CSU The California State University

A REPORT FROM:

THE INFORMATION TECHNOLOGY ADVISORY COMMITTEE

INFORMATION TECHNOLOGY FUNDING GAP STUDY

June 2005

EXECUTIVE SUMMARY

At the executive council retreat in summer 2004, CSU campus presidents expressed a strong interest in learning more about the status of IT-related spending in the system, areas of funding shortfalls, and sources and strategies for addressing them. For the past several months, a sample of six CSU campuses (Chico, East Bay, Fullerton, San Marcos, Northridge, and Los Angeles) agreed to conduct a "bottom up" inventory of all IT expenditures and match them against minimum baseline needs as a means for identifying the size and nature of the IT "funding gap" in the system. The major focus was on academic technology (where most gaps presumably existed), but all IT resources and services were studied. The major questions were:

1. How much are campuses currently spending on IT in various functional areas of the university?
2. What are the areas of greatest unmet need, and how large are the funding shortfalls in each?
3. For areas where no baseline metric currently exists (e.g. mostly in academic technology), how does the system define and measure baseline capability.
4. What would it cost the system, in terms of one-time expenditures and ongoing annual increases, to achieve and maintain minimum baseline in these areas?
5. What are some of the funding sources and strategies that should be considered?

The sample campuses reported spending a total of $86.5 million on all forms of information technology in academic year 2003-04. The split between academic and administrative technology was roughly even with $45.9 million (53 percent) going to the former and $40.6 (47 percent) for the latter. The split between centralized and distributed technology was much wider with $65.2 million (75 percent) for centralized and $21.3 million (25 percent) for distributed. About 52 percent were spent on human resources (salaries and benefits), 23 percent on hardware and software, and 25 percent on operating expenses, maintenance and support.

When the sample dollar figures are extrapolated to the system as a whole using FTES as a base (in most instances), about $288 million were spent on all forms of information technology in 2003-04. Using the sample percentages as a guide, roughly $153 million of this was devoted to academic technology versus $135 million for administrative technology, and $216 million was centralized spending versus $72 million decentralized or distributed. The last survey of all IT-related spending in the system was conducted in 1995 in preparation for launching the ITS and, at that time, total system expenditures on IT was estimated to be $203 million.

Enterprise information systems commanded roughly one-third of the spending in the sample. Shared infrastructure, and instructional technology and student computing, each received about one-fifth of the total. The remaining 27 percent was divided among training and support services, office technology infrastructure, and electronic content.

The study team agreed on four major categories of IT unmet needs, i.e., where campuses were not achieving the minimum baseline standards for access and quality. These categories included: four baseline needs within the existing ITS framework (workstations, servers, technical support, and security); three new or emerging baseline needs (middleware, wireless networks, and SB 302 compliance); four core academic technology needs on the campuses today (LMS, instructional design staff, smart classrooms, and electronic content); and four emerging academic technology needs stemming from the new systemwide initiatives (student success, e-learning framework, professional development, and digital marketplace).

When the sample data from the six campuses were extrapolated to the CSU system as a whole, it can be estimated that:

1. Among the 15 unmet need categories listed above, the system may be currently spending about $48 million annually (*excluding* for the moment middleware and the four new systemwide academic technology initiatives).

2. Roughly $42 million in one-time costs (for certain categories) are needed to achieve minimum baseline.

3. Annual expenditures would have to be increased by $80 million to maintain baseline across these categories, again *excluding* middleware and the four academic technology initiatives.

4. Current estimates for launching all eight new academic initiatives would add approximately $8 million per year to the annual funding needed, all at the system level. The costs for the four academic technology initiatives listed above (i.e., four of the eight with the greatest cost implications for the campuses) are unknown pending pilot studies or prototypes at selected campuses. The security portions of middleware (such as directory services and authentication) are contained in the line item for security. The other needs within middleware are under study by a systemwide team. That process is in its early stages so, at this point, it was not possible to arrive at a baseline definition or metric for middleware for this report.

5. Taken together, these data suggest a total need of about $122 million for closing the funding gap (in one year) for all of these areas of unmet need and for launching (at the system level) the new academic technology initiatives. The "gorillas in the corner" are the unknown costs for middleware and campus obligations to implement the aforementioned four academic technology initiatives; once known, those costs should be added to these totals.

Again extrapolating from the sample data to the system, the following categories had the three highest totals in one-time costs to achieve baseline: SB 302 compliance ($11.4 million); workstation refresh for students, faculty, and staff ($11.1 million); and smart classroom equipment and support ($9.4 million).

The top five categories driving additional annual funding needed to maintain baseline included: smart classroom equipment and support ($19.3 million); instructional design staff ($12.9 million); electronic content ($8.3 million); SB 302 compliance ($3.2 million); and user technical support ($7.2 million). It is notable that smart classrooms are high in both one-time and additional annual costs; indeed, they stand at the intersection between online and traditional teaching and learning.

The four items within "core academic technology needs" accounted for 55 percent of the total annual additional costs, while the four within "existing ITS baseline needs" accounted for 33 percent. Fully 76 percent of the $42 million in one-time costs were consumed by three categories: SB 320 compliance, workstation refresh for students, faculty, and staff, and smart classrooms.

Appendix G of the report offers 16 principles and "success drivers" that should guide IT funding strategies. Appendix H lists 26 specific strategies for meeting the funding requirements of IT arrayed across three categories: cost containment, developing indirect funding sources, and finding new funds. Within the context of a public state system like the CSU, funding alternatives are:

- Existing campus institutional budgets
- Existing system budgets
- New state revenues
- New non-state revenues
- Some combination of the above

Funding strategy decisions depend on at least three factors. First, what is the size of the funding gap that must be closed to achieve and maintain a minimum baseline capability? Second, given the nature of the technology need, what is the most appropriate source or sources of funds? Third, what specific strategy is feasible from both a fiscal and political perspective? The bottom line is that there is probably no single funding source for closing the gap on all IT baseline needs; a "mix and match" package may be required.

INFORMATION TECHNOLOGY FUNDING GAP STUDY
June 2005

Unlike the Common Management System (CMS) and the Technology Infrastructure Initiative (TII), academic technology has never had a systemwide funding commitment, apart from some library initiatives such as the electronic core collection. Most academic technology resources and services are distributed throughout the disciplinary colleges on CSU campuses, and funding them is a constant challenge as student and faculty demands for computing and network support continue to increase. At the executive council retreat in summer 2004, CSU campus presidents expressed a strong interest in learning more about the status of IT-related spending in the system, areas of funding shortfalls, and sources and strategies for addressing them. This study is a step in that direction.

Several months ago, a sample of six CSU campuses (Chico, East Bay, Fullerton, San Marcos, Northridge, and Los Angeles) agreed to conduct a "bottom up" inventory of all IT expenditures and match them against minimum baseline needs as a means for identifying the size and nature of the AT "funding gap" that most CIOs suspect exists. Following is a status report on the four major stages of that study: findings on current IT expenditures; defining a minimum baseline and means for measuring it; identification of major unmet IT needs; and potential funding sources and strategies to close the funding gaps. While most of the focus was on academic technology, all IT resources and services were examined in the process.

Stage 1: EXPENDITURES

The study team agreed to gather data on IT expenditures in six major categories, drawing on the structure and process from an earlier survey on the CSU, East Bay campus. They included:

Enterprise Information Systems: includes all of the hardware, software, staff, and other resources to support legacy and/or PeopleSoft implementation and maintenance; data warehouse; portals, Web services, content management; room/event scheduling; Oracle; and other.

