

DRAFT ITAC ACCESS CRITICAL ISSUES

	CRITICAL ISSUE	DESCRIPTION/PROBLEM STATEMENT	EXAMPLES OF THIS ISSUE	GOAL(S) FOR THIS ISSUE	CURRENT ACTIONS TAKING PLACE TO MEET GOAL	FUTURE ACTIONS NEEDED TO MEET GOAL
1	Ubiquitous access to appropriate IT Infrastructure and Services	<p>Not all members of the campus community have access to appropriate information technology infrastructure, support, and services. This inadequate information technology (IT) environment is hindering Berkeley's ability to attract and retain the best faculty and students.</p> <p><i>Educational institutions that incorporate information technology in better ways than their peers will do better in the competition for great students, faculty, and staff.*</i></p> <p>The base or minimum level of infrastructure and support that is provided to all members of the community is not adequate. No comprehensive definition of a minimally acceptable IT environment has been developed. Technical choices and IT funding models do not adequately address the campus IT environment as a whole and the need for a ubiquitous computing environment.</p>	<p>1) Prospective students expect an advanced technical infrastructure including ubiquitous access to online communication and learning resources and unparalleled online resources. New students are finding the Berkeley IT environment less robust and enriching than they imagined or are used to from growing up in the digital age.</p> <p><i>A similar observation applies to today's students. They have grown up using the Web, PCs, and fast-paced interactive games. They expect a good IT environment at the school of their choice. The downside of an inadequate IT infrastructure in higher education is a decline in the quality of students, faculty, and research in the short term, and inevitable extinction in the long run.*</i></p> <p>2) All faculty members need access to affordable support for development of academic resources. Many faculty members have less desktop computing support than staff members. Many don't have sufficient technical support to feel confident that they have continuous Email access. There is no direct funding for faculty IT support.</p> <p>3) The network funding models currently being discussed should include consideration of the impact on the campus' ability to provide a robust and ubiquitous network.</p> <p>4) Cost of access to electronic journals and online academic resources continues to skyrocket. UC should have facilities to host, archive, and deliver academic content independent from commercial providers.</p>	To improve campus IT environment to a point where it is possible to provide ubiquitous access (to all campus members at all times and places) to appropriate information technology.	<p>Possible enhanced funding of ETS to provide support for faculty to develop learning resources</p> <p>CNS study of mesh networks for campus-wide wireless system implementation</p>	<p>Define an appropriate standard of access for each campus community segment and develop a method of evaluating progress toward these goals</p> <p>Prioritize projects for access enabling technologies</p> <p>Develop direct funding stream for faculty computing support</p> <p>Provide adequate funding</p>

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2	Timely and integrated access to online information is impeded by missing or inadequate middleware components	<p>Critical components of our campus IT enterprise software architecture are either inadequate or missing entirely. Our identity management service (CalNet) is lacking functionality in areas of integration or ease of interoperation with modern software platforms such as J2EE or .NET, and, even more importantly, in failing to provide basic authorization and role data about campus customers. We lack entirely a production middleware messaging layer service that could provide more timely and reliable access to applications and data sources for campus developers to use. These missing infrastructure elements hamper efforts by campus developers to provide (1) simple, reliable, and Ubiquitous access to applications and services, and (2) timely, consistent, and complete information about customers within campus applications. As a result, our IT environment suffers from poorer application integration, security, and personalization capabilities.</p>	<p>The campus information technology architecture does not currently support systems exchange that is simple, easy, and integrated.</p> <p>No real-time messaging exists in campus administrative systems.</p> <p>Batch processing on many central systems imposes a delay, such as the HRMS lapse. While not everything needs to be real-time, there is still a high degree of unnecessary latency and the windows of acceptable latency are shrinking.</p> <p>Current identity systems – Calnet, Kerberos and directory services are homegrown and showing age. There is a serious gap. The e-Berkeley push got things started on a shoestring, but the service is not being managed or maintained (it is languishing).</p> <p>Everyone thinks that CalNet equals secure; however, we are only maintaining the technical state and are purely in a maintenance mode. The environment has changed. We're behind. There are higher demands and no growth path, no technical plan as to what environments we are going to support in the near future</p>	<p>We need software middleware messaging infrastructure to support the improved sharing of data to provide more timely, reliable, and ubiquitous access to applications and services. Developers can use these technologies to improve the quality of access to applications and services by providing and sharing timely, consistent, and complete information about customers.</p> <p>The campus information technology architecture should support broad access.</p> <p>Improvement in the identity service (CalNet) that would facilitate simple, reliable, and ubiquitous access to applications and services must be a planning priority.</p> <p>The quality of access to applications and services, CalNet must provide to applications a more easily available common authentication and a basic authorization view of campus customers in their various roles. This, in turn, will facilitate better application integration, security, and personalization capabilities.</p>	<p>First production test planned for "CalNet Messaging" and the University Health Services "BizTalk".</p> <p>Progress has been made on identity systems over the last 4 years– CalNet, Kerberos, and directory services have been implemented.</p> <p>There are some areas of awareness, planning, and activity in this area - CCS announced that it will look more closely at an identity service – identity management "CalNet", the e-Berkeley portal roadmap, the Calnet identity management system.</p>	

* Jack McCredie, *Does IT Matter to Higher Education?* Educause, November/, December 2003.

