INTERIM RESULTS OF THE SELF-STUDY

I. AN OVERVIEW OF INFORMATION TECHNOLOGY AT UC BERKELEY—A PORTRAIT OF FRAGMENTATION

For reasons that are partly historical, partly cultural, and partly reflective of the sheer complexity of a modern research university, UC Berkeley's structure of governance for defining and funding its information technology (IT) investments is distributed across a wide variety of advisory committees, academic departments, and administrative units. There is no common approach to decision-making or any common forum for making final comprehensive assessments of the IT funding strategy for the campus as a whole. At its best, this structure affords the University's divisions and departments a striking capacity for technological innovation and entrepreneurship free of central administrative constraints. At its worst, this results in a divided community of IT "haves and have-nots," riddled with procurement cost inefficiencies, missed application and service improvement opportunities and constant confusion over IT standards, policies, and priorities. In short, an IT enterprise that is ultimately less than the sum of its state-of-the-art parts.

The good news is that UC Berkeley possesses a world-class IT network infrastructure and staff. There are examples throughout the Berkeley campus of excellent IT service delivery and expert project management, approaches to IT proposal assessment and budgeting that enable decision makers to make careful trade offs among cost and performance goals as these are measured against a clear set of IT investment objectives. The challenge is to weave these best practices into a transparent and comprehensive process for reaching campus-level IT funding decisions while ensuring some common set of minimal service standards for all units and departments. This needs to be done while also assuring the continued freedom of all units and departments to exceed those

service minimums, and to develop unique customer applications, whenever they have the skills and resources to do so. **Indeed, a deep antipathy toward more centralized decision-making as an antidote to organizational fragmentation is perhaps the most universally expressed value articulated by participants in this self-study.** However, the organizational fragmentation is real -- both on the IT demand side (in terms of where discussions of IT needs are held and where decisions about IT funding are made) and on the supply side (in terms of how many units provide separate customer support help desks, for both application development and routine support). And it is this fragmentation that makes the coordination and comparison (not centralization) of multi-unit and Campuswide IT investment decisions such an extraordinarily daunting task.

II. FIVE MAJOR GOVERNANCE AND FUNDING CHALLENGES

1. **The IT investment process is disconnected from the campus funding/budgeting process.** Initiatives or ideas for improvement of IT policies, applications, major new administrative systems or network infrastructure may arise anywhere on the campus. One challenge is that there is currently no process for structuring these ideas/initiatives as formal 'proposals' with common features (e.g., resource requirements, expected costs and benefits, relevance to campus priorities) that can be easily compared. In any case, the set of discussions held about these ideas/initiatives by members of the various IT advisory committees, often culminating in a discussion by the E-Berkeley steering committee, currently provide a fairly good opportunity to ensure that such ideas/initiatives are discussed and debated by a wide variety of administrative, faculty and student representatives. *However, none of these discussions culminates directly in an actual funding decision*, save for the very small pot of money the E-Berkeley steering committee has on hand for so-called "innovation projects" (about $100K/year compared to a total of nearly $135 million spent annually on IT at UC Berkeley). The

process for actually budgeting for and funding IT investments on campus is comprised of a separate, and not always parallel, set of discussions. In colleges, schools, and departments, IT funding proposals tend to make their way up to the deans, who may or may not have the resources to fund them or to build them internally. In administrative units, such proposals tend to make their way up to the individual vice chancellors, who again may or may not have the resources to build them internally or to buy them from another provider (on or off campus). Ultimately these proposals make their way into the budget request of an individual dean or vice chancellor to the office of budget and finance and ultimately to the executive vice chancellor and provost. Discussions tend to focus on how much of the overall budget request will be granted, not on its individual components (unless there is a major new initiative proposed). There is nothing in the governance structure that would cause these various IT-related budget requests to be considered in more detail, in comparison, or comprehensively, as a group. Nor is there anything to ensure that the advice and recommendations of the advisory committees are systematically applied to the department- and unit-specific budget/funding decisions. Thus there is no sure way to view proposals for IT funding that involve more than one department or unit comprehensively across the entire campus, to trade-off one multi-unit IT request or proposal against all the others, or to consider how a decision to fund one multi-unit IT proposal may affect the technical and financial prospects for starting or sustaining all the rest into the future.

2. **A "Silo-Specific" and Incremental Budgeting Approach is Applied to Central Administrative Systems.** Even after the establishment and campus-wide roll out of new central administrative systems, such as the Human Resource Management System (HRMS), these systems are still treated in the annual budget process as if they belong to the single administrative unit/vice chancellor that has functional responsibility for

operating the system. Instead of being treated as a permanent campus-level commitment, which implies significant non-discretionary spending each year going forward, these systems are reviewed as part of an individual vice chancellor's annual budget request for incremental new funding. For example, the request for additional funding for BFS (Berkeley Financial System) would be in acting VC Webster's budget request for his unit; the comparable request for the HRMS system would be in acting VC Lustig's individual budget request for BAS. Yet virtually every academic department and administrative unit on campus is devoting significant human and financial resources to the population and operation of these campus-wide data bases. The current budget/funding process obscures the true nature of the costs of maintaining, much less expanding, these central administrative systems, whose yearly budgets cannot be simply traded off annually against new proposals for IT spending (including proposed spending for other new central administrative systems, such as a new campus-wide course management system, which right now would come as an individual request from Vice Provost Maslach). And, again, although some of these strategic issues are discussed in the various IT advisory committees and the e-Berkeley steering committee, those discussions are disconnected from the annual budget reviews where actual funding decisions are made.

