everyone agrees – it is expensive. The College cannot afford to do everything possible with the limited technology dollars that it has at its disposal. It must be selective, choosing only those products and processes that will best serve the College's purposes.
>
> For example, the College's role with distance education is becoming clear. Sufficient resources are not available to the College to be able to produce quality Internet courses on a continuing basis. Trial developments have proven to be relatively expensive and time consuming. But such classes are becoming a necessity – they increase access to higher education for a wide range of potential students who have either time or distance constraints. Distance education classes produced by the College for specific, regional purposes or produced by other institutions and brokered by the College can be readily accomplished. The overall objective is to expand academic resources and class offerings currently not available on the MSC campus in an efficient and effective manner.
>
> The College does have distance education technology and can act as a distribution center. Through cooperation with other institutions, the College can provide up-to-date course offerings to its on-campus students and to those in rural western Colorado."[7]

Mesa State is now using its distance learning capability to develop partnerships and to expand its role as regional education provider in western Colorado. Working with other higher education institutions, local school districts, and other organizations, Mesa State is increasing student access to a wide variety of educational resources. Because of its technological capability, the institution can work cooperatively with the Delta-Montrose Vocational School, Colorado Northwest Community College in Rangely, and Colorado Mountain College in Glenwood Springs. The institution is delivering a Post Baccalaureate Teacher Licensure Program with several school districts including those in Glenwood, Eagle/Vail, Aspen, and Rifle, and is developing the delivery of baccalaureate programs leading to licensure. Mesa State partners with some of these and other western Colorado institutions to develop interactive video connectivity for the benefit of all concerned.

Mesa State's cooperative initiatives, enhanced by technology, extend beyond its local geographic area. The College hosts the Western Colorado Graduate Center and provides facilities, library resources, student services, and administrative support for programs the Graduate Center brokers on campus.

---

[7] Mesa State College, *Academic Master Plan*, November 2001, Volume 1, page 31

IX. Information Technology Issues, Barriers, and Obstacles

As stated earlier, Mesa State's technology issues generally fall into the following categories:

- The need for additional operational resources,
- The need for better communication between IT related functions and the rest of the institution to support and enhance its teaching and learning mission, and
- The need to respond to technological development and to provide technology in a reliable, comprehensive, cost effective, and efficient manner throughout the institution.

Following the completion of the *Academic Master Plan* in the fall semester of 2001, the Technology Council surveyed the faculty regarding technology in the institution.[8] The greatest concern that the faculty have with technology is that it be reliable and function adequately for their use. This concern transcends the need for the latest up-to-date equipment and software.

The survey also indicated that there is a need for additional training of faculty to use technology in their teaching activities. Unfortunately, the faculty also said that they had limited time to be involved in such training. This problem was identified in the *Academic Master Plan* as a condition of productivity. According to a University of Delaware study, Mesa State faculty are among the most productive (and lowest paid) of those of comparable institutions in the nation. Because of heavy workloads, the faculty has limited time to spend in formal training sessions.[9]

Perhaps the greatest barrier to the continued success of IT at Mesa State is its generally low level of institutional funding available for various support and enterprise systems, and, specifically in this case, for improvement to campus information technology. Resources that might be utilized partially for technological development and enhancement are by necessity used for faculty and staff salaries that are some of the lowest in the nation. Significant internal budget reallocation has been necessary to sustain even current low salary levels.[10] There is little money for technology.

---

[8] A copy of the survey questions along with responses can be found in Appendix "B" of this document.
[9] Mesa State College, *Academic Master Plan*, Volume 1, November 2001, pages 27-28.
[10] Mesa State College, *Role and Mission Statement*, October 2001, Section 9.

X. Strategies and Rationale

A change in the way resources are obtained, budgeted, and allocated for technology has become necessary for Mesa State. The essential use of technology throughout the institution's educational programs and support areas demands it. In many ways, the continued success of Mesa State's mission as a regional education provider rests on opportunities provided by technology. The following strategies are intended to begin that process:

- Define critical technologies that support the teaching and learning mission of the institution,
- Develop policies that will guide technology acquisition, maintenance, and replacement.
- Develop technologies that are more reliable, and that will assist the institution in a more efficient use of its resources,
- Budget for technology replacement based on life cycle considerations, and
- Locate and obtain additional external funding and resources for technological development.

