CONNECTING WITH TOMORROW

A STRATEGIC AND FINANCIAL PLAN FOR INFORMATION TECHNOLOGY IN HIGHER EDUCATION IN MARYLAND

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INTRODUCTION

Having participated over the past four years in seven major studies conducted by various State agencies of the information technology needs of higher education, the members of the Educational Technology Policy Council have concluded that no further study is needed. It is time for action. This strategic and financial plan gives a realistic projection of the funding needed to assure that Maryland remains competitive with other states in educational information technology. Each of the four major components of an integrated approach to the information technology needs of the higher education system is explained and specific budgets are recommended. A summary table at the end of the *Plan* indicates the cumulative challenge to prepare Maryland to become a leader in the educational applications of advanced technology.

The Educational Technology Policy Council (ETPC) is an advisory council of the Maryland Higher Education Commission. Members of the Policy Council represent the segments of postsecondary education, State agencies, public education, and other interested organizations. They are senior administrators who can speak authoritatively for the segment/institution which they represent. Normally, members are administrators holding the rank of dean, provost, or president of a campus or are an official of a segmental board. In addition, faculty and student representatives are selected by the organizations they represent.

The ETPC advises the Maryland Higher Education Commission on issues related to advanced electronic educational technologies as they impact on postsecondary education, including academic, financial, and operational issues such as information technology infrastructure, interinstitutional connectivity, administrative computing, funding for telecommunications, automated student services, fair and open access, articulation among institutions, consortial arrangements, educational quality, and other technology-related issues.

BACKGROUND

Information technology has transformed how learning occurs in postsecondary education. It has made information readily accessible and has enabled students to engage in learning in almost any setting – the home, the work place, community centers, and throughout the campuses of Maryland's colleges and universities. As a result, learning is not restricted to a classroom at a scheduled time; it can be distributed to any setting and need not be limited to a particular schedule.

Distance learning distributed *via* information technology has grown dramatically in Maryland in recent years. It can take the form of classrooms or sites linked electronically through interactive or one-way video and audio, or it can be coursework available through the Internet. In 1997, Maryland campuses offered 1,245 credit courses through one or more of these technologies serving nearly 30,000 students: since 1997, these enrollments have skyrocketed. Issues concerning the use and application of distance education will be a major focus of higher education in coming years, particularly as the demand for learning extends to the work place and to the home.

The State has recently undertaken several grant programs directly focused on increasing the information technology resources of campuses and the use of technology-enhanced instruction. The community colleges have benefited from matching technology grants up to $400,000 per campus over two fiscal years. These funds are being used primarily for hardware and campus infrastructure. Faculty technology training has benefited from $2 million in grants spread over FY 2000 and FY 2001. The Maryland Digital Library (MDL) has been funded at $900,000 over the same two fiscal years. Several studies of the need for a more robust statewide educational network and of expenditures on technology in higher education in states with which Maryland is often compared (Virginia, New Jersey, Georgia, Kentucky) indicate that the State must make a greater investment in higher education information technology to remain competitive.

Maryland confronts the same challenges that face other states. Technology-enhanced instruction has costly components: wiring of classrooms and dormitories, a complex telecommunications infrastructure, training and mentoring of faculty and monitoring of their performance, creating standards for software to be used by faculty, devising and implementing policies on copyright and intellectual property, supporting online library holdings and databases, and creating and maintaining technology support systems. These costly components are required not only for Web-based instruction conducted at a distance but also for technology-enhanced classroom courses.

As in most states, Maryland's colleges and universities are heavily engaged in integrating the new technologies into their academic programs. But unlike most states, Maryland also has a few institutions that are well positioned at the leading edge. The University of Maryland University College has emerged as the premier virtual university in America, if not the world. UMUC currently offers more than 200 separate online courses, 26

baccalaureate and master's degree programs, and, in 1998-99, had more than 21,000 enrollments in online distance courses. In addition to UMUC, Maryland's most entrepreneurial institutions in online courses and programs are its community colleges. Through the Maryland Community College Teleconsortium (MCCT), they have developed a process for sharing distance learning courses so that Maryland students have greater access to the courses they need and want.

