

DRAFT

For Discussion Purposes Only

**Report of the University of California
Information Technology Guidance Committee**

October 5, 2007

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With the University engaged in long-term strategic planning through the President's Long Range Guidance Team and my complementary UC-wide Academic Planning Process, there is no better time to focus Universitywide attention on the development of an information technology infrastructure that supports and integrates the University's academic and administrative activities.

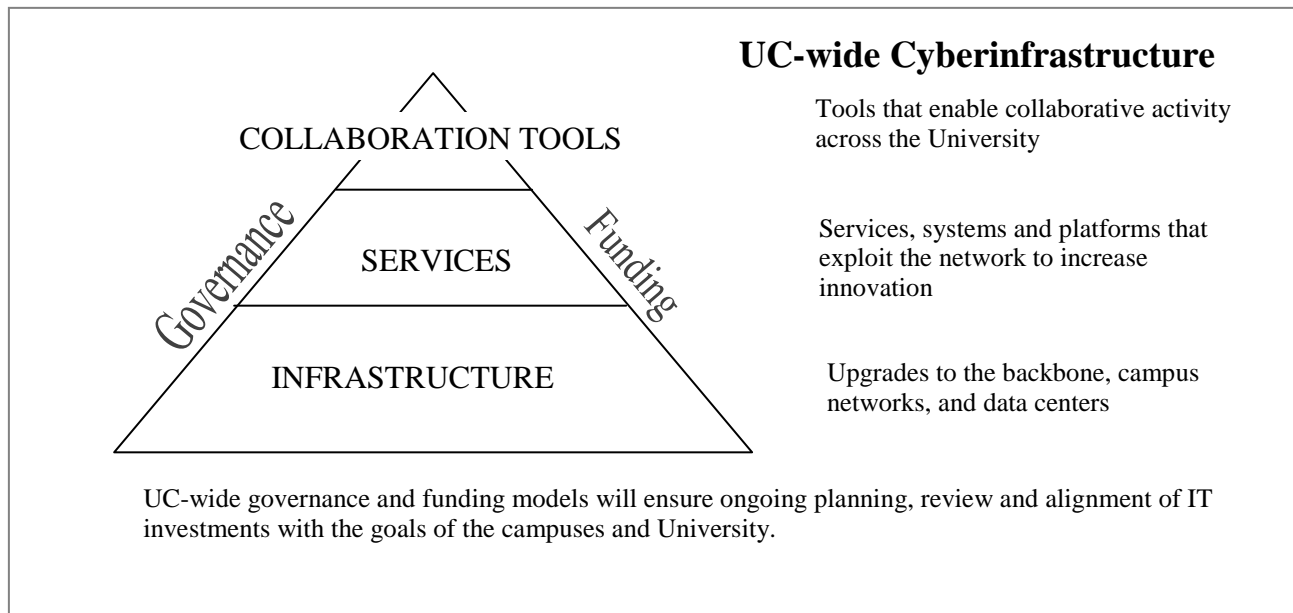
To cost-effectively support UC's continued eminence, our long-term IT requirements and investments must closely align with and support campus and UC-wide goals in all areas, including research, teaching, student life, faculty and student recruitment and retention, development, public service, and administration. While most of the responsibility for achieving this alignment rests with the campuses, there are clearly opportunities at the UC-wide level to leverage campus and UC-wide investments, foster campus distinctiveness, enhance the University's competitive position, and avoid duplicative expenditures. The IT Guidance Committee process affords a welcome opportunity to cultivate a campus/UC-wide partnership to guide UC's strategic investment in a rapidly evolving information technology environment.

Wyatt R. Hume
Provost and Chief Operating Officer, UCOP

I. EXECUTIVE SUMMARY

In January of 2006, the Information Technology Guidance Committee (ITGC), a group of University executive leaders, faculty, librarians, and chief information officers, was charged by UC Provost Rory Hume to engage in a consultative, UC-wide planning process to identify and recommend strategic directions to guide investments in information technology (IT) and the academic information environment. The formation of this committee recognized the increasingly important role that information technology plays in sustaining and enhancing the University's academic quality and competitiveness, as well as ensuring essential business effectiveness and efficiencies. The ITGC was chaired by UC Provost Rory Hume and co-coordinated by Vice Provost of Academic Information & Strategic Services Dan Greenstein, and Associate Vice President & Chief Information Officer Kristine Hafner.

Through the creation of issue-focused work groups with broad campus representation, the ITGC sponsored the identification of many important steps the University could take to improve IT's ability to enhance the University's mission. This report reflects a commitment to harness UC's "promise and power of ten" and outlines initial steps to create a new delivery model for IT services, one that avoids the irrational redundancy of building ten or more solutions for every problem. It is a commitment within UC's IT community to collaborate to share expertise, development and support effort, leveraging a common architecture that supports local priorities, as well as global efficiencies.



The recommendations in this report are described in four categories: Infrastructure, Services, Collaboration Tools, and The Way Forward. They are:

Infrastructure

⇒ Infrastructure Recommendation A.1 – Upgrade the Network

- 1) **Connect all campuses to the backbone.**
- 2) **Upgrade the UC backbone for capacity and speed.**
- 3) **Upgrade intra-campus networks.**

- 4) Give researchers the flexibility to create point-to-point high speed connections when they need them.**

⇒ Infrastructure Recommendation A.2 – Develop a consolidated next-generation data center infrastructure

Services

⇒ Services Recommendation B.1 – Expand the UC Research Grid

⇒ Services Recommendation B.2 – Create the capacity to manage our digital assets

⇒ Services Recommendation B.3 – Cultivate organizational leadership for instructional technology and IT in the student experience

Related Efforts:

- **Multi-campus educational programs**
- **Effective IT to enhance business efficiency**