The acquisition, maintenance, and replacement of technology are regular activities at Mesa State. As at other institutions, these activities often become confused with a perceived need to obtain the latest versions and updates of equipment and software. To be on the "cutting edge" is often seen as desirable. Yet, for some applications, such an attitude may not be necessary or appropriate. Mesa State develops policy statements to guide such decisions, basing technology on conditions that will consistently support the mission of the institution as a regional education provider.

Reliable systems have become a necessity in all areas of Mesa State. As stated earlier, the operations of the institution are dependent on a functioning IT system. One of the conditions that negatively affects reliability is the current plethora of equipment and operating systems. The irregular acquisition and replacement of computers on campus is causing problems. IT personnel must be able to work on equipment and operating systems that range from some that are new to some that are six to seven years old. Confusion and downtime often result. While some variation in equipment and software is unavoidable, a limit to the wide variation will help to provide more reliable systems.

To assist in determining policies regarding technology acquisition, maintenance, and repair, those based on life cycle concepts will be utilized. It must be recognized, however, that life cycle concepts for buildings and those for technology are different. As stated by the previously referenced publication of the Society for College and University Planning:

> "The rate of change and the changes themselves… have transformed the way we plan for a technology-intensive environment. We note that technology is supporting more and more services within the higher education environment. As

> this trend continues, the life-cycle concept will depend less and less on age and more and more on usefulness of the current technology and its rate of change."[11]

A building's roof may reliably perform its function for 20 years. After that time, it usually breaks, it leaks, and no longer functions. But much unbroken technological equipment that is still operable cannot use the latest software or function efficiently. Six and seven-year old computers still operate. But they cannot use some of the latest application software necessary in many programs at Mesa State.

Because of the current rate of change in technology, Mesa State would like to replace all computers on a rotating three-year basis. However, because of the limitations imposed by the number of available IT personnel, a four-year replacement schedule is deemed necessary. Such a policy and schedule for regular computer replacement is an essential element in creating a reliable technology.

Additional funding is essential to the development of a continuously successful IT system. External sources of grants and funds to cover operational costs are being sought. Unfortunately, most are not forthcoming on a continuing basis. Their life span is limited.

It is requested that the State of Colorado fund the operational portion of technology as it does the continuing maintenance of buildings. It is argued that the maintenance of such operational technology equipment is just as necessary to the operation of an institution as is its buildings and grounds. While it is understood that no such mechanism for funding currently exists, it is suggested that one be developed. The continued regular replacement of computers and software is essential to the maintenance of systems at Mesa State and to those it interfaces with throughout Colorado and the nation. The projects listed and requested in the next section of this document assume funding from the State that will support such operational necessities.

---

[11] Boettcher, Judith V., Mary M. Doyle, and Richard W. Jensen, Technology Driven Planning: Principles to Practice, Society for College and University Planning, Ann Arbor, 2000, page 3.

XI. Required Financial Resources

Following are three projects that are requested to be funded by the State of Colorado. A program plan document detailing each project will be submitted for such funding subsequent to CCHE approval of this document. Costs indicated below are for the current year. Ongoing yearly costs will, by necessity, require adjustment for inflation in accordance with State policy.

XI.A WebCT Enhancement

Mesa State has selected WebCT as its course management system after a two-year trial period. This network-based software allows faculty and students to better communicate and enhance course work, and to more efficiently deal with the structural necessities of enrollment and grading, allowing more time for other activities. By using WebCT, faculty have an easy way to communicate with students, provide online assignments, to facilitate anytime learning through discussion boards and chat rooms, to make use of the various resources available on the World Wide Web, and to provide regular student feedback through usage of WebCT's online grade book tool.