The community colleges and five senior institutions have also formed MarylandOnline for the promotion and support of Web-based distance education. In its premiere semester, Fall 1999, MarylandOnline had 12 participating institutions offering 31 online degree programs. The fact that 12 colleges and universities in the State, representing all collegiate segments, including independent institutions, created and launched MarylandOnline in less than one year is a testament to the speed with which Web-based distance education is gaining acceptance and even urgency. As more evidence of this rapid development, by the end of the Spring 2000 semester, MarylandOnline encompassed 18 member institutions offering more than 50 degree and certificate programs.

A Time for Action

In order to leverage individual institutional strengths to extend the instructional power of the World Wide Web to every college student in Maryland, our State must establish the proper infrastructure in organization, connectivity, educational resources, and human resources. There have been seven major studies of the information technology needs of higher education in the past four years. No new studies are needed. Now is a time for action. The following four goals must take priority during the next several years:

1. **Connecting educational institutions with *net.work.Maryland*, the State's backbone network, with statewide broad-band, high speed connectivity.**

2. **Through MarylandOnline and MCCT, enhance access to the online courses and programs offered by Maryland colleges and universities and develop an Internet portal that brands Maryland as a national and international leader in distance education.**

3. **Develop a digital library providing online access for distance education and traditional students, faculty researchers, the general public, and business and industry to commercial electronic databases and journals, streaming media, specialized library collections, and traditional library materials in digital form.**

4. **Provide faculty technology training to prepare adequate numbers of faculty members capable of developing and delivering high quality multi-media instruction.**

CONNECTING EDUCATION TO *net.work.MARYLAND*

Goal 1. **Connect educational institutions with *net.work.Maryland*, the State's backbone network, with statewide broad-band, high speed connectivity.**

The University of Maryland Academic Telecommunications System has connected the 13 institutions in the University System for over 9 years. It provides data services and interactive video among the participating campuses and Internet access for all of them. This network allows instructional programs to have participants from multiple campuses without travel. Additionally, it pools funds and technical expertise to leverage the capabilities of the participating institutions to do more collectively than any could do individually.

Additionally, UMATS is facilitating the exploration of Next Generation Internetworking for USM institutions beyond the research institutions. This access to leading edge capabilities also needs to be implemented for all educational entities in Maryland

Next Steps in Networking Maryland Educational Organizations

To be truly effective, the next generation network to support education in Maryland must be all-inclusive and not just limited to one segment. The vision for education in Maryland is a seamless system from K through graduate school and beyond. To achieve this, it is necessary to tie *all* educational institutions in the State together by a common data network. This would allow K-12 students to participate in collegiate bridge programs or research projects from their home schools. In-service teachers could maintain continuing education without the need to travel. Student teachers could similarly participate in K-12 classrooms around the State. Community College students could make the transition to senior institutions more easily. Students would be able to earn both an Associate degree and a Bachelor's degree from their home, working at their own speed.

While all of these things are happening to a degree at the current time, there are many limitations in the present network infrastructure. Many institutions have very limited Internet connections. Even those that have adequate connections find themselves on different backbone networks that force traffic to go in circuitous routes around the Internet and through congested inter-carrier inter-exchange points. These factors limit the capabilities and services that are currently possible.

An expansion of UMATS to connect all of higher education and, eventually, K-12 as well to *net.work.Maryland,* the State's backbone network, is needed. Since UMATS is currently funded by its participating institutions, it is expected that they, and other participating institutions, will pay at about the same rate for the new service into the future. The model is not *something for nothing*, but *more capability for about the same cost*.

Providing Differentiated Levels of Service and Connectivity

The technical model underlying this plan involves two components. The first component is a shared backbone across the State. It is this shared backbone that allows a network of networks within Maryland to operate efficiently and keeps local traffic in the State local to the State. It is hoped that *net.work.Maryland* will play this statewide backbone role. The complementary connectivity proposed here would require a *substantial*, *dedicated*, and *specially managed* component of that backbone for educational applications. "Substantial" means at least the OC12 (622 Mb/s) capability that UMATS already has in the Baltimore/Washington corridor, and perhaps more effectively an OC48(2488 Mb/s) capability to allow for growth. "Dedicated" means that while *net.work.Maryland* is a shared resource, it has to be designed and operated so that different stakeholder communities can have differentiated levels of service. Thus, education users who depend on this service for real-time teacher-student interactions, cannot be impacted by a researcher who is transmitting large data files or by a State agency which is properly processing a large number of financial transactions over the same network. All of these are legitimate and envisioned uses of *net.work.Maryland*, but they have to be protected from each other. "Specially managed" means that these capabilities have to take into account the time dependence and latency requirements of different services.