Collaboration Tools

⇒ Recommendation C.1 – Develop a route map for identification, deployment and sharing of IT-enabled collaboration tools for the UC community

The Way Forward

⇒ Recommendation V.A - Establish the ITLC as the UC-wide IT governing body

⇒ Recommendation V.B – Fund IT as critical infrastructure

⇒ Recommendation V.C - Apply proven collaboration models to advance IT initiatives

II. VISION/ROLE OF INFORMATION TECHNOLOGY IN UC'S FUTURE SUCCESS

"The University of California of 2025... is a university that holds true to its mission of teaching, research and public service by maintaining the quality of its world-class faculty, the foundation on which a great teaching and research university is built; by providing access by developing new modes of delivering instruction, expanding its infrastructure, and ensuring affordability to all segments of California's population, including middle-income families; and by expanding its reach into California's communities through its health services, agriculture extension, academic preparation and other public service initiatives." – Report of the President's Long Range Guidance Team, 2006

As California's public research university, with roots deep in the land-grant mission of its founding, the University of California of 2025 will be dedicated to nurturing the talent of California's people, pushing the boundaries of global innovation and discovery, and creating solutions for the social, economic, and health challenges of California that are at the heart of the University's work.

Through the various recent reviews of UC's administrative structure, including the recommendations made by the Monitor Group, the University is being called upon, among other things, to strengthen its core to fulfill its mission and set a course for global preeminence for research and education in the 21st Century.

Yet the University of California of 2007, despite its current strengths and contributions, is at a crossroads. Faced with the shifting external challenges and demands confronting modern society, the University must not only respond, but also anticipate and proactively prepare for the future. At stake is UC's continuing excellence, its place on the cutting edge of knowledge and creativity, and its relevance to the pressing needs facing California and its people.

Information technology (IT) is critical to UC's continued excellence in this future. In a growing number of areas, IT is a primary vehicle for intellectual pursuit in a globally connected academic environment that thrives on autonomy, independence and academic freedom, based in and supported by an institution that is publicly accountable, socially committed, internationally oriented and community dependent (based on Frank Rhodes, University of the Future).

For example,

- High performance research computing makes it possible to collect data from remote experimental equipment, move that data through multiple analysis tools running on specialized computer clusters around the world, and deliver it to researchers' desktops anywhere in the University. These capabilities help keep UC at the forefront of research by increasing the efficiency and effectiveness of research activities and facilitating collaborations among research groups around the world. (For example, in predicting and analyzing earthquakes and assessing climate change effects on air quality)
- Learning is no longer bound by the constraints of the classroom. Internet-based collaboration and multimedia tools enable faculty to create new learning opportunities for students, as well as give students convenient access to learning materials from anywhere, at anytime. (For example, UC now offers an online course in Arabic, which is open to enrollment to students from all UC campuses)

- Libraries have made great strides in leveraging IT to extend the reach of their services. Patrons can discover and access library collections at any time from any location with an Internet connection. UC's California Digital Library has been a pioneer and world leader in providing these types of services.
- The University's administrative transactions can increasingly be conducted by self-service, automated processes. Purchasing, for example, can now be accomplished by online applications that automatically place orders with lowest-cost vendors, specifying delivery to the initiator's office. Human interaction is necessary only when pre-assigned authorizations are exceeded.
- Health care is also leveraging IT. UC's Telehealth program will use high-speed networks to provide UC's world-class health care to people who live in rural and other under-served areas.

A robust IT infrastructure is a critical element on which all innovations in teaching, research and public service will increasingly rely. In order to succeed now and in the future, UC must invest in IT just as it would in "brick and mortar" buildings, electricity and water. It's no longer a choice of whether to invest in IT, but how.

III. PLANNING ASSUMPTIONS AND PRINCIPLES

"What does 'the promise and the power of 10' mean? This concept refers to the University of California working as a single university, bringing together the complementary strengths of its ten campuses in a creative, interconnected, focused approach that summons the total impact of the UC system to address the public's needs. We have tremendous size, scale, and scope - and if we draw on our individual strengths to make the total impact more than the sum of its individual parts, we can do incredible things for California and for the world." - Wyatt R. Hume, Provost and Chief Operating Officer

In 2006, UC Provost Rory Hume charged the ITGC to:

- Identify strategic directions for IT investments that enable campuses to meet their distinctive needs more effectively while supporting the University's broader mission, academic programs and strategic goals.
- Promote the deployment of information technology services to support innovation and the enhancement of academic quality and institutional competitiveness.
- Leverage IT investment and expertise to fully exploit collective and campus-specific IT capabilities.

Thinking strategically about the role of IT in support of the University's mission requires a window into the University's future challenges and aspirations. Simultaneous to the ITGC process, planning about other mission-critical issues was happening across the University, the outcomes of which are key to informing the ITGC's work. These include reviews into the role of the Office of the President in relation to the campuses, the University's role with the people of California, and academic goals across the system. It was not until near the end of the ITGC process that these other reviews were completed, so, to get started, the ITGC devised a set of assumptions to guide its work.

These assumptions were about the future of UC and higher education more broadly, such as:

- **Increasingly global and competitive.** The environment in which institutions of higher education function is increasingly stretching across traditional geographic boundaries and becoming more competitive. This change is happening amidst declining public financial support.
- **Integration of missions.** Research and instruction will continue to become more integrated.
- **Student-driven learning.** Learning environments will become more participative and interactive.
- **Public service.** The University can enhance its service mission to the citizens of California through open access to information.
- **Institutional Diversity.** The University is committed to supporting the unique strengths of its campuses.
- **Agility.** The University must be agile to respond to new opportunities.
- **The Promise and Power of Ten.** The University will leverage the promise and power of its ten campuses to achieve goals that would otherwise be unattainable by any of its parts.

Further, the ITGC articulated a set of IT-related principles to guide the development of its recommendations.