It is proposed that the WebCT license be upgraded from the standard edition to the enterprise-level Campus Edition, that a separate server be provided to operate the system, and that SCT Banner modules and additional software be provided to link the software with the institution's enrollment data and systems. These proposed changes will provide full integration between WebCT and SCT Banner, the institution's current administrative computing system. Enrollment in a course through Banner will then automatically enroll students in the enhancing and book keeping WebCT activities for that course. The changes will also resolve compatibility and technical problems encountered with the trial system.

Costs for implementing the WebCT Campus Edition are:

- $22,000 per year for licensing fees,
- $55,000 for one-time expenses for additional SCT Banner modules, Mercury Message Broker, and gateway SCT,
- $40,000 for design, consultation, and implementation, and
- $7,000 for training.
- $7,500 for ongoing software maintenance for SCT Banner Modules

Total funding for the project consists of first year costs of $124,000 with ongoing yearly costs of $29,500.

XI.B Document Imaging Project

This project provides hardware and software to scan, store, and retrieve the voluminous quantity of documents at Mesa State. While the immediate need is in Enrollment Management areas, Academic Affairs, Human Resources, and the Business Office will benefit. The system provides indexing, management, and capturing of paper documents for computer further applications.

The three departments of Enrollment Management – Financial Aid, Registration, and Admissions – are awash in paper work. The existing method of copying records to microfiche is time consuming and expensive. It also does not lend itself to expedient document retrieval or integration into computer-networked systems. The existing system cannot keep up with the present number of documents nor process future documents efficiently. This project will allow for more effective operations in dealing with incoming data and information.

Three stations, each consisting of a PC and scanning device, are requested for this project. No additional personnel are needed.

Costs for implementing this project are:

- $100,000 for equipment (3 sets) and software
- $10,000 for design, installation and training
- $5,000 ongoing for software maintenance

Total - $110,000 initially with $5,000 per year after.

XI.C Technology Operations Maintenance Project

As explained earlier, the creation of a system for the regular replacement of technology at Mesa State is necessary for its continued success. Computers (1000), operational and standard application software, servers, and network components have a relatively short functional life-cycle. Regular replacement on a rotating four-year basis is requested.

Yearly costs for this project are:

- $325,000 for computers,
- $20,000 for software
- $110,000 for servers and related network components.

Total - $455.000 each year of the four-year cycle.

XII. Conclusions

The planning outlined in this document contains only the start of an ongoing process to make technology at Mesa State a "…formal, systematic organizational element in the institution's planning and budgeting processes."[12] The general rapidity of technological change, further analysis of the previously discussed faculty survey, as well as continued communication with all concerned will undoubtedly foster additional planning and development. Discussions are already underway in the Technology Council regarding additional projects and policy changes that can have an impact on the institution. Mesa State's progress in accomplishing the goals and objectives outlined in its *Academic Master Plan* will do likewise.

This document should therefore be considered a working entity, necessitating change on a regular basis. Amendments will be submitted as conditions require.

---

[12] Boettcher, Judith V., Mary M. Doyle, and Richard W. Jensen, Technology Driven Planning: Principles to Practice, Society for College and University Planning, Ann Arbor, 2000, page 96.

APPENDIX "A"

HISTORY

The following paragraphs present the history of Mesa State's formal involvement with Information technology since its inception in 1985. The information is taken from the institution's first *Technology Master Plan* dated January 19, 1999. (Pages 12 – 14)

"…INFRASTRUCTURE:

The first milestone in the growth of computing resources was AT&T's donation of hardware, the backbone for the College's first local area networked computer laboratory. This grant made Mesa State one of the first campuses in the country with a local area network (LAN). Between 1985 and 1993, AT&T donated more than one million dollars in hardware to the College.

A wiring project completed in 1996 provided a 100 megabit FDDI fiber optic backbone for the main campus. This backbone enabled the College to upgrade its local area network from AT&T StarLAN to Novell Netware 4.1. The new network provides amore stable and reliable network. A CD-ROM tower was added to the network in 1997, providing network access to 24 different CD-ROM drives for instructional and applications software.