The second component of the proposed solution is connecting participating institutions to the shared backbone. This is perhaps the most challenging component of the project. Providing appropriate connections from participating institutions to backbone access points is a form of the *last mile problem*. While participating institutions should be expected to contribute to the cost of such connectivity, in some areas of the State there are no competitive alternatives, and in most areas the cost of truly significant bandwidth as envisioned is prohibitively expensive. To be effective it is necessary to develop a business plan for the educational component of *net.work.Maryland*, and perhaps subsidies, that equalizes the cost of backbone connection to a standard connection fee for each K-12 district, community college, senior college or university that wishes to participate.

The expansion of UMATS can provide dynamic, postalized, and specialized services. Also, an expanded UMATS will provide a "menu" of standards-based services according to institutional need, current tariff offerings, and "optimized "last mile" network design. The default interface will at DS3 levels for edge institutions. Since the large bandwidth and high-speed connections provided by UMATS as envisioned will probably not be needed by all colleges, savings can be realized both by UMATS and by the institutions by scaling down the normal UMATS hardware required by the largest users. Menues of services and the hardware required will be provided to insitutions; so they may choose the most appropriate and least expensive package appropriate to their needs.

The following projected budget indicates new State funds that will be needed to implement an expanded UMATS as envisioned. Costs associated with inter-LATA telecommunications that may be absorbed by *net.work.Maryland* are not included in this budget. In addition,

costs for services currently provided by UMATS have been estimated and subtracted from the base budget for this proposal.

Financial Requirements: Connecting Education to *net.work.Maryland**

Budget components	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Annual Operating expenses					
Salaries/Wages/Fringes	136,000	203,000	352, 300	374,400	405,600
Contracted Personnel and Services	125,000	200,000	250,000	280,000	300,000
ISP Interface	1,600,000	1,800,000	2,075,000	2,400,000	2,650,000
UMATS Maintenance	200,000	285,000	340,000	270,000	335,000
Segment Training	50,000	75,000	100,000	125,000	125,000
Membership - Contracts (Professional, UCAID, MAX, NGI, etc.)	100,000	150,000	200,000	250,000	275,000
Total annual operating	**2,211,000**	**2,713,000**	**3,317,300**	**3,699,400**	**4,090,600**
One-time Capital Expenses					
CO Hubs Interface to *net.work Maryland* through UMATS	1,520,000	1,520,000	1,520,000	1,895, 000	2,050,000
USM/MICUA/Comm.College/ Brds of Education -WAN Interfaces (DS3)	1,260,000	1,730,000	2,260,000	2,500,000	2,200,000
UMATS equipment	2,925,000	1,250,000	2,400,000	1,875,000	2,260,000
One time (capital)	**5,705,000**	**4,500,000**	**6,180,000**	**6,270,000**	**6,510,000**
Less current UMATS budget to be applied to connectivity to Net.work.Md	**1,000,000**	**1,200,000**	**1,300,000**	**1,400,000**	**1,500,000**
Total new funds (operating + capital)	**6,916,000**	**6,013,000**	**8,197,300**	**8,569,400**	**9,100,600**

* This budget assumes inter-LATA HUB to HUB connections will be supplied by *net.work.Maryland*. If the inter-LATA connectivity is not provided by *net.work.Maryland*, an additional $2 million annually will be required.

COORDINATING AND DEVELOPING DISTANCE EDUCATION

Goal 2: Through MarylandOnline and MCCT, enhance access to the online courses and programs offered by Maryland colleges and universities and develop an Internet portal that brands Maryland as a national and international leader in distance education.

The higher education community nationwide and worldwide has increasingly begun to acknowledge and use the powerful learning resources and tools available through the World Wide Web. Students now entering college have grown up with access to computers and the Internet; students expect their instructors to be equally conversant with information-age media.

Currently, more than 35 states have organized consortia to advance their distance learning and instructional technology goals, using a wide range of models to suit their individual needs. The term "virtual university" may be used to describe models that vary significantly in their organizational structure. The emerging model, and the one used by Maryland community colleges in forming the Maryland Community College Teleconsortium, is the "home institution/provider institution" model, in which a distance learning student designates a home institution through which she is admitted, registers, receives support, and is ultimately awarded her degree. The courses that comprise her program of study, however, might be offered by multiple "provider" institutions throughout the state, working closely with the home institution to ensure consistent content, quality of instruction, and course articulation within the student's chosen curriculum. The Kentucky Commonwealth Virtual University and the Illinois Virtual Campus are built on this model.