Shared Infrastructure: includes all expenses related to the campus data, video, and wireless networking (hardware, software, and staff); central data center operations (administration, hardware, software, staff, security and middleware); remote access (modem pools and ISP); e-mail services for faculty staff and students; commodity and high performance Internet; videoconferencing; telephony; and other.

Instructional Technology/Student Computing: includes learning management systems; library technology equipment and resources; lab computers and peripherals; classroom technology equipment; assistive technologies; distance learning; multimedia production; and other.

Electronic Content: includes electronic databases and subscriptions; disciplinary software; and other.

Office Technology Infrastructure: includes desktop computers; printers; servers; and related hardware.

Training and Support Services: includes help desks; faculty development; college and departmental lab support; and other.

In addition to these six functional areas, the data collection template contained five major expense categories: hardware, software, maintenance and support, operating expenses, and salaries and benefits. The line-item totals were further divided into centralized versus distributed expenditures and academic versus administrative costs. Attachment A describes some of the methodological assumptions underlying this data collection effort.

The sample campuses reported spending a total of $86.5 million on all forms of information technology in academic year 2003-04. The split between academic and administrative technology was roughly even with $45.9 million (53 percent) going to the former and $40.6 (47 percent) for the latter. The split between centralized and distributed technology was much wider with $65.2 million (75 percent) for centralized and $21.3 million (25 percent) for distributed. About 52 percent were spent on human resources (salaries and benefits), 23 percent on hardware and software, and 25 percent on operating expenses, maintenance and support.

Distinctions between academic and administrative computing were straightforward in some cases (e.g., smart classrooms are clearly academic, and CMS is mostly administrative). In other cases, such as network infrastructure, it was largely a judgment call in terms of how many dollars should be allocated to each area. Physical location could be one indicator; organizational location was another. The campus representative gathering the data used the criteria that seemed most appropriate for a given campus. Distinguishing between centralized and distributed computing was somewhat easier because it was based on whose budget controlled a given resource or service. Methodological refinements in these and other categories in the study are possible and can be made, as more stakeholders get involved in the process. In that sense, all of the data reported here should be considered preliminary pending further review and analysis, but they are the most representative available to date.

When the sample dollar figures are extrapolated to the system as a whole using FTES as a base (for the most part), about $288 million were spent on all forms of information technology in 2003-04. Using the sample percentages as a base, roughly $153 million of this was devoted to academic technology versus $135 million for administrative technology, and $216 million was centralized spending versus $72 million decentralized or distributed. The last survey of all IT-related spending in the system was conducted in 1995 in preparation for launching the ITS and, at that time, total system expenditures on IT was estimated to be $203 million.

Enterprise information systems commanded roughly one-third of the spending in the sample. Shared infrastructure, and instructional technology and student computing, each received about one-fifth of the total. The remaining 27 percent was divided among training and support services, office technology infrastructure, and electronic content.

As one would expect, most of the enterprise information system and shared infrastructure expenditures are centralized, electronic content is mostly distributed, and office technology infrastructure and training and support services are split evenly between the two. Spending for instructional technology and student computing tend to be more centralized than distributed. Again, as might be expected, spending for instructional technology and student computing as well as electronic content are exclusively academic, enterprise information systems is mostly administrative, and expenditures in the other categories are roughly even.

Fully 75 percent of administrative spending is for either enterprise information systems or shared infrastructure compared to only 36 percent of academic spending. All expenditures for instructional technology, student computing, and electronic content are academic in nature, and these categories comprise about 41 percent of total academic spending. Academic and administrative spending for both training and support services and office technology infrastructure comprise roughly one-fourth of their respective totals.

Administrative and academic expenditure levels were examined in terms of FTES and student headcount, respectively. In both instances, the larger the campus the lower the level of overall spending per unit, suggesting that economies of scale apply in either case. A major distinction between academic and administrative costs may be that the latter have a somewhat greater base of fixed expenditures and are therefore less sensitive to student enrollments, whether FTES or headcount. In fact, information technology generally has many fixed costs unrelated to student enrollments, with concomitant implications for funding formulas.

The headcount ratios of academic versus administrative spending may be especially instructive. Campus CIOs are quick to point out that individual students, regardless of their credit workload, always incur some fixed costs. This is especially true in the area of direct user support such as help desks, and for providing common productivity tools such as email and course management system accounts, as well as registration and degree audit systems. Still, the relative importance of FTES versus headcount in technology spending (especially on the academic side) is a complex matter. FTES often drives funding formulas in the CSU, while actual costs for information technology may be fixed or headcount related.

Campus size and discipline mix are two of the major factors driving technology expenditures. Accordingly, these factors, together with a mix of urban/rural and residential/commuter, determined the choice of the six campuses for the study. Overall, the 9 small campuses in the CSU are 14.8 percent of system FTES; the 7 medium campuses are 32.8 percent of system FTES; and the 7 large campuses are 52.4 percent of system FTES.

The sample of six campuses represent 29.5 percent of total system FTES. San Marcos is 12.6 percent of small campus FTES; Chico, East Bay, and Los Angeles are 38.0 percent of medium campus FTES; and Fullerton and Northridge are 28.8 percent of large campus FTES. Of course, FTES is closely related both to FTEF and campus budgets so it may offer one means for calculating system totals. On the other hand, given the many fixed costs associated with technology (as noted above), student headcount could be another indicator for extrapolating total need, depending on the category. In this study, FTES was used to calculate system extrapolations.

STAGE 2: DEFINING MINIMUM BASELINE AND UNMET NEEDS

There are two components to defining baseline: access and quality. The basic questions are a) how many users have access to the hardware, software, network, training, and support resources on campuses and b) how many of those resources meet minimum quality standards. In the Measures of Success (MOS) reports, 90 percent has been used as the general benchmark of minimum baseline from a system perspective. Definitions of "full baseline" for access and quality depend on individual campus needs and priorities.

Minimum baseline is a moving target for at least two reasons. First, the need or demand for information technology resources among students, faculty, and staff continues to increase, which in turn affects the level of access. Second, the technologies themselves experience rapid change, affecting quality standards. The study team examined four indicators of need as a means of defining minimum baseline:

1. Longitudinal trends on the importance and use of information technology among CSU students, faculty, and staff based on representative surveys such as the MOS.

2. The official CSU baseline standards for meeting the personal productivity needs of user groups for workstation hardware and software, network connectivity, and training and support services, most of which require constant revision.

3. Comparative norms for spending on information technology based on national survey evidence such as the Educause Core Data Services survey and the Campus Computing Survey.

4. Anecdotal campus reports of unmet needs among user groups for technology resources because of a) long or short-term budget shortfalls and b) the pace and scope of technological changes in hardware, software, networks, etc.

Based on all of these considerations, the study team agreed on four major categories of IT unmet needs, i.e., where campuses were not achieving the minimum baseline standards for access and quality. These categories included: baseline needs within the existing ITS framework; new or emerging baseline needs due to changing technologies; core academic technology needs on the campuses today; and emerging academic technology needs stemming from the new systemwide initiatives.

STAGE 3: THE IT FUNDING GAP

There was general consensus among study team members that most, though not all, of the unmet needs on their campuses (and within the system generally) fell within academic technology. The study team gathered two types of cost data: the one-time expenditures needed to achieve minimum baseline, and the annual costs to maintain it (above current funding levels).