- **Interoperability.** Information technology systems should be capable of exchanging information and services within and among campuses, nationally and internationally.
- **Information** is a critical resource/asset to be developed, securely managed and preserved by UC in support of knowledge, discovery, communications, and organizational efficiency and effectiveness.
- **Leverage Shared Infrastructure.** As with buildings and roads, information technology infrastructure must be robust and secure, with architectural and financial accommodation for future growth. Where infrastructure can be shared across the University, campuses benefit by avoiding unnecessary and duplicative investment.

Also, in conducting its exploration and devising its recommendations, the ITGC stayed focused on UC-wide issues and opportunities, and not on the inner workings or unique needs of individual campuses. As one might imagine, common problems and needs certainly exist among the 10 campuses, but significant differences, reflecting important adaptations to local needs, exist as well. Also, when it comes to the academic enterprises of research and teaching, one-size-fits-all recommendations were not considered appropriate. Both are, rightly, in the hands of the faculty and thrive as a result of their individual creativity. Thus the ITGC's work focused on proposing commonly needed yet flexible solutions.

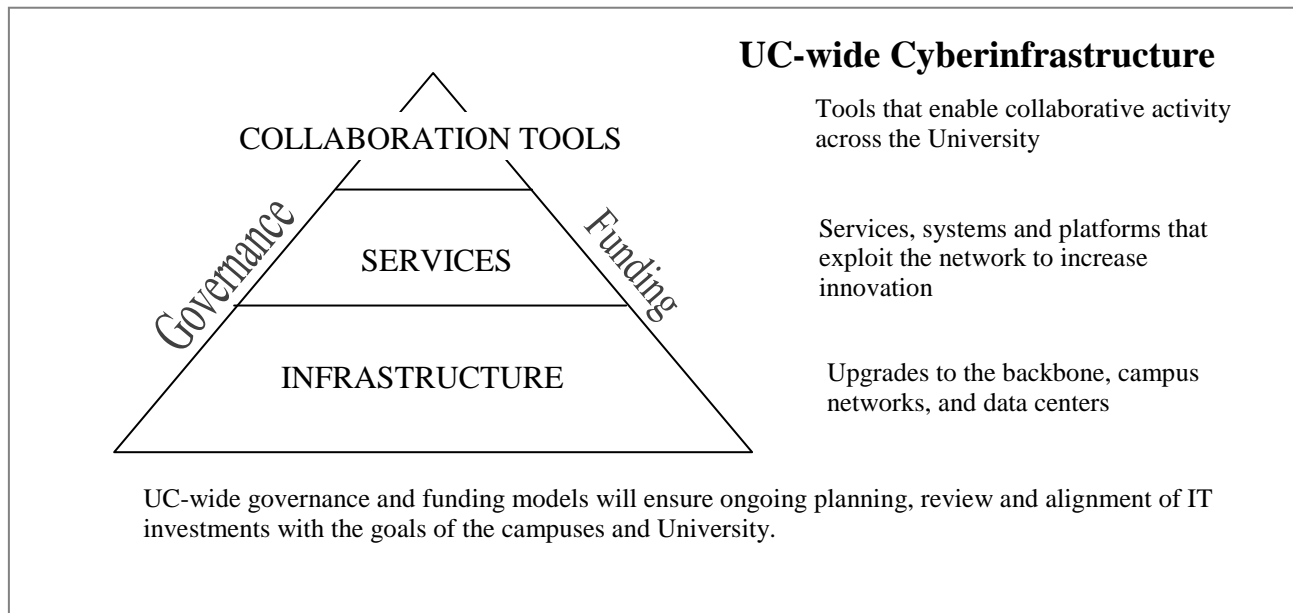
Finally, underlying the ITGC process is the principle, most prominently advocated by the President's Long Range Guidance Team, that the University of California will need to work more as a system in the future to achieve its goals and maintain its status as a preeminent institution of higher learning. It's been an assumption from the beginning that the ITGC is just the first step in an ongoing process of the UC community coming together to think about common needs and problems and propose collective solutions. Information technology changes at a rapid pace and requires ongoing planning to ensure its effectiveness. It's critical that we find models for working together to review emerging needs and existing services and prioritize our investments to ensure that we as a University are providing those things that serve the collective interest of the community.

IV. RECOMMENDATIONS – CREATING THE UC CYBERINFRASTRUCTURE

“Like the physical infrastructure of roads, bridges, power grids, telephone lines, and water systems that support modern society, ‘cyberinfrastructure’ refers to the distributed computer, information and communication technologies combined with the personnel and integrating components that provide a long-term platform to empower the modern scientific research endeavor.” - [Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure](#), January 2003

The recommendations put forth in this report cover a wide range of information technology investments, from platforms and systems to services and organizational structures that support UC in its mission of teaching, research and public service. Collectively they could be conceptualized as the initial building blocks of a UC-wide cyberinfrastructure, comprised of a layering of components:

- **The Infrastructure**, which is the foundation on which all IT systems and services rely;
- **Services**, which provide faculty, staff and students opportunities to take advantage of the network; and
- **Collaboration Tools**, which enable the University community to conduct its work, and leverage expertise and resources, in shared and innovative ways.



In addition, the ITGC has proposed principles for addressing administrative and business systems, which, in recent years, has been especially important to the University and, holds great potential for realizing efficiencies by adopting common approaches across campuses.