As in most states, Maryland's colleges and universities are heavily engaged in integrating the new technologies into their academic programs. The 21 higher education institutions that comprise MarylandOnline and/or MCCT annually enroll more than 40,000 distance learning students. MCCT and MarylandOnline both promote the growth of distance learning and encourage collaboration and resource sharing among institutions at all levels of the educational spectrum. The challenge for Maryland higher education is to leverage individual institutional strengths to extend the instructional power of the World Wide Web to every college student in Maryland.

The profile of distance learning students in Maryland generally conforms to national statistics: Distance learners are usually over the age of 23; 70% are female; and 76% are degree oriented. They are adult learners, motivated by clear educational goals directly related to workplace advancement or betterment. These students are often experienced computers users, who graduated from K-12 systems where computers have been part of their education for many years, and who now work for high tech firms or state and local government where advanced business and technology skills are required. Today's distance learning consumers demand and expect Maryland higher education institutions to meet their

needs for a wide range of quality educational choices, equal access, anytime and anywhere learning, and training throughout their career cycles.

Collaborative Efforts

Collaborative efforts have begun in Maryland at the "grass roots," powered by institutions that have come together to provide leadership in distance learning initiatives. In 1997, the Maryland Community College Teleconsortium (MCCT) developed a mechanism for course sharing built on trust and cooperation among all 16 community colleges. The MCCT cooperative arrangement augments each community college's online offerings and degrees. In 1999, MarylandOnline, building on MCCT, engaged institutions that might be natural competitors and turned them into partners that collaborate for the good of Maryland's distance learning students. MCCT and MarylandOnline now represent 21 institutions working collaboratively to promote the growth of distance learning and encourage collaboration and resource sharing among Maryland institutions.

Maryland Community College Teleconsortium (MCCT) --
www.aacc.cc.md.us/mcctadmin

At the core of Maryland distance learning is the Maryland Community College Teleconsortium (MCCT), composed of all Maryland Community Colleges. The mission of MCCT is to provide Maryland community college students with greater access to distance learning opportunities through a cost-effective, cooperative process that preserves institutional autonomy. Beginning as a voluntary effort in 1997, MCCT is led and governed by the Maryland Community College Council of Presidents. MCCT is staffed by a Director, whose position has been funded through a Maryland Higher Education Commission (MHEC) grant in FY 2000; the community college presidents have agreed to fund this position in FY 2001. During its three pilot semesters, MCCT has served over 1,700 students in more than 100 shared courses.

MarylandOnline -- www.MarylandOnline.org

MarylandOnline, an inter-segmental consortium of nine Maryland community colleges and five senior institutions, offers students the opportunity to achieve their educational goals by completing courses, certificates, and degree programs at a distance. Currently MarylandOnline represents 10 certificate programs, 11 associate degrees, 17 bachelor's degrees, and 12 graduate degrees – all available at a distance. Membership in MarylandOnline is open to all Maryland higher education institutions, public and private, that are licensed by the Maryland Higher Education Commission and accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools. MarylandOnline is organized as a (501)(c)(3) corporation.

Faculty Online Technology Training Consortium (FOTTC) --
www.Mdfaconline.org

As of December 1, 1999, the Maryland Higher Education Commission (MHEC) funded the Faculty Online Technology Training Consortium, a partnership of 20 Maryland institutions representing the members of MarylandOnline and MCCT. Targeted specifically at increasing instructional technology training opportunities for faculty, the key components of the grant project include: Design and maintain the Maryland Faculty Online Web site; develop a Train-the-Trainer approach to training faculty; create online training modules at the intermediate, advanced and training levels; provide Cross-Institutional Technology Training Incentives to encourage collaboration among partner institutions to provide faculty training. Evaluate and disseminate project activities.

The Internet has significantly changed the banking, retail, and entertainment industries by providing instant access to a wide array of Web-based services – and is in the process of changing higher education equally. MarylandOnline and MCCT are helping prepare for the changes in higher education brought by online learning. Students expect and demand 24/7 access to information, technical help, library materials, advising, and other student services. To meet these expectations and demands, MarylandOnline and MCCT can assist their member institutions in providing these services while avoiding duplication. As the largest statewide provider of distance education, UMUC offers many of these services to its own students, but the exponential growth of its online offerings seriously strains UMUC's infrastructure. It is not reasonable to assume that UMUC can support not only the needs of its own students, but also the 24/7 needs of all Maryland institutions offering distance education.