In some cases, minimum baseline can be inferred from common agreement within the IT community generally (e.g., refresh cycles). In other instances, there may be quantitative guidelines or standards concerning quality that one can use (e.g., for wireless networks, security). However, for some areas within academic technology (e.g., user training and support, smart classrooms, electronic core for e-learning), few standards for minimum baseline exist and have to be defined through consensus of campus experts. In many instances, individual CSU campuses had already conducted cost studies (e.g., on LMS, middleware) or implemented certain technologies (e.g., wireless), so those benchmarks were available for defining baseline.

Following are the major cost centers that campus representatives identified as most likely to fall below minimum baseline targets under even the most conservative assumptions and definitions. Using worksheet data submitted from Appendices B, D, and E and the baseline definitions and metrics in Appendix C, it is possible to estimate the size of the funding gap for information technology generally, and for academic technology needs specifically.

Existing ITS Baseline Needs

- Workstation refresh cycles for students, faculty, and staff
- Server refresh cycles
- Technical support for students, faculty, and staff
- Security (core services and support)

Emerging Baseline Needs

- Middleware (core services and support)
- Wireless networks (purchase, maintenance, and refresh)
- SB 302 Compliance (access to IT products and services for the disabled)

Core Academic Technology Needs

- Learning management system license and support
- Instructional design staff (disciplinary specialists)
- Smart classroom equipment and support

- Electronic content (databases, subscriptions, digital libraries)

<u>Systemwide Academic Initiatives (with significant campus cost implications)</u>

- Student success initiative (degree audits, advising tools, enrollment and facilities planning)

- E-learning framework initiative (LMS and other activities)

- Professional development initiative (for faculty, staff, and students)

- Digital marketplace initiative (procurement of technology tools)

The six sample campuses gathered data on current annual expenditures in each of the above categories together with the one-time funding needed to achieve baseline and the additional annual funding to maintain it. When the data were extrapolated to the CSU system as a whole (see Table 1), it can be estimated that:

1. Among the 15 unmet need categories listed above, the system may be currently spending about $48 million annually (*excluding* for the moment middleware and the four new systemwide academic technology initiatives).

2. Roughly $42 million in one-time costs (for certain categories) are needed to achieve minimum baseline.

3. Annual expenditures would have to be increased by $80 million to maintain baseline across these categories, again *excluding* middleware and the four academic technology initiatives.

4. Current estimates for launching all eight new academic initiatives would add approximately $8 million per year to the annual funding needed, all at the system level. The costs for the four academic technology initiatives listed above (i.e., four of the eight with the greatest cost implications for the campuses) are unknown pending pilot studies or prototypes at selected campuses. The security portions of middleware (such as directory services and authentication) are contained in the line item for security. The other needs within middleware are under study by a systemwide team. That process is in its early stages so, at this point, it was not possible to arrive at a baseline definition or metric for middleware for this report.

5. Taken together, these data suggest a total need of about $122 million for closing the funding gap (in one year) for all of these areas of unmet need and for launching (at the system level) the new academic technology initiatives. The "gorillas in the corner" are the unknown costs for middleware and campus obligations to implement the aforementioned four academic technology initiatives; once known, those costs should be added to these totals.

Again extrapolating from the sample data to the system, the following categories had the three highest totals in one-time costs to achieve baseline: SB 302 compliance ($11.4 million); workstation refresh for students, faculty, and staff ($11.1 million); and smart classroom equipment and support ($9.4 million).

The top five categories driving additional annual funding needed to maintain baseline included: smart classroom equipment and support ($19.3 million); instructional design staff ($12.9 million); electronic content ($8.3 million); SB 302 compliance ($3.2 million); and user technical support ($7.2 million). It is notable that smart classrooms are high in both one-time and additional annual costs; indeed, they stand at the intersection between online and traditional teaching and learning.

TABLE 1

SIX CAMPUS TOTALS		CURRENT ANNUAL EXPENDITURES SAMPLE	EXTRAPOLATION ANNUAL EXPENDITURES SYSTEM	ADD'L ANNUAL NEEDED TO ACHIEVE BASELINE	EXTRAPOLATION ANNUAL COSTS SYSTEM	ONE TIME COST TO ACHIEVE BASELINE SAMPLE	EXTRAPOLATION ONE TIME SYSTEM
		TOTAL UNFUNDED NEED SAMPLE CAMPUSES AND SYSTEMWIDE EXTRAPOLATION					
1. Existing ITS Baseline Needs							
a. Workstations for students, faculty and staff		5,453,111	12,723,926	2,829,942	6,603,198	4,758,392	11,102,915
b. Server refresh cycles		718,908	1,677,452	1,791,092	4,179,215	1,460,000	3,406,667
c. Technical support for students, faculty and staff		3,685,212	8,598,828	3,106,477	7,248,446	0	0
d. Security (core services and support)		2,209,526	5,155,561	2,574,220	6,006,513	0	0
	Sub Total	**12,066,757**	**28,155,766**	**10,301,731**	**24,037,372**	**6,218,392**	**14,509,581**
2. Emerging Baseline Needs							
a. Middleware (core services and support)		330,000	770,000	0	0	0	0
b. Wireless Networks (purchase, maintenance and refresh)		404,088	942,872	615,630	1,436,470	2,136,972	4,986,268
c. SB 302 Compliance		2,150,000	5,016,667	0	0	0	0
	Sub Total	**2,884,088**	**6,729,539**	**615,630**	**1,436,470**	**2,136,972**	**4,986,268**
3. Core Academic Technology Needs							
a. Learning and library management system licenses and support		827,479	1,930,784	1,137,537	2,654,253	606,000	1,414,000
b. Instructional design staff (disciplinary specialists)		683,326	1,594,427	5,515,181	12,868,756	0	0
c. Smart classroom equipment and support		1,621,108	3,782,585	8,258,492	19,269,815	4,034,800	9,414,533
d. Electronic Content (databases, subscriptions		2,451,388	5,719,905	3,546,434	8,275,012	0	0
and multimedia learning objects including training and support)							
	Sub Total	**5,583,301**	**13,027,702**	**18,457,644**	**43,067,835**	**4,640,800**	**10,828,533**
4. Systemwide Academic Technology Initiatives							
(with major campus cost implications)							
a. Student success initiative (degree audits,		N/A		N/A		N/A	
advising tools, enrollment and facilities planning)							
b. E-learning initiative (LMS and other activities):		N/A		N/A		N/A	
Major staff costs for this initiative.							
Goal is interoperability among ERP, LMS, and Library systems							
c. Professional development initiative		N/A		N/A		N/A	
(faculty assigned time and curriculum development)							
d. Digital Marketplace							
	TOTAL	**20,534,146**	**47,913,007**	**29,375,005**	**68,541,677**	**12,996,164**	**30,324,383**
Systemwide AT Initiatives		0			8,000,000	0	
SB 302 Compliance		0			3,200,000	0	11,400,000
Consortial Technical Support		0			370,557	0	
	TOTAL	**20,534,146**	**47,913,007**	**29,375,005**	**80,112,234**	**12,996,164**	**41,724,383**
Middleware		0		**UNKNOWN**	**UNKNOWN**	**UNKNOWN**	**UNKNOWN**
Campus AT Initiative Costs				**UNKNOWN**	**UNKNOWN**	**UNKNOWN**	**UNKNOWN**

The four items within “core academic technology needs” accounted for 55 percent of the total annual additional costs, while the four within “existing ITS baseline needs” accounted for 33 percent. Fully 76 percent of the $42 million in one-time costs were consumed by three categories: SB 320 compliance, workstation refresh for students, faculty, and staff, and smart classrooms.