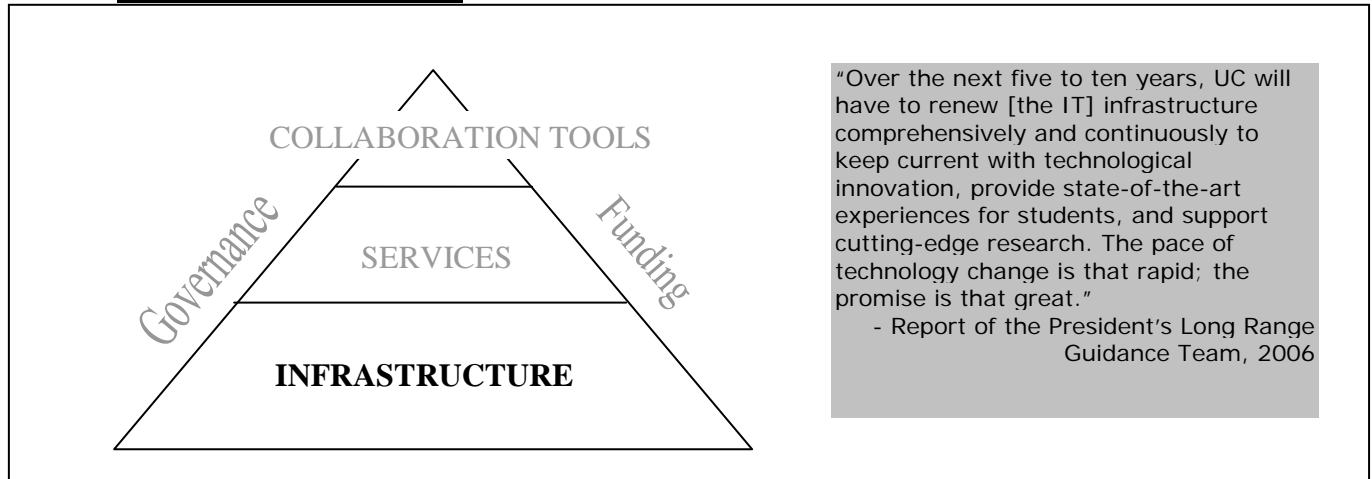
Working together to develop a UC-wide cyberinfrastructure also promises to result in an increase of the types, and improvement of the quality, of IT services accessible to the entire UC community. For example, a cyberinfrastructure would make UC researchers uniquely competitive because they have access to:

- Reliable, secure and high-speed network connectivity that enables them to interact in real time

with people, data, and applications anywhere in the world.

- Large-scale computational capacity that enables them to capture, manipulate, analyze, and manage vast quantities of data.

IV A. The Infrastructure



A UC cyberinfrastructure that includes state-of-the-art network connectivity and a scalable data center framework puts in place the foundation for exploring, designing and launching a wide range of new services to support and enable the future operations of the University by:

- providing the backbone for new research computing paradigms
- acting as a catalyst for new course delivery mechanisms
- enabling discovery of, and communication about, new knowledge
- giving our students powerful tools to enhance their educational experience, and
- connecting the University to business partners, alumni and the community.

The network is the central nervous system of the University – and it requires ongoing planning and investment to keep pace with new technologies. It is the foundation for scholarly communication and collaboration, for online access by students to course materials and digital resources, and for business transactions that run the administrative operations of the University. As such, it is a critical component of the cyberinfrastructure that allows UC faculty and students to access and transmit data in support of their scholarly activities across disciplines, among campuses, and with peers throughout the world.

⇒Infrastructure Recommendation A.1 – Upgrade the network

UC’s network is in need of immediate care. Our researchers, particularly in the sciences, do not have the bandwidth necessary to conduct cutting-edge research. UC has fallen behind that of peer institutions in its network infrastructure. To bring it up to research community standards, the following four levels of emphasis are proposed:

- 1) **Connect all campuses to the backbone.** Complete the intercampus optical network to the high performance research computing backbone.
- 2) **Upgrade the UC backbone for capacity and speed** (“next-generation network”)
- 3) **Upgrade intra-campus networks** to exploit the next-generation network (intra-campus networks currently lag by a factor of 10, which produces a bottleneck).
- 4) **Give researchers the flexibility to create point-to-point high speed connections when they need them.**

In addition, multi-year funding needs to be recalibrated to address the increased level of service the community demands.

Data Centers

Campuses have reached the limits of sustainability of current research computing models, where individual researchers acquire and house their own computing environments. Many campuses have outgrown data center capacity and are considering building new facilities. As is happening world-wide, space constraints, the high cost of electrical power, and security concerns have reached a crisis point and are forcing UC campuses to search for new models for providing data center capabilities.

UC must act now to continue its international leadership and future competitiveness. We must ensure UC has the facilities to house the computing resources it requires, that those resources and the information they contain are capable of being shared in support of UC research wherever it occurs in the world, that we provide the staff support needed to make effective use of these resources, and that we leverage this infrastructure to enhance UC's national and international competitiveness.

⇒ Infrastructure Recommendation A. - Develop a consolidated next-generation data center infrastructure

We need to analyze UC's current data center infrastructure, assess future needs, and ultimately develop a new blueprint for providing data center services to the UC community that are cost efficient, secure and designed to accommodate future demands. Creating a UC-wide disaster recovery service, building upon successful inter-campus partnerships, is an integral component of this plan.

UC must partner with network providers world-wide to accomplish these goals. In particular, these recommendations leverage UC's founding status in CENIC, California's regional network providing connectivity to K-20 institutions throughout California. A model for inter-segmental collaboration, CENIC operates the fiber optic backbone network that connects all UC campuses to each other and to national and international research and education networks.

By providing an enabling platform for various academic services, UC IT resources will be positioned to continue to support world-class research and instruction. The network infrastructure also provides a basis for initiatives that increase the efficiency and effectiveness of UC's business and administrative applications.

POSSIBLE SIDEBAR:

UC initiatives such as Calit2 are paving the way for innovative research uses of the network. An example includes the Calit2 iGrid 2005 conference, at which Mark Ellisman's National Centre for Microscopy and Imaging Research⁶ (NCMIR) at UCSD successfully conducted a collaborative microscopy experiment with one of the world's most powerful electron microscopes in Osaka, Japan. Using a dedicated lambda linking Osaka and San Diego, high-definition video images from both a remote microscope and a television camera in the microscope control room were brought together (creating a scene similar to that in the image below). Telescience, such as this, enables remote scientific instruments to deliver their output directly into the lab using dedicated optical networks.