Barriers

Maryland's distance learning effort has been created and supported through the 21 institutions comprising Maryland Online and MCCT. But more can – and must - be done to serve Maryland's students and employers and to meet the anticipated explosive growth in enrollments in the next decade. And the MarylandOnline and MCCT institutions have reached the limit of available resources. These institutions have committed significant resources for FY 01:

Membership dues for MarylandOnline (18 institutions) and MCCT (all community colleges)	$165,000
Additional in-kind contributions from Anne Arundel Community College, UMUC, and Montgomery College	$192,300
UMUC direct start-up funding for MarylandOnline	$297,948
Total for FY 2001	$655,248

But this level of support will not be available in FY 2002. UMUC will have honored its commitment to start-up funding for MarylandOnline but must direct its resources to its own internal initiatives. Membership fees and dues are not enough to continue the growth and development necessary to make Maryland competitive with other statewide initiatives. Without significant additional support, the significant accomplishments of MarylandOnline and MCCT will either be unable to grow to meet student and workplace demand or eventually fail.

Maryland institutions have applied, and will continue to apply, for federal and state grants to meet these needs. But this is not a long-term solution to establish a sustainable funding base. Funding agencies expect to see evidence of state commitment and support for distance learning efforts; they look to fund exciting new initiatives rather than the on-going costs of doing business. Maryland's current distance learning needs are no longer "innovative." In the current distance learning environment, what Maryland distance learning providers are trying to accomplish is at a basic level expected by students, employers, and funding agencies.

Solutions

Distance learning enables greater access to education and training for Maryland citizens and employers – and thereby creates a highly educated and productive workforce. This educated workforce is a powerful tool for retaining established businesses and attracting new business development to Maryland. Significant state support for distance learning identifies Maryland as a powerful online higher education resource and contributes to Maryland's economic strength.

To achieve this position, Maryland must encourage and support a collaborative, assertive approach to distance learning built on the following goals:

- Expanded and equitable access to quality online higher education for all citizens
- Serving as a catalyst for economic development in Maryland
- Meeting the increasing demand for a skilled workforce
- Leveraging the State's substantial investment in technology
- Containing costs through collaboration to reduce overhead, reduce duplication of effort and increase buying power

Maryland higher education institutions are already active collaborators in providing distance learning delivery to Maryland students. Course sharing, student recruitment, and joint planning efforts are already in place for some institutions, and this has created a momentum

that the State should recognize and support as a means of providing quality online higher education to Maryland. In order to maximize its return on these efforts, Maryland should take the following steps to ensure its role as a leader in distance education:

1. At the highest level of State government, publicize Maryland's intention to place its higher education institutions at the leading edge of online learning through collaborative and consortial mechanisms.

2. Recognize and appropriately fund MarylandOnline and the Maryland Community College Teleconsortium (MCCT) as the entities charged with facilitating the fulfillment of Maryland's vision for online higher education.

3. Develop a robust Internet portal for distance learning offered by Maryland's higher education institutions.

4. Extend and equalize access for Maryland citizens to high quality postsecondary online education by:

    a) Developing a scalable, efficient, secure course management system that includes course sharing, registration, transfer of grades, and related service.

    b) Building online student-centered delivery processes based on documented needs.

    c) Increasing the number and type of courses, degrees and certificates available online.

    d) Creating courses and services for at-risk and diverse populations.

    e) Developing a process for workforce certification and credentialing to help online students identify and meet requirements and obtain skills for critical occupations.

    f) Training faculty to effectively use current and emerging technologies as instructional tools.

Financial Requirements: MOL/MCCT

Budget Components	FY 2002	FY2003	FY2004	FY2005	FY2006
Operating Budget					
Web development, administration, student recruitment, communication	821,786	846,439	871,832	897,987	924,927
Course Management System	0	300,000	250,000	250,000	250,000
Research and Evaluation	100,000	75,000	75,000	75,000	75,000
Online Student Services	370,000	300,000	250,000	250,000	250,000
Shared Online Course Development	300,000	350,000	250,000	250,000	250,000
Online Workforce Certification/Credentialing	400,000	350,000	350,000	350,000	350,000
Faculty Training	350,000	350,000	350,000	350,000	350,000
Total Operating	**2,341,786**	**2,571,439**	**2,396,832**	**2,422,987**	**2,449,927**
One-time Capital Expenses					
Course Management System	500,000				
Total Request	**2,841,786**	**2,571,440**	**2,396,833**	**2,422,988**	**2,449,927**

MARYLAND DIGITAL LIBRARY

Goal 3. Develop a digital library providing online access for distance education and traditional students, faculty researchers, the general public, and business and industry to commercial electronic databases and journals, streaming media, specialized library collections, and traditional library materials in digital form.