In addition to desktop access, all faculty, staff, and students have access to either of the College's UNIX mini-computers. Both systems provide Internet, e-mail, World Wide Web, USENET News, etc. Both faculty and students can create their own Web pages on the server. In 1996, faculty began utilizing the Web server for classroom purposes. Since that time, several faculty have established course home pages.

Faculty, staff, and students also have limited off-campus Internet access. 72 modem lines connect off-campus users to the UNIX mini-computers. All of these lines provide PPP Internet access with full graphical capabilities.

Facilities on the main campus are linked via the Novell local area network with a fiber optic backbone. Students living in one of the four residence halls have campus network access in their rooms. The other three residence halls have a small computer lab available for their residents. Plans are underway to provide network access to all on-campus living facilities. Demands on the main campus data and communication network continue to increase as the College relies more heavily on the Internet, extends communication links throughout the west and develops an intranet environment for academic, student and administrative services.

Through leased T-I telecommunications lines, Mesa State is connected directly to the Montrose Campus, UTEC, School Districts 50 and 51, and all Colorado public libraries, as well as the Colorado CIVICS network. The College also has ISDN dial-up capability for establishing video conferences. In 1997-1998, Mesa State participated in the WestCEL consortium of K-12, vocational-technical schools, and higher education institutions to create a data and compressed video network on the Western Slope between participating entities.

EQUIPMENT

The use of computers at Mesa State College has undergone numerous transformations in the past fifteen years. As late as 1984, computing resources at the College consisted of twenty terminals connected to a DEC PDP 11-70 multi-host

computer. Faculty did not have computers in their offices, nor did any of the College's administrative staff.

With the completion of the John U. Tomlinson Library in 1986, the College's academic computing center moved to a laboratory in the new library. The College opened its first open student computer laboratory in that location. In the ten-year period between 1986 and 1995, the use of computers mushroomed. There are currently over 800 personal computers on the main campus and thirteen student computer classrooms or laboratories. Both the UTEC Campus and the Montrose Campus have two student computer labs each.

All full-time faculty currently have, at a minimum a 486 class personal computer with full network access in their offices. Most faculty run the Microsoft Windows 95 operating system and Microsoft Office software suites. Faculty in Mass Communications and Graphic Arts run Macintosh computers. All faculty have Internet access direct to their PC's at Ethernet speeds.

Between 1994 and 1997, Mesa State created a total of 18 technology-enhanced classrooms. These classrooms all have networked computers, data projection and video playback capability. Primary funding for these projects came from a series of grants from the Colorado Commission on Higher Education. In addition, through this series of grants, Media Services has been able to add state-of-the art equipment such as non-linear video editors, CD-ROM recorders, digital cameras, slide and flatbed scanners, and multimedia production software as well as a faculty multimedia development lab.

Mesa State College is in the process of making the transition that will provide access to high technology for students and faculty in the classroom, library, offices, residence halls and home.

In August 1996, Mesa State inaugurated its first distance learning classroom in the library. Funded primarily from grants from the CCHE, Office of State Colleges, and Public Utilities Commission, the distance learning classroom is designed to emulate a regular classroom environment. The facility contains a PictureTel compressed video system and a PictureTel Socrates integrated teaching podium. The College also established compressed video facilities at the Montrose Campus and at UTEC with a PictureTel compressed video systems.

All Mesa State classrooms have a permanent overhead projector and projection screen. In addition, Media Services delivers mobile media equipment to classrooms. A limited inventory of notebook PC's, projection equipment, VCR's, televisions, and traditional audiovisual equipment is available to faculty for classroom use.