At noted above, none of these costs include what might be needed at the campus level to implement the eight new academic technology initiatives; four of the eight appear, at this early stage, to contain potentially significant cost implications for the campuses. The Academic Technology Advisory Committee (ATAC) and the Provosts Technology Steering Committee (PTSC) are leading the planning and implementation efforts in this area. To date, only three of the eight initiatives are in progress: foundational skills, e-learning framework, and digital marketplace. As more progress is made on each initiative, it should be possible (at some point) to conduct pilot studies at one or more campuses in order to estimate the potential costs. Appendix F provides an overview of the academic technology initiatives, including a description, rationale, and list of potential projects for each.

One other caveat to these findings should also be noted. In some cases, campuses found it prudent or necessary to deviate slightly from the baseline metrics shown in Appendix C. Several factors could account for such variations, such as hardware configurations, disciplinary considerations, or other unique campus features. Campuses were encouraged to footnote those items in the cost worksheets so the information was not lost and apparent to all in the study team. Of course, all of data collected in this study are subject to further refinements as conditions dictate.

STAGE 4: FUNDING OPTIONS

The final stage of the study links the unmet needs listed above to potential funding sources and strategies. That process can be informed by two major studies on technology funding alternatives conducted by Educause and by the Educause Center for Applied Research (ECAR) in 2003 and 2004, respectively. Both studies were developed in cooperation with the National Association of College and University Business Officers. The Educause study recommended the following as overall IT funding sources:

- Central funding from institutional operating and capital budgets
- Debt financing/bonds
- Special student technology fees/tuition add-ons
- Revenue –generating activities/charging for services
- For-profit subsidiaries/auxiliary funds
- Revolving funds
- New monies (private donations, federal or state grants, IT fundraising)
- Vendor arrangements (discounts, leasing arrangements)

The ECAR study identified two major categories of IT funding strategies: cost containment and new revenue sources. The former included (in order of preference among more than 480 higher education CIOs): across the board cuts; consortia or shared purchases; minimizing supported technologies; cutting renewal and replacement; using open source; sharing technology implementations; limiting duplicate IT organizations; cutting service levels; outsourcing; freezing salaries; staff layoffs; external software development; and cutting benefits.

New revenue sources included (in order of preference): grants; fund-raising; increased student fees; corporate partnerships; expanded use of charge-backs; external provision of services; technology transfer; and external provision of products.

Appendix G offers three categories of principles and “success drivers” that should guide IT funding strategies (drawn from a variety of Educause/ECAR, Gartner Group, and academic research studies); four of the 16 principles are policy related, nine refer broadly to procedural matters, and three are derived from the technologies themselves. Whatever the funding source or strategy, these constitute best practices for maximizing both effectiveness and efficiency.

Appendix H lists 26 specific strategies for meeting the funding requirements of IT arrayed across three categories: cost containment, developing indirect funding sources, and finding new funds. Within the context of a public state system like the CSU, funding sources boil down to the following:

1. Existing campus institutional budgets
2. Existing system budgets
3. New state revenues
4. New non-state revenues (e.g., student technology fees)
5. Some combination of the above

Funding strategy decisions depend on at least three factors. First, what is the size of the funding gap that must be closed to achieve and maintain a minimum baseline capability? Second, given the nature of the technology need, what is the most appropriate source or sources of funds? Third, what specific strategy is feasible from both a fiscal and political perspective?

For example, consider the list of 15 priority or unmet needs discussed above. The items within “existing ITS baseline needs” might be addressed either through institutional budgets (e.g., cost shifting, redirection) or the introduction of new non-state revenue sources (e.g., student technology fees). The middleware, security, and SB 302 compliance issues might lend themselves to new state funding given their legal and statutory implications, while those for wireless networks could be candidates for new non-state funding such as vendor partnerships. The four items within “core academic technology needs” might benefit from a variety of strategies ranging from system-negotiated discounts (e.g., for LMS licenses and electronic database subscriptions) to new state capital funds (for smart classrooms) to institutional allocations (for instructional design staff). Finally, the new systemwide academic initiatives might compete for start-up funding through public or private grants, achieve economies of scale through consortial arrangements, or be supported through special system appropriations.

The bottom line is that there is probably no single funding source for closing the gap on all IT baseline needs; a “mix and match” package may be required. One of the overarching goals should be to establish a stable, adequate, long-term, and predictable source of funding for academic technology. In that context, technology fees could be part of that mix if national trends are any indication. Accordingly, Appendix I contains a brief summary of an earlier CSU study on student technology fees with special attention to the policy issues involved (note, too, the addition of recent student survey data from spring 2005). In addition, Appendix J is an overview of IRA fees in the system.

APPENDIX A

Expenditure Methodology

The study's intent was to capture central, college-level, and library expenditures using a common format and definitions. Following are a few examples of major assumptions underlying the data collection.

1. Data were collected on all types of spending for IT, but limited to the 2003-04 academic year. In addition to state funds, grants and gifts were included in the process. Lottery dollars were included, but foundation and associated students expenditures were excluded.

2. In some cases, distinguishing IT equipment from instructional equipment proved difficult. It was decided that such resources would be excluded if they were not part of the formal IT budget.

3. The study group agreed that the category of library technical support should include servers and data center hardware, software, and staff positions. A category on electronic content was also added to include subscriptions and databases.

4. Once centralized and distributed expenditures were determined to produce a campus total, the amounts allocated to academic versus administrative expenditures were based on percentages for each line item category.

5. General fund charge-backs within the university (e.g., printing and telephone) were included in the overall expenditures and not counted as offsetting revenues to central IT; they were counted once at the source of spending. However, expenses reimbursed with non-general fund money were not counted.

6. Both implementation and operational costs for CMS were included, depending on how each campus allocated resources for this purpose. The data match those in official CMS reports.

7. A systemwide figure of 31 percent of salary was used to calculate benefits for human resources such as IT staff and consultants. Salaries for IT staff were distributed across the taxonomy based on the percentage of time devoted to each category. Prorated management salaries were included by category as well.

8. Group II purchases for new buildings were excluded from the data rather than annualized. Other large capital expenditures (e.g., mass storage systems) were annualized.

Appendix B

IT Funding Gap Worksheet

Campus: ____________________

Unmet Needs	current annual expenditures	additional annual needed to achieve baseline	one time costs
1. Existing ITS Baseline Needs			
a. Workstations for students, faculty and staff			
b. Server refresh cycles			
c. Technical support for students, faculty and staff			N/A
d. Security (core services and support)			N/A
2. Emerging Baseline Needs			
a. Middleware (core services and support)		N/A	N/A
b. Wireless Networks (purchase, maintenance and refresh)			
c. SB 302 Compliance	N/A	N/A	N/A
3. Core Academic Technology Needs			
a. Learning and library management system licenses and support			
b. Instructional design staff (disciplinary specialists)			N/A
c. Smart classroom equipment and support			
d. Electronic Content (databases, subscriptions and multimedia learning objects including training and support)			N/A
4. Systemwide Academic Technology Initiatives (with major campus cost implications)			
a. Student success initiative (degree audits, advising tools, enrollment and facilities planning)	N/A	N/A	N/A
b. E-learning initiative (LMS and other activities): Major staff costs for this initiative. Goal is interoperability among ERP, LMS, and Library systems	N/A	N/A	N/A
c. Professional development initiative (faculty assigned time and curriculum development)	N/A	N/A	N/A

APPENDIX C

TECHNOLOGY FUNDING GAP NEEDS
Definitions of Baseline Metrics

1. EXISTING ITS BASELINE NEEDS

A. <u>Workstations for students, faculty, and staff</u>

Refresh Cycle – 3 years (for faculty, staff and students)
Cost - $1200 per workstation (includes monitor); includes HW and SW only

Faculty – 1 workstation for each full time faculty
Faculty – 1 workstation per 3 part time faculty
Staff – 1 workstation for each staff member
Open access student labs – 1 workstation per 15 students headcount (be sure to include all labs that might be considered open access, even if they are managed by colleges or departments)

Number of workstations and number at baseline must match MOS data in the annual campus survey.