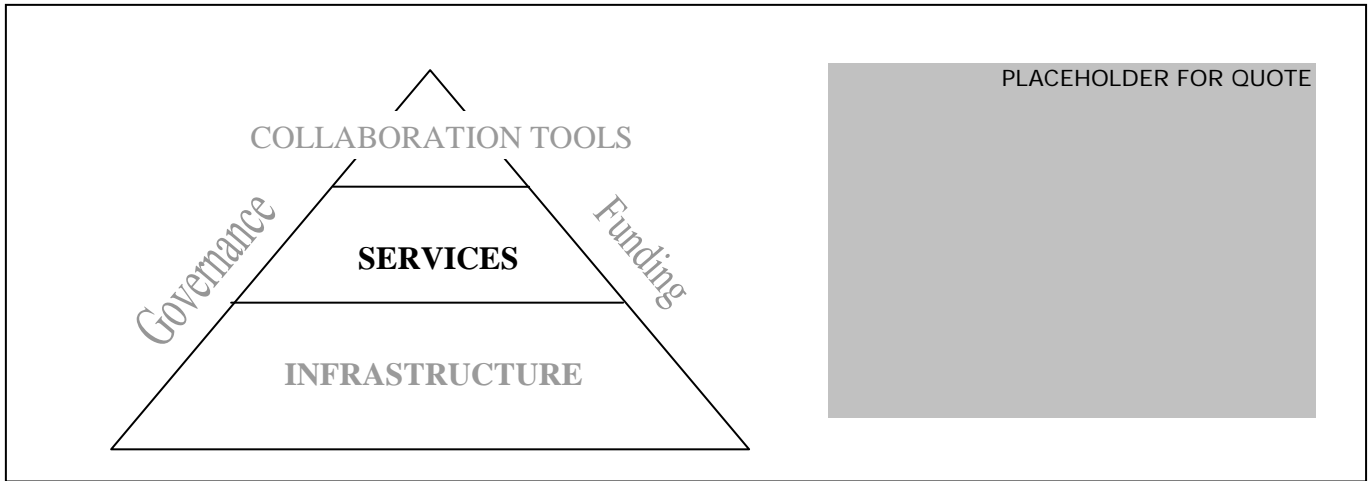


An OptIPortal tiled display wall. Such lambda-connected displays enable researchers to view local high-resolution images at the same time as high-definition images from remote labs or computers in real time.

Photo courtesy of David Lee, National Centre for Microscopy and Imaging Research (NCMIR) at UCSD.

[WE WOULD NEED TO GET PERMISSION FROM LARRY SMARR, ET AL TO USE THE ABOVE]

IV B. Services



The University would not be able to function without the network and data centers. However, most of the faculty, staff and students who rely on this infrastructure experience it primarily through the services it enables. That's where the value of a robust and secure infrastructure is most apparent and where additional investments should be made.

The ITGC is proposing that UC deploy the following services that leverage investments made in the IT infrastructure to advance the University's mission of research and teaching:

- UC Grid
- Secure services to support information creation, discovery, access, and preservation
- IT to enhance educational opportunities across the university

Crucial to an effective UC-wide cyberinfrastructure is a common IT architecture that establishes interoperability standards among the multiple components. The ability to share information and expertise across these service areas is paramount.

UC Grid

The nature of research computing is currently undergoing a rapid evolution. As the research environment evolves to solve ever more complex problems, there is urgency to design and deliver a comprehensive set of research cyberinfrastructure services. Researchers across disciplines require a wide range of computational, analytical and data management tools and they need to have the ability to manage and communicate electronic data between collaborating groups.

To address this need, a UC-wide high-performance computing grid platform is currently being piloted by three campuses (UC Irvine, UCLA and UC Santa Barbara). The Grid optimizes utilization of campus computing resources that may be underutilized at any given time.

There are three components of the UC Grid:

- 1) High performance research computing (shared computing cycles available)
- 2) Shared data storage (with ability to manage data sets)

3) Tools and services to allow the community to perform research

⇒**Services Recommendation B.1 - Expand the UC Research Grid**

The ITGC proposes steps for expanding the existing three-campus UC Grid prototype:

- 1) All ten campuses add computing resources to the Grid
- 2) Develop a plan for expanding the Grid's capacity, including identifying Federal funding opportunities
- 3) Define the services and storage strategies for the Grid

The blueprint for the UC Grid will need to be looked at in relation to the larger data center consolidation plan (mentioned earlier in this report).

[PLACEHOLDER FOR UC GRID GRAPHIC]

Secure services to support information creation, discovery, access, and preservation

UC is in the business of creating new knowledge. That knowledge, however, is useless unless it can be discovered by others, is accessible, and is preserved for future generations. This is true independent of the type of information or the intended (or unintended) audience. Whether we are dealing with a doctoral dissertation or earthquake data collected by seismographs located throughout the state, appropriate stewardship is required to assure that this happens.

⇒**Services Recommendation B.2 - Create the capacity to manage our digital assets**

In collaboration with UC's library community, and leveraging UC-wide data and information resources, mount a number of pilot projects that explore the feasibility of developing services to facilitate the life-cycle of information stewardship. Example projects include:

IT systems and services to enable sharing of instructional content

UC faculty produce an enormous and impressive cache of educational materials. However, those materials are largely locked away in "shoe boxes," such as restricted-access learning management systems, rendering them accessible to only those faculty who create them or students enrolled in a particular course (and for only a pre-determined length of time). Faculty who wish to make their course materials openly accessible to other faculty and students, or to others in the University or public communities, face significant technical, service and cultural obstacles in doing so.