While all faculty have computers on their desks, these computers are often not designed for multimedia development. As a result, a faculty multimedia development laboratory has been established in the library. This laboratory contains five Pentium computers connected to the Internet and a wide variety of multimedia software and peripherals such as a digital camera, scanner, and color printer. This laboratory is available to all faculty for the development of multimedia materials for classroom or research projects. It also serves as a small group training center. "

APPENDIX "B"

Faculty Technology Survey, Fall 2001

N	**182**	
1. Where do you teach most of your classes?		
Main Campus	148	82.68%
UTEC	27	15.08%
Montrose	4	2.23%
	179	
2. What is your contract Status?		
Tenured	73	40.33%
Tenure Track	44	24.31%
Full-time, non-tenure track	37	20.44%
Adjunct	27	14.92%
	181	
3. What is your administrative unit?		
School of Applied Technology	25	13.74%
Accounting & Information Technology	8	4.40%
Business Administration	14	7.69%
Human Performance & Wellness	6	3.33%
Nursing & Radiologic Sciences	8	4.44%
Education & Teacher Licensure	5	2.78%
Fine & Performing Arts	22	12.22%
Languages, Literature & Communications	29	16.11%
Social & Behavioral Sciences	27	15.00%
BiologicalSciences	9	5.00%
Computer Science, Mathemtics & Statistics	15	8.33%
Physical & Environmental Sciences	12	6.67%
	180	

4. Current Use and desired use.	Would students		Would Self		Current Student		Current use	
WEB CT	26	12.32%	52	17.75%	12	3.79%	15	2.99%
Power Point	21	9.95%	39	13.31%	20	6.31%	77	15.34 %
Specific Course Software or Courseware	21	9.95%	24	8.19%	34	10.73%	52	10.36 %
Computer-based simulations or exercises	20	9.48%	33	11.26%	31	9.78%	40	7.97%
Internet/World Wide Web	27	12.80%	15	5.12%	73	23.03%	118	23.51 %
CD Rom/Multimedia	19	9.00%	23	7.85%	26	8.20%	50	9.96%

Applications								
On-line discussions	16	7.58%	14	4.78%	13	4.10%	13	2.59%
Homework Submitting & Grading	22	10.43%	41	13.99%	22	6.94%	36	7.17%
On-line reserves	22	10.43%	28	9.56%	28	8.83%	15	2.99%
General Application Software	11	5.21%	11	3.75%	41	12.93%	65	12.95 %
Programming Languages	2	0.95%	8	2.73%	9	2.84%	10	1.99%
Other	4	1.90%	5	1.71%	8	2.52%	11	2.19%
	211		293		317		502	

5. Support of high quality teaching with technology, what is the importance of the following:		
System reliability		
Very Important	169	97.13%
Moderately Important	4	2.30%
Slightly Important	0	0.00%
Not Important	1	0.57%
	174	
Functionality		
Very Important	154	90.06%
Moderately Important	15	8.77%
Slightly Important	1	0.58%
Not Important	1	0.58%
	171	
User friendly for students		
Very Important	130	75.58%
Moderately Important	36	20.93%
Slightly Important	5	2.91%
Not Important	1	0.58%
	172	
User friendly for faculty		
Very Important	119	69.59%
Moderately Important	44	25.73%
Slightly Important	6	3.51%
Not Important	2	1.17%
	171	
Current versions of Software		
Very Important	76	46.06%
Moderately Important	61	36.97%
Slightly Important	24	14.55%
Not Important	4	2.42%
	165	
Accessibility to campus network		
Very Important	113	66.47%
Moderately Important	35	20.59%
Slightly Important	15	8.82%
Not Important	7	4.12%

	170	
Wireless access to internet in Library and common areas		
Very Important	22	13.50%
Moderately Important	36	22.09%
Slightly Important	53	32.52%
Not Important	52	31.90%
	163	
Wireless access to internet in student labs and classrooms		
Very Important	24	14.91%
Moderately Important	44	27.33%
Slightly Important	44	27.33%
Not Important	49	30.43%
	161	
Latest application software in faculty offices		
Very Important	70	42.68%
Moderately Important	60	36.59%
Slightly Important	22	13.41%
Not Important	12	7.32%
	164	
Distance learning via internet		
Very Important	18	11.18%
Moderately Important	27	16.77%
Slightly Important	53	32.92%
Not Important	63	39.13%
	161	
Distance learning via 2-way video		
Very Important	15	9.26%
Moderately Important	30	18.52%
Slightly Important	52	32.10%
Not Important	65	40.12%
	162	
TECHNOLOGY		
I have enough time to preapare to use technology in my classes		
Strongly Agree	5	3.01%
Agree	33	19.88%
Disagree	66	39.76%
Strongly Disagree	49	29.52%
Don't Know	3	1.81%
Not Applicable	10	6.02%
	166	
I have had enough training		