EXAMPLE:
Assuming 1200 computers (in any category).
1200 (computers) / 3 (years) = 400 computers refreshed per year $400 per year
Annual budget required = $480,000

Assuming 400 computers this year require refresh and also assuming 75 from a last year, that is, last year you had a refresh budget for 325 computers.

Calculation:
Assuming annual (current fiscal year) budget is $210,000 (175 workstations)
Then
Current Annual Expenditures = $210,000
Additional Annual Needed (current fiscal year) = $270,000 (brings current year to $480K for 400 workstations)
One time costs = amount to restore all computers to baseline @ $1200 per computer = $270,000 + $90,000 (that is, 400 + 75 computers).

B. <u>Server refresh cycles:</u>

Refresh Cycle – 3 years
Average cost = $10,000 per server

Cost calculation is the same as described in the workstation example.

C. <u>Technical support for students, faculty, and staff:</u>

The campus accepts responsibility for providing help-desk service to its individual constituents for 66% of the time - M-F 7:30 AM to 10:00 PM and Saturday 8 AM to 1 PM. At all other times, the campus is part of a consortial arrangement. So the campus has to pay the full cost of the 66%

coverage (20 shifts) as well as the reduced cost of participating in the consortium (10 shifts), estimated at 25 percent of the remaining one-third. Staffing:

1. One technician for every 200 faculty headcount (both F/T and P/T).

2. One technician for every 200 staff headcount (both F/T and P/T).

3. One technician for every 3,000 students headcount (both F/T and P/T)

Salaries: $45,000 x 1.32 benefits for level 1 and 2; $60,000 x 1.32 for supervisors and content experts.

For level 2 support (supervisors and content experts) use 1 and 2 above only.

There is no one-time cost for this item. The consortium costs are calculated separately in the worksheet.

D. Security (core services and support)

Use the worksheet in Appendix D that shows an average of $73 per port. Note that this category does not include one-time costs.

The TII eligible port count is inclusive of voice and data ports, and should be consistent with the port allotment in the MOS. Add all new buildings that have come on line subsequent to the TII eligible port count. Wireless security is excluded from this category.

Following are the core services and support components for information security:

1. Firewalls including workstations, host, sub-network, and perimeter as required
2. Malicious code protection including viruses, worms, Trojans, spam etc
3. Incident and vulnerability detection, prevention and response
4. Data encryption
5. Backup and recovery
6. Software configuration, change and patch management
7. E-mail, communications and remote access security
8. Activity and event monitoring and logging including bandwidth management
9. User identification, authentication, privileges and account management

2. EMERGING BASELINE NEEDS

A. Middleware (core services and support)

The minimum baseline components of middleware are directory services and authentication, both of which are contained in the security line item. After considerable discussion, the funding study work group decided to enter all other middleware costs as “to be determined” pending further review by systemwide committees.

B. Wireless networks (purchase, maintenance, and refresh)

Interior Spaces – 100% coverage (based on total assignable square feet)
Exterior Spaces – 70% coverage (based on campus acreage, excluding “farm” areas)
Refresh Cycle – 4 years for both interior and exterior

For interior calculation, use $0.14 per assignable square feet. This is based on the San Marcos experience that has 100 percent interior coverage and corresponds closely to the figure at Monterey Bay.

Example for exterior spaces:
Using the Long Beach model, the cost of 4 antennas (that may cover the entire external campus) is $80,000.

Using per access point -
Assuming you have x% coverage today with 120 access points and you need 60 more access points to achieve 100%

120(access points) / 4 (years) =   ($1500 *120)/4 = $45,000 (current fiscal year annual cost)

Assume your current budget for this item = $35,000
Then
Current annual expenditure = $35,000
Additional annual needed = ($1500*60)/4 = $22,500 (for the new equipment) + ($10,000)(deficit of current budget)
One time needed = $1500 * 60 = $90,000(cost of 60 access points) + ($10,000)(annual deficit)

C. SB 302Compliance

This category establishes a baseline metric for satisfying the 508 requirements in the 1973 Rehabilitation Act. The data are based on the 2003-2004 fiscal impact calculations based on the metrics reported to the legislature a year earlier. Only system totals are required.

One-time cost range to the CSU is between $9.4 Million and $14.0 Million or $29.50 to $43.90 per FTES. This is $11.7 Million +/- 20% or approximately $36.75 per FTES.

Ongoing cost range to the CSU is between $3.0 Million and $4.4 Million or $9.40 and $13.80 per FTES, per year. This is $3.75 Million +/- 20%, or $10.50 per FTES, per year.

3. CORE ACADEMIC TECHNOLOGY NEEDS

A. Learning management system licenses and support:

Use the worksheet in Appendix E drawn from the CSU Fullerton example. Be sure to include costs for the full enterprise suite license and support, not just basic Blackboard.

B. Instructional design staff (disciplinary specialists):

1 Instructional designer per 60 FTEF, based on working with 50% of total FTEF
Salary = $85,860 ($65,000 x 1.32 benefits)

Example:
Assume FTEF = 600
    600 / 60 = 10 instructional designers required
    Assuming you already have 3 instructional designers
    Then you are in deficit 7 staff

Current Annual Expenditures = Salaries of your 3 instructional designers (example=3*85000)

Additional Annual needed = 7 * $85,860 or $600,600

One-time costs are not applicable.

C. <u>Smart classroom equipment and support:</u>

All classrooms that accommodate >10 students shall be equipped (include all multimedia devices needed).
Use SFDB for total number of classrooms.
Initial one-time cost = $15K per classroom
Refresh Cycle: Electronics 3 years @ $12K
Everything else 5 years @ $5K

<u>Support Costs:</u>
One technician per 20 classrooms.

Example:
At the rate of 1 technician for 20 classrooms for 8 hours /day, at $48,000 with benefits, the cost per classroom assuming 16 hours coverage /day will be 2x48000/20 = $4,800 annually per classroom. Technical support includes not only faculty assistance but also maintenance of equipment, (cleaning filters, changing lamps, monitoring lamp usage in each classroom, etc.) and assistance with replacement of equipment on the defined cycle.

D. <u>Electronic Content (databases, subscriptions, and multimedia learning objects including training and support):</u>

In 2003-04, campuses reported spending $8.3 million annually for e-content. Of this amount, SEIR manages $6 million in "opt-in" contracts for e-resources on behalf of the CSU campus libraries. The remaining $2.3 million is spent by CSU campuses independently. An additional $2.5 million is centrally funded by SEIR for the electronic core collection (ECC).

