THE BIG PICTURE

Following is a brief discussion of the role of IT prior to and during the MOS process from a national, statewide, and institutional perspective. Dramatic changes have occurred in both IT policies and technologies, even since the advent of the MOS in 1999-2000. In general, the trends and priorities within the CSU tended to mirror those of other higher education institutions in the nation and the state.

The National View

Network and digital technologies are changing the culture and character of higher education much as they are changing the face of everyday life and the operations of almost every industry in the economy. The MOS was conducted in this dynamic environment where the university was only part of broader IT forces sweeping the social and economic landscapes.

Each year since 2000, the EDUCAUSE Current Issues Committee has conducted a survey on the most pressing higher education IT challenges facing executives and CIOs of member institutions. Nearly 600 institutions typically respond to this annual survey. From a list of approximately 30 potential issues, adapted from the changing landscape, IT leaders identified the top ten from four different perspectives:

- Most important for your campus to resolve for its strategic success
- Potential to become much more significant in the coming year
- Spending most of your time as an IT leader addressing
- Costing the most human and/or financial resources

Each year there were distinct differences within the top ten items for each of the four questions. What IT leaders were spending their time on was not necessarily where their institution as a whole was spending the most human and/or fiscal resources. In addition, the issues that are most important to resolve today may not be those that have the greatest potential for future challenges.

The table below shows the top ten issues in 2000 and 2008 based on their current strategic value to the institution (question one). Perhaps the most striking feature about the change over time was the rise in network security issues and the decline in academic technology that has always been the victim of funding shortfalls. Trends in the CSU were not markedly different. In general, the dominant pattern has been the rise in network technologies and all of the changes in individual and institutional behavior that stem from it. Directly or indirectly, the MOS was witness to those changes.

2000	**2008**
1. Funding IT	1. Security
2. Faculty development, support, and training	2. Administrative/ERP Information Systems
3. Distance education	3. Funding IT
4. Electronic learning environments	4. Infrastructure
5. Enterprise administrative systems (ERP)	5. Identity/Access Management
6. IT staffing and human resources management	6. Disaster Recovery/Business Continuity
7. IT strategic planning	7. Governance, Organization, and Leadership
8. Online student services	8. Change Management
9. Advanced networking	9. E-learning/Distributed Teaching and Learning
10. Support services demands	10. Staffing/HR Management/Training

The national Campus Computing Project is a second major source on the most important IT issues facing higher education institutions. When the findings for 2000 and 2007 are examined, a similar pattern emerges. Instructional integration, user support, and funding IT were the top three issues in 2000, while network and data security, upgrading or replacing ERP systems, and hiring or retaining IT staff were the top three issues in 2007. In fact, no other issue made it into the top three over the period.

The Statewide View

State lawmakers are less concerned with the internal preoccupations of IT than with practical matters of budgets and the economy. Therefore, their priorities tend to revolve around three interrelated issues: student access, workforce preparation, and institutional efficiencies. Technology is a subset, albeit an important one, of these concerns.

Access: Expanding access to higher education has been a cardinal principle of California state government since adoption of the Master Plan for Higher Education in 1960 and the dramatic expansion of CSU and community college campuses during that decade and beyond. For many years, the California Department of Finance (DOF) published official projections of higher education enrollments, and public infrastructure investments (for both physical plants and information technology) relied heavily on them. More recently, the DOF discontinued the projections because of their budget and political implications as ten-year census data became more problematic. Still, the basic building blocks of such projections (population changes, demographic shifts in age and ethnicity, and high school graduation rates) suggest that the current mix of CSU campuses may not be sufficient to accommodate anticipated enrollment increases, especially in geographic areas of high growth.

Many CSU campuses in areas of high population growth have reached or exceeded their master plan limits for the physical plant. Those limits traditionally were set at 25,000 FTES, but they can be waived upon petition to the Board of Trustees, and have been. All of this implies new buildings or new campuses and off-campus centers, or all three. Greater use of information technology, especially online instruction, has represented the best hope for both expanding access while realizing efficiencies in space construction and maintenance. Those hopes have not yet been satisfied to a significant extent, so the access/space dilemma remains.

The latest systemwide academic strategic plan for the CSU is titled *Access To Excellence*, an accountability plan that includes eight "commitments" for access and degree attainment together with a "menu of possible indicators" to demonstrate progress toward them. The technology infrastructure of the CSU is identified as one of the enabling tools for achieving these commitments to students and the state.

Workforce Preparation: Both students and faculty accorded workforce preparation a high priority in the MOS user surveys. Knowledge of, and skills in the use of technology figure prominently in the information age economy of the state. Much of the state support for the ITS was predicated on the long-term benefits to students and the state of a technologically-literate citizenry.