Connectivity is only one component of an educational environment. It is in libraries that the resources necessary to support learning and research are found. Thus, a proposed Maryland Digital Library will provide the content in electronic form to make the Maryland Education Network a complete academic resource.

The Maryland Digital Library reflects broad agreement and support among Maryland's academic libraries about the resources needed in Maryland to make the ongoing transition to a digital library environment. Such an environment enables library users to gain access seamlessly to electronic resources as well as the substantial collections of more traditional forms of material that publishers continue to issue and that libraries collect and organize for use. The combination of these electronic and traditional forms of material stands at the core of college and university commitments to support learning and research and will determine in part the quality of education which Maryland's colleges and universities will be able to support in the years ahead.

Maryland's academic libraries, which serve the state's publicly supported and independent two- and four-year colleges and universities, have joined to develop and to put in place. a Maryland Digital Library (MDL). The goals of the Maryland Digital Library are to: (1) increase effective access to information of critical value in both Internet accessible electronic form and in library collections of books, journals, sound recordings and other traditional forms of material, (2) optimize effective use of funding in the acquisition and creation of digital resources, and (3) link Maryland to the rapid developments in national and global digital library capabilities. The proposed MDL enables Maryland's academic libraries, their users, and the State of Maryland to undertake crucial steps in the transition to library and information services that implement these goals.

The principal benefits of the Maryland Digital Library accrue from two key program components – the *Maryland Universal Statewide Access* (MdUSA) that provides access to licensed Internet accessible information and the *Maryland Premier Academic Catalog* (MdPAC) that provides online access first to existing library holdings and then to newly created digital content. However, the MDL program will result in a number of very specific benefits to academic libraries, Maryland's colleges and universities, and the state at large.

The significance of the Maryland Digital Library extends far beyond the role which libraries have traditionally played at the center of college and university campus life. The Maryland

Digital Library program is critical for maintaining the competitiveness of higher education in the state. Students and their parents are mindful of the value that electronic information plays in learning and of the economic return on investment for college graduates who know how to exploit the new world of information resources. Prospective faculty members also now take into account the availability of digital library resources as they make decisions about job offers. Businesses are keenly aware of the need for a technologically oriented workforce able to engage in learning and training activities on an ongoing basis. Such an educational environment forms an important part of a healthy climate to attract new business and economic activity. Digital library capabilities provide the key underpinning for the type of flexible learning environments required to meet the needs of employers and employees.

A major benefit of the Maryland Digital Library will be to level the academic playing field for the residents of Maryland's rural areas and the students and faculty of the smaller colleges. The cooperative licensing of access to expensive databases and online journals and indexes will make these rich resources--now prohibitively expensive to all but the largest research universities--available to students and their instructors in every region of the State.

Financial Requirements: Maryland Digital Library

Budget Components	FY 2002	FY2003	FY2004	FY2005	FY2006
MdUSA - Maryland Universal Statewide Access (contracts for licensed databases/ journals)	$2,487,360	$2,614,728	$2,852,964	$3,112,173	$3,300,000
MdPAC - Maryland Premier Academic Catalog (access to library catalogs and to digitized library materials)	211,200	457,640	649,272	604,490	604,490
Support of K-12, lifelong-learning, and business	18,000	18,900	19,845	20,837	20,837
User Support (help desk)	70,000	73,500	77,175	81,034	85,086
Administrative support	45,000	47,250.	49,613	52,093	54,698
Creating new digital content and Online Reference Service	35,200	171,960	Not yet estimated	Not yet estimated	Not yet estimated
Supplies, Equipment	62,000	25,200	25,200	25,200	25,200
Professional development, and Travel	25,000	25,000	25,000	25,000	25,000
Total	**$2,953,760**	**$3,434,178**	**$3,699,069**	**$3,920,827**	**$4,090,311**

FACULTY TECHNOLOGY TRAINING

Goal 4. Provide faculty technology training to prepare adequate numbers of faculty members capable of developing and delivering high quality multi-media instruction.