SEIR also has $1.2 million in backlog requests for the ECC based on at least 15 campus subscribers, or 50 percent above current expenditures. It is estimated that if all potential ECC resources were considered, the unmet need systemwide would be closer to $6 million annually, or roughly one-half of the total expenditures by the campuses and system.

Calculation:

The consensus of all consulted on this matter, both on the campuses and the system office, is that the sample campuses should increase their current levels of spending for e-content by 50 percent to achieve baseline (use the 2003-04 CSU Annual Library Statistics data). This includes an inflation factor of 20 percent, which has been the recent pattern for the larger subscriptions such as Elsiver.

4. **SYSTEMWIDE ACADEMIC TECHNOLOGY INITIATIVES (with significant campus cost implications)**

A. <u>Student success initiative (degree audits, advising tools, enrollment and facilities planning):</u>

B. <u>E-learning framework initiative (LMS and other activities): Major staff costs for this initiative. Goal is interoperability among ERP, LMS, and Library systems</u>

C. Professional development initiative (for faculty, staff, and students)

D. Digital marketplace initiative (procurement of technology tools)

Note: System costs only are reported for the eight new academic initiatives. Campus costs for the three initiatives listed above remain unknown until pilot studies on one or more campuses can be conducted and prototypes established to determine average campus costs.

Appendix D
Proposed Minimum Baseline Security Funding Standard

	ACCESS	SUPPORT		TRAINING	
Category of Core Services		***FTE***			***Total***
Baseline Information Security Infrastructure	$681,000				$681,000
Firewalls workstations, host, sub-network, and perimeter					$0
Backup and recovery					
Incident and vulnerability detection, prevention and response					
Data encryption					$0
Software configuration, change and patch management					$0
E-mail, communications and remote access security					
Activity and event monitoring and logging including bandwidth management					
Malicious code protection including viruses, worms, Trojans, spam etc					$0
User identification, authentication, privileges and account management					$0
Information Security Officer		1.0	$100,000		$100,000
On-line Training/Documentation		0.5		$24,000	$24,000
Senior Analyst		1.0	$80,000		$80,000
Career Analyst		1.0	$50,000		$50,000
Staff Benefits @ 32%			$73,600	$7,680	$81,280
Grand Totals	***$681,000***	***3.5***	***$303,600***	***$31,680***	***$1,016,280***

Cost per Port Calculation	
TII Eligible Port Count for LA	13,885
Proposed funding per port	$73

APPENDIX E
LMS Funding Study

FTES	LMS License Cost	ASP Solution - 42000 for 8000 Active users 30000 for every extra 7500 Active users	Admin Support (.5-1 FTE) *60000 + 32% Benefit	Application Support (.5-1 FTE) *60000 + 32% Benefit	Total
0-2000	$ 24,887.50	$ 42,000.00	$ 39,600.00	$ 39,600.00	$ 146,087.50
2000-4000	$ 31,675.00	$ 42,000.00	$ 39,600.00	$ 39,600.00	$ 152,875.00
4000-8000	$ 38,462.50	$ 42,000.00	$ 59,400.00	$ 59,400.00	$ 199,262.50
8000-15000	$ 47,060.00	$ 72,500.00	$ 59,400.00	$ 59,400.00	$ 238,360.00
15000-25000	$ 53,847.50	$ 100,500.00	$ 79,200.00	$ 79,200.00	$ 312,747.50
25000-50000	$ 61,087.50	$ 130,500.00	$ 79,200.00	$ 79,200.00	$ 349,987.50

Appendix F
Academic Technology Services: Current Prospective Projects

4/11/2005	**Academic Technology Services: Current and prospective projects**	version 0.5
Initiative/ Project Name	**Description**	**Why Important**
Foundational Skills		
Math Success Website	Development of version 3.0 of Math Success Website that is integrated into CSU Mentor; provides more functional, personalized advising services via roadmap functionality, provide more functionality for academic preparation activities: Deliver by 12/05	Students following authoritative advice and engaging in effective academic preparation programs will reduce the rate of remediation for incoming freshman
English Success Website	Develop version 2.0 of English Success Website that is integrated into CSU Mentor; provides more functional, personalized advising services via roadmap functionality, provide more functionality for academic preparation activities. Deliver by 12/05	Students following authoritative advice and engaging in effective academic preparation programs will reduce the rate of remediation for incoming freshman
English Success Digital Library for California Teachers	Develop digital library portal of professional development resources & curriculum for 12 grade English (expository writing) and CSU English Composition courses using MERLOT, MERLOT portal technologies, and custom publishing technology services; Design and develop in collaboration with English Council/EPT committee, deliver version 1.0 by 12/05 and version 2.0 by 6/06	12 grade English teachers must be capable and confident in their abilities to teach expository writing to their students. Students learning expository writing skills will pass the EPT, reducing the remediation rates in English.
Teaching Math to Mastery with Technology	Professional development program for CSU math faculty, CSU developmental math faculty, and selected 9-12 teachers to learn how to use online math tutorials (ALEKS, and others) to prepare students for success in the CSU. Programs will be both face-to-face and online.	Online tutorial programs can improve student readiness for CSU education with these online tutorials but for the students to uses the tutorials, the faculty and teachers must have some level of familiarity and skill to encourage and support students using these online tools.
eLearning Senior Year Math Experience	CSU Math Faculty supervise student use of ALEKS for Senior Year math experience.	Reduce math remediation rate
Evaluation Program for advising and eLearning programs	The Math Success Website provides advising and access to eLearning programs for students to successfully prepare and satisfy the CSU ELM requirement. This project will be designed to evaluate the effectiveness of the advising and learning for students. The project will examine the usability (effectiveness, easy to learn, easy to use, and motivating performance) of the advising tools and success of student learning. The evaluation will be of the Math Success Website and the ALEKS programs (both ELM preparation and Senior Year Math Experience option).	Determine the value of the outcomes of the eLearning services within Math Success Program
Math and Science Education Center of Excellence: Developing a Prototype	Develop and evaluate the effectiveness of a CSU "Center of Excellence" for the development and application of online math and science resources to support CSU science and math bottleneck courses, inservice and preservice online and traditional course. The project will leverage the CSU-NASA collaborative that has been developing a collection of NASA resources for K-20 teaching, the MERLOT project, and the CSU Fresno Science and Math Education Center. The Center will deliver science and math "portals" and well as professional development and inservice programs. CSU Fresno will function as an outreach, distribution, and facilitation center for exemplary practices for teaching science and math with technology.	Math and Science teachers need to learn about exemplary practices if they are to improve the quality and quantity of student learning outcomes. Dissemination of exemplary practices is critical for teacher and student success. Dissemination requires the development or aggregation of exemplary practices and well as the presentation and repository services for distributing exemplary practices.
Math and Science Education Simulations	CSULA was awarded a $1.2 Million grant from NSF in 2004 to develop interactive, multimedia science and math simulations most in Earth Systems Science, an area of critical demand in K-12. These simulations are also applicable in the CSU. The CSU CO is providing matching funds for NSF grant, $40K is for the 2nd year and $30K is for the 3rd year for matching funds. We already have MOU with CSULA.	Teachers must have effective/usable content for students to learn effectively. High quality, multimedia resources can provide effective and usable tools for faculty and students.