Strongly Agree	18	10.78%
Agree	61	36.53%
Disagree	56	33.53%
Strongly Disagree	24	14.37%
Don't Know	4	2.40%
Not Applicable	4	2.40%
	167	

I know how to use the technology equipment in my classrooms.

Strongly Agree	24	14.29%
Agree	87	51.79%
Disagree	36	21.43%
Strongly Disagree	7	4.17%
Don't Know	9	5.36%
Not Applicable	5	2.98%
	168	

I know how to use the campus email network to communicate with colleagues and students.

Strongly Agree	107	63.69%
Agree	48	28.57%
Disagree	8	4.76%
Strongly Disagree	1	0.60%
Don't Know	2	1.19%
Not Applicable	2	1.19%
	168	

I believe that the technology in my office is sufficiently up to date for my use.

Strongly Agree	32	19.05%
Agree	63	37.50%
Disagree	29	17.26%
Strongly Disagree	33	19.64%
Don't Know	4	2.38%
Not Applicable	7	4.17%
	168	

I believe that technology in my classroom is suffieciently up to date for my use.

Strongly Agree	16	9.58%
Agree	69	41.32%
Disagree	38	22.75%
Strongly Disagree	23	13.77%
Don't Know	9	5.39%
Not Applicable	12	7.19%
	167	

I am confident that the technology in my office will be operational.

Strongly Agree	10	5.92%
Agree	66	39.05%
Disagree	52	30.77%
Strongly Disagree	27	15.98%
Don't Know	4	2.37%
Not Applicable	10	5.92%
	169	

I am confident that the technology in my classrooms will be operational

Strongly Agree	2	1.20%
Agree	58	34.94%
Disagree	63	37.95%
Strongly Disagree	20	12.05%
Don't Know	10	6.02%
Not Applicable	13	7.83%
	166	

If I have a technology problem I know who to call.

Strongly Agree	45	26.63%
Agree	87	51.48%
Disagree	20	11.83%
Strongly Disagree	10	5.92%
Don't Know	1	0.59%
Not Applicable	6	3.55%
	169	

If I have a problem with my office computer system, the problem is addressed in a reasonable amount of time.

Strongly Agree	15	9.04%
Agree	60	36.14%
Disagree	33	19.88%
Strongly Disagree	17	10.24%
Don't Know	21	12.65%
Not Applicable	20	12.05%
	166	

If I have a problem with my classroom technology, the problem is addressed in a reasonable amount of time.

Strongly Agree	31	18.56%
Agree	71	42.51%
Disagree	29	17.37%
Strongly Disagree	20	11.98%
Don't Know	4	2.40%
Not Applicable	12	7.19%
	167	

If I have a technology problem I know when it will be addressed.

Strongly Agree	10	5.99%
Agree	34	20.36%
Disagree	56	33.53%
Strongly Disagree	33	19.76%
Don't Know	23	13.77%
Not Applicable	11	6.59%
	167	

My students have adequate access to technology on this campus.

Strongly Agree	15	8.98%
Agree	68	40.72%
Disagree	35	20.96%
Strongly Disagree	15	8.98%
Don't Know	31	18.56%
Not Applicable	3	1.80%
	167	

My students know how to communicate with me through campus email.

Strongly Agree	39	23.08%
Agree	89	52.66%
Disagree	15	8.88%
Strongly Disagree	0	0.00%
Don't Know	15	8.88%
Not Applicable	11	6.51%
	169	

CLASSROOM ENVIRONMENT

The classrooms I teach in are conducive to learning.