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3	Physical Infrastructure	<p>Members of the campus community daily rely on our information technology infrastructure to carry out many aspect of their work. The failure of even one of our main IT systems, such as e-mail, creates a significant disruption to important campus activities. This dependence will continue to grow as additional crucial campus activities are facilitated by our IT infrastructure. The tools provided by it are essential to the conduct of our core missions of research, teaching, learning, and public service and also to promote collaboration among the members of our "coherent but heterogeneous community of colleagues."¹</p> <p>The campus will need to continue to improve the infrastructure to succeed in many of its new research programs including the computational biology and bioinformatics initiative and nanotechnology initiative. Students and instructors will grow more reliant on the infrastructure as the campus deploys the student portal, Sakai learning management system and the Library delivers more and more of its scholarly resources via the Web. Finally, all members of the community will need an increasingly robust infrastructure as campus administrative and student services continue to be transitioned from paper-based to web-based business practices.</p>	<p><i>Research</i> New research initiatives on campus including the computational biology and bioinformatics initiative and the nanotechnology initiative require the campus to provide researchers in these fields with an extremely fast networking infrastructure and vast data storage facilities to support the transmission and storage of large data sets.</p> <p><i>Teaching and Learning</i> Today, instructors and teachers daily rely on the IT infrastructure for teaching and learning activities. The infrastructure is used to access course web sites, to locate and read scholarly materials, and to deliver instructional content from systems such as CourseWeb, WebCast, BalckBoard and WebCT. Use of these services is likely to increase in the near future, and students and instructors will make even more intense use of the infrastructure as the campus deploys the Sakai leaning management system.</p>	<p>Repair the campus infrastructure to prevent the disruption of existing services. Invest in new IT infrastructure to maintain the reputation of the campus as the nation's pre-imminent public institution of research and higher learning which attracts the best faculty and students.</p>	<p>IST/CNS work with the technical staff across campus to identify and prioritize the elements of the campus data network that should be repaired or improved within the next three years. Priority should be given to those elements of the network that should be repaired to:</p> <ul style="list-style-type: none"> • Prevent the disruption of existing key campus services • Reduce the cost of operating the campus IT infrastructure • Help the campus attract and retain top faculty and students • Achieve key campus strategic goals 	<p>1. Determine options for making the AirBears network available in all areas of campus where it is important for teaching, learning, and research. Establish how many additional access points would be required to provide wireless networking for these purposes and the cost of operating the expanded network. Also explore other emerging wireless networking technologies such as WiMax that may be more cost effectively for delivering ubiquitous wireless networking service. Determine if it best to continue to invest in 802.11b/g technology or delay additional expansion of wireless networking services until a more cost effective technology becomes available within two years.</p> <p>2. Have ETS and the Library identify the key elements of the campus infrastructure that need to be repaired or improved to support the broad use of the Sakai learning management system and allow faculty and students to make more intensive use of online scholarly resources provided by the Library.</p>

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3	Physical Infrastructure <i>(continued)</i>	<p>Although all of the factors listed above will require the campus to invest in the maintenance and improvement of our IT infrastructure, we must be mindful of our budgetary constraints and rising student fees which threaten to jeopardize many students' access to a world-class education. Projects must be selected because they are essential to maintaining existing campus services and advancing our strategic goals.</p>	<p><i>Student Service and Administrative Systems</i> Almost all of the campus student and administrative services are moving from paper-based to web-based business practices which make greater demands on our legacy IT systems and network infrastructure. Many of these systems must exchange data with one another by performing daily or weekly batch processes that remove the systems from operations for a number of hours at a time. These batch exchanges of data also delay business transactions by days or weeks when compared to the transaction conducted via modern web-service-based technical architectures. The campus has begun and will continue to develop web services like CalNet and the Paperless Payment System to speed the processing of secure transaction, but these new web services will also place greater demands on our network.</p> <p><i>Funding Models:</i> Current funding models make it difficult to execute projects that require several successive years of investment. The current funding models also place heavy emphasis on temporary funding for the operation of systems after they are developed. Owners often worry that they will need to shutdown a system soon after they have launched a service because they don't have adequate permanent funding to operate the system. The campus needs to identify a more reliable model for funding IT infrastructure projects and operations.</p>			<p>3. Identify and prioritize key administrative and business processes that should be improved or replaced within the next three years to reduce the cost and improve the delivery of student and administrative services conducted via the web. Identify key systems and network infrastructure that should be improved to support near-real-time business transactions. Priority should be given to those systems that reduce the cost of conducting these activities or help the campus attract and retain top faculty and students.</p> <p>4. Identify a budgetary model that allows the campus to invest in multiyear infrastructure projects and provides a reliable model for the ongoing operation of these systems.</p>

¹ Berkeleyan, *Birgeneau's on the Job* by Robert J. Birgeneau, September 23, 2004