Transfer Success Website & Services	The goal of the project is to provide advice and tools to prospective CSU transfer students so they can make successful plans and decisions for effectively and efficiently transferring to the CSU. To start, we will need to develop Version 1.0 of the LDTP online community to facilitate collaboration among CSU faculty on the articulation and implementation of major-related course requirements for transfer students. Design and develop in collaboration with LDTP committee members and set up discipline-specific online forums to promote cross-campus collaboration on issues related to transfer student course requirements. Collaboration tools such as webinars and discussion boards will be used to promote regular cross-campus communication on issues related to the successful implementation of the LDTP.	Academic programs will be able to build and sustain discipline-based leadership across the CSU in a cost-effective manner. These leadership communities can be leveraged perform a number of task and provide advice to the CO about streamlining the transfer and graduation processes.
CO Staff to manage Foundational Skills projects		Without good managers, good ideas won't produce good results
eLearning Framework		
Integrating digital collections into LMS's	Sentient DISCOVER is a robust software application that plugs into all the CSU campuses LMS's (Blackboard, WebCT, Moodle, etc) that enables faculty and students to search, find, and organize portfolio's of CSU's library resources and MERLOT (and other digital libraries') learning objects as well as connect to Amazon.com to buy books and resources without ever leaving the Bb or WebCT environment.	Potential for all CSU students and faculty to have "1 click access" to all CSU electronic resources. Significantly decrease in faculty and student workload in finding and organizing digital resources for learning; Significantly increases utilization of CSU investment in Electronic Core Collection and MERLOT resources; Decrease cost of education for students by faculty choosing e-resources (library and MERLOT) tailored to their needs vs. textbooks
Baseline collection of digital academic content	All CSU faculty, staff, and students will have easy access to a common baseline of digital, multimedia academic content that is core to the teaching and learning within academic programs and provides an enriching and effective online learning experience for students and enriching and effective online teaching experience for students. The CSU CO has "transitionally" supported these digital libraries as they have matured and these digital libraries now require sustaining support for the readily available and extensively used digital resources. See list of digital content collections below	Every campus must have a baseline access to academic content for integrity of academic programs as well as WASC and disciplinary accreditation requirements. The digital content is what the faculty and students value. The investments in the infrastructure for the distribution of digital content will now produce the benefits. Much of this digital content can now be provided "centrally" at a significantly lower cost.
	1) MERLOT (multimedia learning objects for all disciplines)	Reusing high quality online learning objects results in significant workload reductions for faculty and higher quality learning experience for students
	2) IMAGE and CIELO (image database for art and architecture);	Images are fundamentally required for teaching in the arts
	3) Specialty Center databases;	Discipline-based information technology competencies are required for students graduating in social science and business. Using these databases is a workforce requirement in these disciplines
	4) CAM (Center for Alternative Media),	Significantly reduces costs and improve quality and quantity of accessible online materials.

	5) Virtual Language Labs	Enable campuses to offer a variety of language programs at significantly reduced costs and improved quality.
Systemwide LMS Strategic Planning	Glenda Morgan has developed and the campus CIO's have supported a systemwide planning process to evaluate and recommend CSU's strategy for procuring and sustaining LMS systems	LMS's have become a core infrastructure for delivering CSU academic programs. Improving its effectiveness and reducing its costs is a very high priority for campuses, faculty, and students
Digital Marketplace		
Systemwide Acquisition of Technology - SWAT	A program to enable campuses to identify, select, negotiate, procure, and maintain technologies that have a shared use across the system. We will start with 2 groups coordinating these activities - ITAC and the Directors of Academic Technology	By leveraging the size of the CSU, 1) campuses can reduce their operational expenses on technologies and 2) the CSU system will develop a common set of applications, support services, and practices that will create operational efficiencies and adoption of best practices across the CSU.
Digital Marketplace	To provide services to effective distribution of network-based digital goods and resources in support of its academic programs. The CSU has identified the growing need to effectively acquire, share, market, and distribute commercial and non-commercial digital learning content and resources within the institutional environment, and integrate the content within instructional programs.	Reduce costs of student textbook purchases, reduce workload and costs of faculty creating course content portfolios, increase faculty and student use of electronic content and technologies already invested in by the CSU
CO Staff to manage SWAT projects	The SWAT program requires a CO staff to: coordinate campus consultation, vendor negotiations, and dissemination of outcomes, develop and manage contracts, and coordinate with CSU CO contracts department.	Without good managers, good ideas won't produce good results
CO Staff to manage digital marketplace projects	The Digital Marketplace project requires a CO staff to: coordinate campus consultation, manage collaborations with publishers, technology companies, and higher ed, vendor negotiations, develop and implement communications plans, develop and manage contracts, and coordinate with CSU CO contracts department.	Without good managers, good ideas won't produce good results
Professional Development		
Design Quality Learning with Online Resources	These campus-based faculty development program would provide faculty with guidelines and tools for enhancing and expanding the effective use on online resources in their 5 steps in teaching: (1) Discovery and Research for Teaching, (2) Designing the Learning experience, (3) Teaching, (4) Facilitating Learning, and (5) Assessment, Evaluation and Feedback. The programs would be developed in cooperation with campus personal and made for adoption and adaptation by campus faculty development program coordinators. The programs will be developed in phases with about 3 self-selected campuses starting the program	Improve the quality and utilization of faculty time and talents to produce quality learning experiences leading to student success.
Tenure and Technology	Develop and implement a program for campuses to develop policies and practices evaluating faculty contributions to the teaching, scholarship, and community/university services with technology	Aligning tenure and promotion policies and practices will provide incentives and support for faculty developing and implementing technology for student and teacher success.
Discipline-based teaching-learning communities	Faculty from each campus in the same academic discipline will work on sharing best practices, sharing curriculum, developing strategies for innovation in teaching the academic discipline with technology, and developing strategies for facilitating graduation rates.	Improve student success/progress toward graduation, support faculty learning and using exemplary practices for teaching and learning with technology
Academic Technology Leadership Forums	Provide campus leaders the best expertise in academic technology issues at a systemwide forum	Campus leaders make more informed decisions

RESEARCH & APPLICATION OF EFFECTIVE PRACTICES in Academic Technology		
	In collaboration with the ITL and campus faculty development centers, build an online collection of research resources and guidelines for faculty to use and contribute to. MERLOT's Teaching and Technology provides framework and international repository of content in this area that can be leveraged for CSU purposes.	Increase readiness of faculty to use academic technology and support faculty decisions on the effective use of technology in teaching and learning
Shared Services for the CSU		
CSULB Center for Usability In Design and Assessment (CUDA)	All of the above projects involve the design and deployment of technologies that need to satisfy the needs of end-users. Is the technology usable? (Effective, easy to learn, easy to use, and motivating performance) CUDA at CSULB has been performing usability evaluation of technologies for the last 10 years nation wide and on many of the CSU projects (MERLOT, Math and English Success Websites for example). CUDA would continue to provide its evaluation services in support of all the academic technology projects as needed.	Ensures the technologies are designed for success with users.
Communications and Relations Management Staff Position	Implementing and sustaining an effective communications plan requires effective staffing for the communications. This will require a full time person to develop, manage and sustain the communications and relationships between project, project staff, and all the constituents served by the project	Ensures that CSU students, faculty, and staff will participate in the planning, implementation, and utilization of academic technology services.

APPENDIX G

IT FUNDING PRINCIPLES AND SUCCESS DRIVERS

POLICY

Long-term IT financial planning should be an integral part of overall institutional financial planning; institutional capital and operational financial planning must include IT.

IT investments must align with institutional strategies, priorities, and culture.

Involve all levels of executive management in IT planning, including the campus president and CFO; “how much is enough” and “how cutting edge do we want to be” are policy questions.