Determine the feasibility and desirability of collaboratively providing tools -- to those who wish to make use of them -- to store, access and share instructional content.

IT systems and services to enable faculty to share data sets and analytical tools

Leading-edge research in all disciplines is becoming both more collaborative and cross-disciplinary and more reliant on machine-readable information – data, text, images and video – and advanced computational and networking capabilities. To support UC's research enterprise, and increasingly to meet the expectations of funding agencies for effective data curation and data sharing, the University must adopt strategies to ensure that the information produced in the

course of research is effectively secured, managed, preserved and made available for appropriate use by other researchers. In addition, effective use of the great volumes of research data now being produced requires the availability of sophisticated computational tools for management, display and analysis. The ability to effectively develop and share these tools enables better and more cost-effective research and fosters both collaborative and cross-disciplinary use of research data.

IT to Enhance Educational Opportunities Across the University

"The University of California of 2025 will be student centered in ways that better leverage the depth, breadth, and diversity of our faculty's expertise UC-wide. UC will leverage unparalleled experimental and research facilities, libraries, research data, and other tools that foster scholarly collaboration on a worldwide scale to create distinctive educational experiences for our students." - Report of the President's Long Range Guidance Team, 2006

On UC campuses and universities around the world, IT is successfully being used to:

- Actively engage students in the learning process
- Provide highly interactive activities in large enrollment courses
- Enable students to participate directly with faculty in research, interacting with data and simulations, and discovering new areas of interdisciplinary inquiry
- Provide greater access to learning opportunities across traditional campus boundaries and outside of formal courses
- Prepare students with a range of problem solving, critical thinking, and information skills required in an information-based society

The ITGC proposes implementing services and structures across the UC system that have the potential to leverage campus expertise and resources for benefit across the system. Recommendations in this area reflect the need for organizational leadership to support campuses working together to collectively address issues in common and to explore models for providing students with new educational opportunities.

⇒ Services Recommendation B.3 – Cultivate organizational leadership for instructional technology and IT in the Student Experience

Enhance existing organizational leadership structures and create new ones, if appropriate, to better:

- provide a locus for coordinating and supporting UC collaborative instructional technology efforts
- build agreement around and encourage adoption of standards essential to information interchange, interoperability and re-use
- foster information sharing and community building key to both innovation in instructional applications of technology and their effective appropriate adoption
- support IT design and delivery needs of multi-campus educational programs
- identify common needs and develop strategies and shared solutions to address how the student experience can be improved through IT
- promote student expertise in the use of information technology in their academic disciplines
- develop curriculum to prepare students to become facile and competent creators and consumers in a digital environment

Organizational models should be developed in consultation with the campuses, UCOP and the IT Leadership Council.

Potential Sidebar:

UC San Diego has made great progress in meeting student service needs as well as enabling discussion across functional groups by implementing a student portal called Triton Link. UC Berkeley is actively exploring how to meet student demand and provide more integrated services, and has published a report entitled "Information Technology at UC Berkeley: The Student Experience" (<http://hrweb.berkeley.edu/ldp/07infotechnology.pdf>). The UC community at large is building on these efforts and actively discussing, through forums such as the annual UC Enrollment Technology Services Conference, how it might work within and across campuses to address these issues together.

Related Efforts:

The ITGC recognizes the importance of related IT efforts that are being implemented in various functional areas across the University. In particular, the ITGC acknowledges and endorses the initiatives underway in multi-campus educational programs and in administrative and business systems.

IT support for educational programs and courses across campuses

Demand for courses and programs that enroll students from multiple campuses is, by most accounts and perspectives, likely to grow in the coming decade. These programs, often offered at off-campus locations, such as Washington, DC, Sacramento, or foreign countries, are becoming increasingly important as laboratory experiences where students can become involved directly in organizations and activities that offer learning opportunities not available on campus. In some instances, online courses available to all UC students are provided by a campus or a consortium of campuses (e.g., Arabic without Walls, offered by the UC Language Consortium).

Additional benefits of multi-campus educational opportunities include:

- Graduate and undergraduate students alike can engage with ideas and with ongoing research independently of where (on what campus) they are located.
- Pooling student demand from across the system, UC will be able to sustain instruction in specialized subjects which, if treated on a campus-by-campus basis, might atrophy.
- Similarly, it may offer a cost-effective way to offer components of emerging academic programs, particularly in interdisciplinary fields of study.

The Academic Affairs division at UCOP has already begun a strategic planning process to identify and address the needs of existing courses and programs that enroll students from multiple campuses. Although this process will initially focus on administrative issues, it provides a framework for exploring the potential of putting in place an IT infrastructure and services that facilitate instruction across campuses. The ITGC proposes that a study be done, in alignment with the greater strategic planning process, of the needs for such an infrastructure and, if appropriate, a pilot of such services.

Effective IT to Enhance Business Efficiency

Although the IT Guidance Committee focused most of its attention on information technology investments in support of the academic mission, we recognize that the University must have a solid foundation of business and administrative processes and systems to enable its teaching, research and public service. We can build on a UC cyberinfrastructure to offer opportunities to increase the efficiency and effectiveness of UC's business and administrative processing.

Multiple studies have assessed UC's IT needs in payroll, human resources, and other administrative areas. *UC 2010: A New Business Architecture for the University of California (July 2000)*, proposed a road map to redesign UC's core business processes to enable the University to manage growth, control costs, improve the work environment, and implement best practices. Information technology was viewed as a critical tool to transform UC's administrative support infrastructure.

Recent organizational reviews, such as the Monitor Group report, have reinforced the need for business efficiencies. Functional stakeholders from business areas throughout the University are addressing these issues and are forming critical partnerships with the IT community to successfully design and implement solutions.