3. **The AVC-IT/CIO does not manage (or necessarily know about) two-thirds or more of the IT activity on campus.** Although the associate vice chancellor for information systems and technology now also carries the title of chief information officer, his span of control does not in fact include two-thirds or more of the IT activity on campus. This creates two challenges. First, the AVC-IT/CIO is often expected to develop comprehensive strategic plans for campus IT investment even though no academic department or administrative unit other than IS&T is obligated to inform him of its own IT needs or plans. The local department IT services

are often provided based on technologies that are not compatible with other campus units. Second, the independent IT organizations within some administrative units and academic departments have now evolved to a point where they actually compete with (or at least provide an alternative to) IS&T for providing other units and departments with development assistance for customer applications or for providing routine workstation/desktop support. Yet part of the AVC-IT/CIO's job is the "care and feeding" of the employees of IS&T, which derives a substantial portion of its budget by charging to provide such services.

4. **Central Administrative roles are unclear with respect to instructional computing, research computing, and campus IT services.** IS&T is responsible for the campus voice and data network, enterprise systems (financial, personnel, email, student, research, etc.), secure operational facilities, site licenses, and connections to UC, national and international infrastructure (e.g., CENIC, Internet2, Commercial Internet, system-wide payroll, supercomputing, California Digital Library, Melvyl, system-wide data, etc.). As the primary central administrative unit clearly responsible for IT, , many people on campus mistakenly presume that IS&T is also ultimately responsible for providing routine workstation/desktop support and development assistance for customer applications to any academic department or administrative unit on campus. Although IS&T has developed a limited capacity to provide these services, basic responsibility for both support and development assistance evolved a long time ago from within the individual departments and units. Similarly, the office of the vice chancellor for research is often thought to be responsible for "research computing" on campus. Yet requests for funding for various research computing initiatives and improvements are often made by individual PI's either to their department chairs, their deans, or to the directors of an Organized Research Unit (ORU). Most of the ORU's report to the vice chancellor for research, but currently there is no formal process

by which she can view all of the various research computing requests that come to deans, ORU directors or in grant proposals processed by the Sponsored Projects Office. So it is very difficult, if not impossible, for her to represent the campus demand for research computing in a comprehensive manner in the annual budget process for her unit. The challenge is even greater, perhaps, for the vice provost for undergraduate education, who has executive management responsibility for the Educational Technology Service, but has no real way to track or coordinate the individual experiments and requests for funding that arise from hundreds of faculty and graduate student instructors who are using IT in their teaching all across the campus. Finally, as noted, the dozen or more IT advisory committees, including the e-Berkeley steering committee, have virtually no formal role in the process by which spending for IT on campus is actually budgeted, so, not surprisingly, many members of these committees express confusion about exactly what their role in the process is supposed to be. Yet people "outside" of the process tend to view IS&T, the e-Berkeley steering committee, the Vice Chancellor for Research and the Vice Provost for Undergraduate Instruction as being "in charge" of the IT activities that are supposedly under their "jurisdiction."

5. **There is no mechanism to encourage IT managers to migrate toward "best practice" for either customer application development or workstation/desktop support.** At UC Berkeley, there are more than a dozen IT organizations based in academic departments or administrative units (including more than one group within IS&T) that provide a telephone and/or web-based help desk for customers seeking help with routine workstation/desktop problems or the development of customer applications. Some of these organizations use state-of-the-art request tracking software, helping to deliver efficient service and quick customer feedback. Others simply rely on individuals to return phone calls and fix problems on a first-come, first-served basis or on a "squeaky wheel gets

the grease" basis. For many people on campus, this lack of consistency creates feelings of annoyance and frustration, either with their own unit's or department's independent IT organization or with IS&T, on an almost daily basis. These feelings seem to color their view of the entire IT enterprise at UC Berkeley. Other people on campus, whose needs for service are managed effectively and consistently by ultra-responsive online, telephone, or in-person support, report higher levels of satisfaction with their own support situation and with the entire campus IT organization. The system is so fragmented that there is no opportunity (or reason) for one "service provider" to partner with other provide groups, or be compared systematically to one another in terms of efficiency or effectiveness; thus there is no incentive for managers to adopt organizational routines or products (such as help desk software) that are used by the units that seem to be doing the best job and that have the most satisfied customers.

Illustrative IT Services Provided on Campus

Many campus Email Servers
Calmail service (including subdomains)– about 61% of campus email activity
About 200 mail servers in departments handle the remaining 39%

Multiple Administrative Platforms
UC Berkeley supports Windows (several versions) and Mac operating systems for its priority 1 enterprise systems (BFS, HRMS, BIS, BAIRS, etc.)

Several Secure 24x7 Operations Centers
IS&T Data Center on Hearst Street
Other significant centers throughout campus (e.g., EECS, Haas, Residential Computing, L&S, etc.)

Multiple Application Development and Hosting Sites
Hundreds of departmental web sites designed, hosted and supported independently
Dual Easy-sure-pay local and at UCOP
No Single Travel system
Many Course management systems (B-Space…WebCT, Blackboard, Haas, Campus OMS, etc.)
Many Portals (BIS reporting, HRMS, Haas, etc.)
Dual Payroll processing (campus and at UCOP)
Active directory root support
Centrally and locally managed access points for wireless network
Several Credit card payment systems
Several GIS systems
Several Independent efforts for development of IT support for academic collections
Multiple approaches to off-site data storage and backups
Decentralized management of hardware and software maintenance contracts

UC Berkeley University of California

Illustrative Gaps in IT Services at UCB

No Integrated Berkeley Portal
No Unified approach to spam filtering
No Roles based authorization system
No Unified approach to firewalls
No Content management system for web apps
No Digital asset management system
No single Departmental business resumption planning approach
No General archive facility for storage of large datasets
No single Calendar system for students
No Unified email addressing space
No Integrated ‘personal information management’ (PIM) systems