Fixed IT budgets and deferred maintenance are continuing challenges; develop reserve funds for upgrades and new technologies.

PROCESS

A comprehensive knowledge of institutional IT spending is needed; leverage total institutional investment by making central and distributed IT accountable.

IT requires full-cost, life-cycle funding; it is not a one-time purchase expense but an ongoing operational expense for maintenance and upgrades, including staff training and professional development.

IT assessment must take place on both the administrative and academic sides; it should involve “intangible” outcomes, not just “tangible” or input categories such as asset inventories or activity counts.

Campus IT leaders can be most effective if they have a seat on the executive cabinet or council; the IT budget process should be structured and transparent to all stakeholders on campus.

Prioritize IT investments based on current and future value; delay or eliminate projects to make room for new, growth-oriented needs and innovations.

Create a controlled and stable IT environment through predictable IT budgeting and good management practices.

Recognize that human resources are a major component of IT costs and that personnel costs represent ongoing, increasing annual expenditures.

Metrics need to be established for the delivery of all IT services, and costs need to be benchmarked. Benchmarking against peer institutions should be part of this process.

Cost-shifting and re-allocation of IT funds should be considered in times of retrenchment to ensure that funding remains available for higher-priority IT projects.

TECHNOLOGY

Standardize hardware, software, and support practices as much as possible to deliver baseline services through economies of scale.

Establish replacement cycles for each component of the technology infrastructure, and develop funding strategies to cover the cost of replacement in the IT budget.

Minimize cross-subsidization of campus networks and computing labs.

APPENDIX H

FUNDING STRATEGIES

COST CONTAINMENT STRATEGIES

Across the board cuts

Reduce the number of technologies supported

Delay renewal and replacement of hardware and software

Use open source software or external software development

Obtain discounts through the shared purchase of hardware and software

Limit duplicate IT organizations

Cut service levels

Freeze salaries; cut benefits; layoff staff

DEVELOPING INDIRECT FUNDING SOURCES

Cost-shifting

Re-allocation of existing funds

Sunsetting technologies; knowing when to quit

Consortial arrangements/partnerships

FINDING NEW FUNDS

Central operating and capital budgets

Sponsored research (technologists as research/faculty partners)

Fund-raising (a development office for IT)

Commercializing intellectual property

Debt financing; bonds

New fees (student technology fees, targeted tuition component)

Special appropriations

New business lines, for-profit subsidies, and auxiliaries: computer store, etc.

Chargebacks; revenue-generating activities

Vendor incentives, discounts, leases

Consortial/partnership arrangements

State and federal grants

Gifts, fundraising

Outsourcing

APPENDIX I

STUDENT TECHNOLOGY FEES

There is one source of funding for academic technology that is large, stable, long-term, and predictable, and that is supported by a broad and growing base of institutional precedent—student technology fees. For example, according to the most recent national data available on the subject, about 28 percent of higher education institutions charged some form of technology fee to students in 1995. By 2004, that percentage had increased to 69 percent among public four-year institutions and averaged $124 per year. The average fee amounts vary widely from year to year based on state budget appropriations for higher education. In most cases, fees are earmarked for specific purposes, and students are actively involved in determining how they are spent. Some institutions assess a flat fee while others base it on credit hours, often prorated for part-time students. Prior to these campus-wide fees, there was a long history of technology and other discipline-specific fees for students in fields such as engineering, computer science, arts, music, biology, and chemistry, among others.

The logic underlying a system technology fee is that individual students, or even faculty, could never be expected to keep pace with the rapid advances in hardware, software, and networking technologies on their own. Rather, many institutions have concluded that it makes both academic and economic sense to contribute to a collective program so an individual campus can take advantage of volume purchasing power, yielding prices far below what students would pay on the open market. The benefits--such as high-speed access to network-based resources, increased availability to state-of-the-art computers, extended hours of help-desk support, greater access to core academic software, etc.--would be shared by all, yet the individual student would pay only a small fraction of the market cost.

Technology fees are therefore based on the same premise that has always supported course fees in disciplines that are equipment and materials intensive. Public funding can be expected to build and maintain the basic technology infrastructure of a campus, but part of the cost for “peripherals”, personnel support, and consumables should be user-based.

In fall 1998 and winter 1999, the Social and Behavioral Research Institute at CSU, San Marcos conducted a survey of more than 3,000 CSU students. The representative sample included all campuses. Fully 91 percent of the students indicated that they would be willing to pay a technology fee in return for a specified package of information technology services and support. Among this group, 71 percent said they would be willing to pay $10 to $15 per month or more for that package. There were no significant variations to these general findings by either campus or student demographic group.

In a systemwide survey of 3,000 students in spring 2005, respondents were asked how much they would be willing to pay per month for a unspecified “package” of various IT resources and services that between 80 to 90 percent had already identified as being “interested” or “very interested” in receiving. Roughly two-thirds of the sample volunteered an answer and gave an average monthly amount of $22. Among the remaining one-third of respondents, 52 percent said they would be willing to pay $15 or more per month, and 72 percent would pay $10 or more per month. When data from the total sample were combined, 75 percent of respondents would pay $10 per month or more, and 14 percent said they would pay nothing or less than five dollars.

If such a fee becomes a realistic policy alternative for the CSU system, several issues deserve attention. For example:
.

1. What are the criteria for proposing a technology fee? While tuition, fee levels, and other evidence from comparison institutions are instructive, the ultimate decision involves the needs and expectations of CSU students versus that which their campuses can offer vis-à-vis competing resource demands. If the academic funding gap in the CSU is large and

growing, the students are the ultimate losers in terms of skill preparation and market competitiveness. The issue is whether they should be asked to become partners with the institution in funding technology resources that are important for their academic and employment future.

2. What would be an appropriate fee level for CSU students if one were adopted? Again, while comparative benchmarks cited in the report are worth considering, a technology fee is only one part of the broader tuition/fee structure in the CSU. A basic question is whether to treat the need for a technology fee on its own merits, or link its existence and level to fees generally in the CSU.

3. Should a proposed technology fee be campus-based or systemwide? Three CSU campuses already have campus-wide technology fees; others have "user fees" that are imposed at the school, departmental, or individual course levels. A standardized system fee might be more equitable in the sense that the technology needs of CSU students are roughly similar across the campuses, and few campuses have adequate resources to meet them. On the other hand, a campus-based fee might be more closely tied to unique campus needs and student influence on how it is spent. Perhaps the major advantage of a system fee is the economies of scale that can be introduced into the process of hardware and software purchasing, network access, and training and support services.

4. What would be appropriate uses of funds from a student technology fee? In almost all instances where fees exist, their use are determined by representative, campus-based committees comprised of students, faculty, and academic and technology administrators. In some cases, certain items are "off the table;" in others, everything involving technology is fair game. Probably the most prevalent use of fees is to support direct personnel costs (e.g., for help desks), and costs involving computer peripherals and consumables. Basic infrastructure needs are usually a secondary concern, although ISP services may be very important to some campuses. On balance, decisions concerning use typically are local matters with strong student advice into the process

5. What audit and evaluation mechanisms should be introduced into the technology fee process? Almost all campuses with such fees have institutionalized channels for communicating their use (e.g., standing committees, student government, newsletters, Web notices, and even signs on the equipment that students use). In addition, many institutions conduct annual audits of technology fee expenditures, as well as periodic evaluations that systematically relate fund allocations to evolving student needs and academic progress.