A shared IT approach presents opportunities to address many of the recommendations outlined in the *New Business Architecture* report:

- standardize business processes
- increase productivity
- eliminate duplication of effort
- lower costs and business risk
- enable more informed decision-making, and
- ensure greater flexibility to respond to the changing landscape of the competitive environment.

The ITGC proposes the principle that UC develop the blueprint for shared administrative and business systems and practices by:

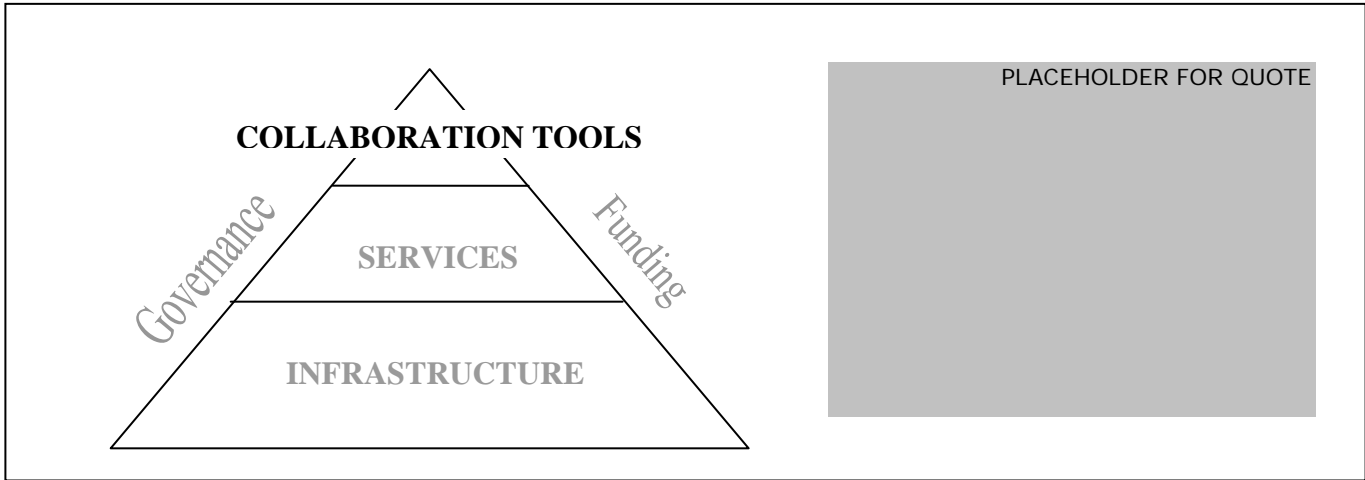
- Adopting and promoting innovative shared service delivery models that address critical infrastructure challenges that could return significant financial benefits to the University while enhancing quality of service.
- Implementing business systems that exploit integrated technology architectures and are catalysts for the adoption and promotion of UC-wide standards and effective business processes.

Several initiatives are underway that illustrate the power of UC-wide solutions to problems that cannot be solved at the campus level, for example:

- Human Resources Information System to improve the quality of employee data and provide a broad range of payroll and human resources services to UC locations.

- Multi-campus partnership (with UCOP support) to implement the Quali Financial System (KFS), a non-proprietary financial system that is being built in conjunction with higher education partners.
- UCTrust, a federated identity management framework, facilitates secure business operations and transactions among UC institutions and with key stakeholder organizations such as the federal government.
- Effort Reporting System, a five-campus partnership (with UCOP) to develop a system to report effort on contracts and grants in compliance with current federal government reporting standards.