Many CSU campuses and the Chancellor's Office conduct periodic studies of the community and statewide economic impact of a college education, respectively. The most recent study of statewide impact shows that the CSU's direct economic effect on the state was $7.6 billion annually. This total in turn generates a "multiplier" impact of $13.6 billion in direct spending for the state's economy, sustaining more than 200,000 jobs and producing more than $760 million annually in state and local taxes. The system's campuses graduate 82,000 students each year, and the 1.7 million CSU alumni working in California earned an estimated $89 billion in income, of which an estimated $25 billion was attributable to their CSU degrees. In general, every dollar of state investment in the CSU returns $4.41 to the economy. Information technology permeates every industry in California, and the CSU produces 40 percent of the state's IT graduates, including more than half in computer and electronic engineering.

Efficiency: Campus collaboration and system centralization are hallmarks of several ITS initiatives, and the MOS was able to document the levels of cost savings and cost avoidance for them. Chief among these have been the data center consolidation for CMS; library resource sharing in the purchase of an electronic core collection; workstation hardware and software purchasing; and purchase and installation of network electronics.

Personal productivity, on the other hand, is usually harder to document but nonetheless real. User satisfaction surveys for faculty, staff, and students were good indicators of the time savings and productivity gains realized from implementation of the student friendly services initiative; remote, high-speed network access; current generation hardware and software; and the student administration and human resource modules within CMS. Beyond institutional efficiencies, training for a knowledge-age workforce was an added imperative for implementing the ITS initiatives.

The Institutional View

Table 1 in Appendix A provides an historical overview of IT development in the CSU, by decade, along six crucial dimensions: IT organization; strategic planning; academic technology and libraries; administrative systems; computing environments; and telecommunications and networking. Together, these dimensions offer a road map to the formation of the ITS, the need for a systemwide MOS, and potentially some form of long-term, systematic data collection. In sum, they highlight the evolving nature of IT over the past several decades:

1960s: era of large mainframe computers run by technical specialists; formation of the first central administrative data center in the CSU.

1970s: era of distributed data processing and related terminal-based computing, central timesharing and mini-computers for instructional and administrative applications; the beginning of library automation and microwave and satellite network systems.

1980s: era of telecommunications and statewide networking for remote access to information resources, formation of the systemwide CSUNet (wide area network), and linkages to networks outside the CSU; convergence of computers and telephony, desktop work processing and personal computers, and client-server environments; mandated annual campus strategic plans along with standardized resource inventories; the first comprehensive, systemwide strategic plan for IT issued in 1983 (a forerunner to the ITS calling for universal access to computers and networks, and integration of voice, video, and data information); formation of the first systemwide commission on instructional technology.

1990s: era of dramatic increases in computer speed, power, and storage together with lower costs; emergence of the World Wide Web, technology convergence and multimedia applications, browsers, search engines, and the commercial Internet; decentralization of computing resources to the campuses; in 1990, the second major strategic plan launches 21 IT initiatives, followed in 1996 by formal adoption of the ITS; formation of four systemwide commissions on instructional technology and libraries, administrative systems, networking, and extended education and the oversight Technology Steering Committee led by campus presidents; comprehensive library and network strategic plans are developed; CSUNet is expanded to include community colleges and some K-12 schools (4CNet), and later merged with a statewide telecommunications network consortium; the CSU becomes a major national player in Internet2, the National Learning Infrastructure Initiative, and the information competence project; planning for the Common Management Systems (CMS) and Technology Infrastructure Initiative (TII) are informed through a Systemwide Internal Partnership and negotiations with external business partners leading to the statewide bond proposition for a baseline infrastructure buildout.

2000s: era of accelerated migration to a networked environment, including wireless technologies and ubiquitous, personal mobile devices; emergence of learning management systems, middleware, and new network security protocols; agreement on a MOS reporting regimen to support the infrastructure buildout; and launch of a second wave of ITS initiatives addressing academic technology.

Summary: Several things are evident from this brief historical overview. First, systemwide strategic planning has been a major focus of the CSU for at least 25 years, including instructional technology, libraries, administrative systems, and telecommunications and networking. Second, presidential involvement and leadership has been a hallmark of the process for almost two decades, exploring avenues for greater collaboration, integration, and cost sharing in IT. Third, the CSU has often been at the forefront of new and emerging technologies and organizational structures, particularly in networking. Fourth, with the exception of the late 1980s and early 1990s (the campus-based program on Computing and Information Resources Project), the CSU did not have a centralized data collection effort in IT. In 2000, the MOS introduced a new culture of evidence and accountability, but more needs to be done in the future as the next two sections of this report indicate.

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