Strongly Agree	20	11.76%
Agree	91	53.53%
Disagree	39	22.94%
Strongly Disagree	20	11.76%
Don't Know	0	0.00%
Not Applicable	0	0.00%
	170	

Equipment in classrooms is appropriate for students (desks, chairs, whiteboards, etc.)

Strongly Agree	20	11.90%
Agree	82	48.81%
Disagree	46	27.38%
Strongly Disagree	17	10.12%
Don't Know	2	1.19%
Not Applicable	1	0.60%
	168	

If I have a problem with classroom facilities, the

problem is addressed in a reasonable amount of time.		
Strongly Agree	19	11.24%
Agree	73	43.20%
Disagree	40	23.67%
Strongly Disagree	14	8.28%
Don't Know	16	9.47%
Not Applicable	7	4.14%
	169	
If I have a problem with classroom facilities, I know who to call.		
Strongly Agree	29	17.37%
Agree	92	55.09%
Disagree	30	17.96%
Strongly Disagree	9	5.39%
Don't Know	5	2.99%
Not Applicable	2	1.20%
	167	

FUTURE OUTLOOK

I am interested in teaching distance education courses.		
Strongly Agree	11	6.47%
Agree	37	21.76%
Disagree	41	24.12%
Strongly Disagree	55	32.35%
Don't Know	19	11.18%
Not Applicable	7	4.12%
	170	
I am interested in learning about distance education courses.		
Strongly Agree	12	7.10%
Agree	55	32.54%
Disagree	36	21.30%
Strongly Disagree	50	29.59%
Don't Know	8	4.73%
Not Applicable	8	4.73%
	169	
The institution should offer more classes after 5 pm.		
Strongly Agree	23	13.61%
Agree	51	30.18%
Disagree	32	18.93%
Strongly Disagree	27	15.98%
Don't Know	32	18.93%
Not Applicable	4	2.37%
	169	
The institution should offer more weekend classes.		

Strongly Agree	11	6.51%
Agree	32	18.93%
Disagree	45	26.63%
Strongly Disagree	54	31.95%
Don't Know	25	14.79%
Not Applicable	2	1.18%
	169	

I am interested n teaching more classes offered after 5 pm.

Strongly Agree	13	7.65%
Agree	30	17.65%
Disagree	48	28.24%
Strongly Disagree	69	40.59%
Don't Know	7	4.12%
Not Applicable	3	1.76%
	170	

I am interested n teaching more weekend classes.

Strongly Agree	4	2.35%
Agree	14	8.24%
Disagree	46	27.06%
Strongly Disagree	96	56.47%
Don't Know	8	4.71%
Not Applicable	2	1.18%
	170	

I would object to students using laptop computers during my classes.

Strongly Agree	14	8.28%
Agree	15	8.88%
Disagree	61	36.09%
Strongly Disagree	65	38.46%
Don't Know	10	5.92%
Not Applicable	4	2.37%
	169	

TRAINING

I would be willing to participate in additional trainng to use technology in my classroom.

Strongly Agree	54	32.93%
Agree	81	49.39%
Disagree	12	7.32%
Strongly Disagree	8	4.88%
Don't Know	3	1.83%
Not Applicable	6	3.66%
	164	

Instructional Technology training sessions offered on campus have met my needs.

Strongly Agree	8	4.91%
Agree	54	33.13%
Disagree	41	25.15%
Strongly Disagree	15	9.20%
Don't Know	21	12.88%
Not Applicable	24	14.72%
	163	

What format do you prefer for training?		
One-on-one instruction.	56	33.94%
Small group instruction in the lab.	108	65.45%
Large group seminars.	1	0.61%
	165	

What technologies would you need/want training in?		
PowerPoint	72	28.57%
WebCT	52	20.63%
General Application software	52	20.63%
Statistical software	37	14.68%
Specific courseware	1	0.40%
Don't Need	38	15.08%
	252	