If a broad base of technology-based courses and programs is to be created, change must occur in the fundamental nature of instruction in colleges and universities. In fact, this change has begun, but it is inhibited by both the strength of traditions and a lack of resources and funding.

Maryland's future work environment will require a new Maryland workforce. In turn, this will require a transformation of the instructional model in our colleges and universities. The use of multimedia and distributed technologies provides both the opportunity for flexible distance learning not bound by time or place and an enhanced traditional classroom. The new classroom is a global learning environment which is student-centered rather than campus-centered, virtual rather than defined by a physical location, and is composed of an array of educational services offered by multiple providers through multiple technologies. The new learning model is nonlinear and asynchronous, structured according to learner needs rather than institutional convenience.

Students can now access learning through the Internet, cable, and satellite technologies, or they can enter a learning "classroom" of individual stations to learn specific topics and demonstrate competencies. Access becomes the critical issue in higher education. Access means the availability of courses and training at convenient times and locations and through flexible formats. It means varied options for combining and documenting learning outcomes for the awards of degrees. It means availability of information and experts outside the walls of a single institution. The new learning environment crosses institutional, state, and national boundaries.

Three factors change in the new instructional model: the concepts of time and place and the role of the instructor. Time to complete a learning activity may expand or contract to fit the learner's preparation and goals. Place may be extended to the virtual classroom. The instructor becomes the facilitator and creator of the learning environment and not the sole information source. This significant change in the role of the instructor necessitates attention to faculty training and development.

The computer- and technology-dependent society requires that students graduate with the technology-related skills necessary to be effective in the workplace. To ensure that all learners, K-12 through higher education and beyond, understand and use current technologies to access information and communications resources in a variety of settings, current college faculty and teacher education candidates must be proficient in basic computer skills and the use of multimedia as an integral part of instruction.

The new learning environment requires that faculty become not only content experts, but competent in instructional design, application design, and technical implementation. In addition to technical capability in using and applying new technologies, competencies in new instructional techniques such as designing curricula based on student learning needs; and accessing information and experts over the Internet are required. In order to support the faculty in the transformation of the instructional model, a redefinition of a faculty member's teaching and research responsibilities is needed that accounts for the time required to develop and maintain technological proficiency for effective teaching.

The State has supported faculty technology training grants for Fiscal Years 2000 and 2001. The Maryland Higher Education Commission administered these grants, which were used to encourage consortial, multi-institutional approaches to faculty technology training. Over 30 colleges and universities have used the grants to initiate faculty training programs. Many of these programs emphasized the train-the-trainer approach to achieve maximum impact for the program. But the number of faculty members receiving training in technology-based instruction through this program is still small (around 300) compared to the total number of faculty (7,143 full-time faculty in Fall 1998, with an additional 7,414 part-timers). Fortunately, many colleges and universities have undertaken systematic approaches to train their faculty. However, this is a large and expensive task. It is in the interest of the State and all its citizens that this training be expedited. Without a technology-savvy faculty to provide the courses and content, the monies invested in high-speed networks and other technology resources will be wasted.

Financial Requirements: Faculty Technology Training

Budget Components	FY 2002	FY2003	FY2004	FY2005	FY2006
Competitive Grant Program	$1,000,000	$1,000,000	$500,000	$500,000	0

Consolidated Financial Requirements
of
A Comprehensive Plan for Information Technology for Maryland Higher Education

	FY 2002	FY2003	FY2004	FY2005	FY2006
Operating Expenses					
Connecting Education to *net.work.Maryland*	2,211,000	2,713,000	3,317,300	3,699,400	4,090,600
MarylandOnline/MCCT	2,341,786	2,571,439	2,396,832	2,422,987	2,449,927
Maryland Digital Library	2,953,760	3,434,178	3,699,069	3,920,827	4,090,311
Faculty Technology Training	1,000,000	1,000,000	500,000	500,000	0
Total Operating	**8,506,546**	**9,718,617**	**9,913,201**	**10,543,214**	**10,630,838**

One-Time/Capital Expenses					
Connecting Education to *net.work.Maryland*	5,705,000	4,500,000	6,180,000	6,270,000	6,510,000
MarylandOnline/MCCT	500,000				
Maryland Digital Library					
Faculty Technology Training					
Total One-time/Capital	**6,205,000**	**4,500,000**	**6,180,000**	**6,270,000**	**6,510,000**