IV C. Collaboration Tools

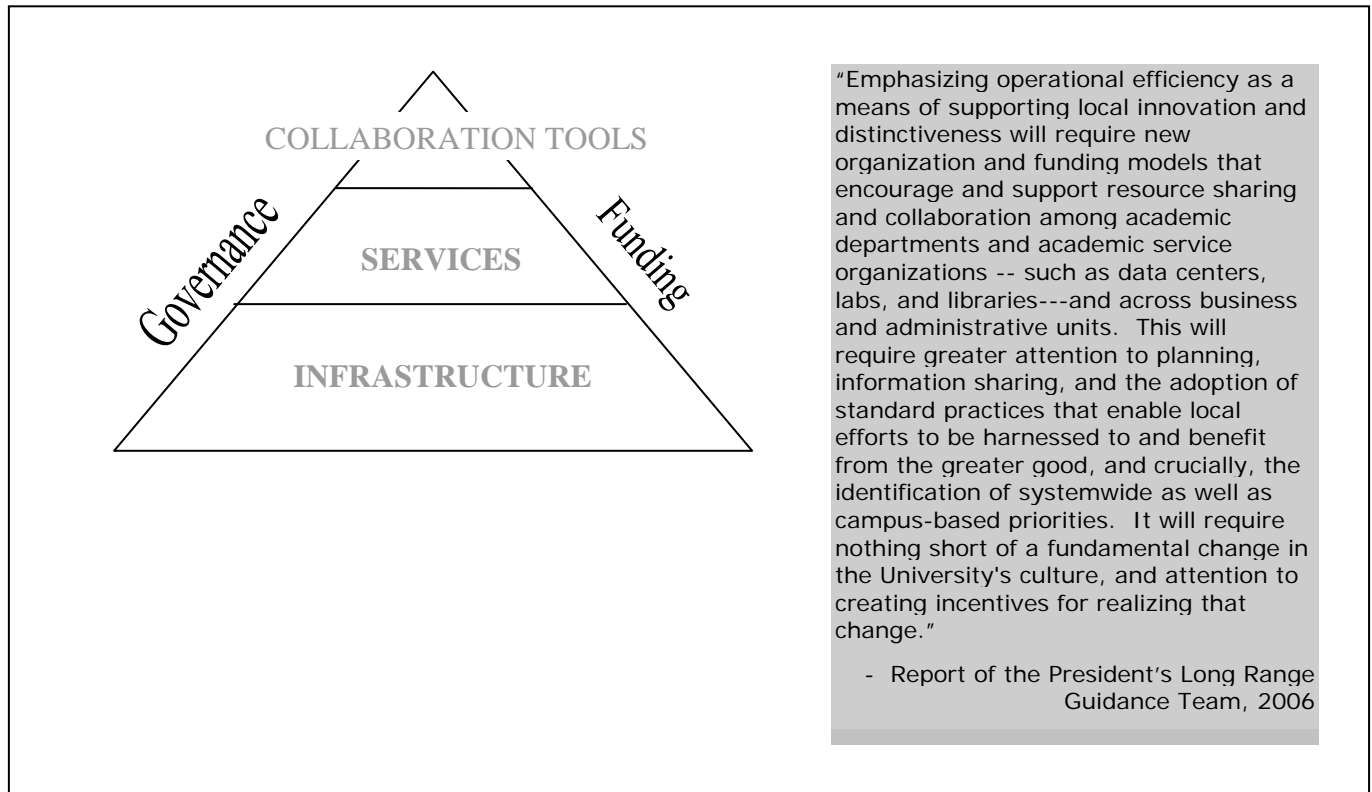


Collaboration is critical to UC’s future success. Research and learning are increasingly collaborative, and institutionally we need to collaborate more to remain efficient and competitive. We need to enhance the ability of UC's faculty, students, and staff to work with each other and their colleagues throughout the state and the world.

Real-time collaboration tools such as web conferencing, desktop video conferencing, and high-definition, studio-based video conferencing, as well as electronic forums and workspaces such as wikis, blogs and shared document repositories and applications, should be made available to faculty, students and staff throughout the UC system.

⇒ Collaboration Tools Recommendation C.1 - Develop a route map for identification, deployment and sharing of IT-enabled collaboration tools for the UC community

V. The Way Forward



Governance

The IT Guidance Committee was envisioned as the first step in an ongoing process for assessing UC-wide IT needs, reviewing investments, and planning for the future. It’s time to institutionalize this process by forming a governance body to build on the work the ITGC started and to continue to plan, prioritize and implement UC-wide IT projects.

Critical to successful governance is active involvement of the leaders of the University’s functional areas. Governance must be a partnership between the providers and users of services and the IT implementers.

⇒**Recommendation V.A – Establish the ITLC as the UC-wide IT governing body**

With UC leadership support and funding commitments for the UC-wide initiatives described in this report, a governance structure is essential for the successful design and delivery of these initiatives in the context of UC-wide and campus IT priorities.

The [UC IT Leadership Council](#) (ITLC), which is made up of chief information officers (CIOs) and other senior information technology (IT) leaders from the UC campuses, Office of the President, medical centers, and UC managed national laboratories, should expand its current role to function as the UC-wide IT governance / decision-making body. It should consult annually with major campus functional leaders (e.g. VC’s Administration, VC’s Research, VC’s for Student Affairs, Planning and Budget Officers, Undergraduate Deans) to identify IT priorities

that serve the strategic interests of the University system. The ITLC should validate these IT priorities to the UC Provost and Executive Vice Chancellors and oversee their implementation. The ITLC decision-making role should be direct in some areas and partnership-based in others and should be supported by designated ITLC project support staff.

Funding

The University of California's IT infrastructure must be reliable, and it must be designed to support current and future UC academic and administrative needs in a sustainable and cost-effective manner. To maintain such an IT infrastructure requires innovative approaches to how the University acquires, manages and invests the required financial resources.

⇒ Recommendation V.B – Fund IT as critical infrastructure

The ITGC strongly recommends that the University implement IT funding strategies consistent with these principles:

- Funding is **stable and predictable** in the long term.
- A **coordinated planning and decision-making process** effectively and strategically balances competing needs and available funding sources.
- Life-cycle costing provisions **ensure renewal of essential components** of infrastructure as they depreciate over time.
- Funds are allocated to **maintain existing infrastructure components**, such as network hardware and software, directories and infrastructural cement of physical assets.
- Funding is earmarked for the **information technology infrastructure component of capital projects**.
- **Technology upgrade and enhancement funds** enable the University to derive ongoing benefits from initial investments in IT infrastructure.

Working Together

We know how to collaborate when we see our collective interest in the balance. We certainly have good experiences on which we can draw – the California Digital Library and Systemwide IT Contracts are but two examples – as well as a variety of proven collaborative models that can be applied, including:

- Multi-campus initiatives, where a subset of campuses agree to collaborate on a system or service, or to adopt a solution developed by one campus
- Functional collaborations, where groups responsible for a particular function at some or all campuses get together to develop or adopt a shared solution that serves their functional need
- System-led initiatives, where campuses request UCOP to provide collaborative leadership in developing or implementing a shared solution or a uniform UC-wide solution is imperative for cost, fiduciary, or other reasons

These efforts demonstrate the power and promise of 10. We can advance IT initiatives by applying what we've learned from these successful collaborations.

⇒ Recommendation V.C - Apply proven collaboration models to advance IT initiatives

VI. APPENDICES

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ITGC Co-coordinators:

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Focus Areas/Work Groups

Advanced Networking Services

Chair: Jack McCredie, UCB

UCOP staff: David Walker

Common IT Architecture

Chair: Rich Kogut, UCM

UCOP staff: David Walker

High Performance Research Computing

Chairs: Jim Davis, UCLA; and Chuck Rowley, UCR

UCOP staff: David Walker

Instructional Technology

Chair: Ruth Sabeen, UCLA

UCOP staff: Paula Murphy

IT in Student Experience

(n/a)

Stewardship of Digital Assets

Chair: Brian E.C. Schottlaender, UCSD

UCOP staff: Gary Lawrence and Connie Williams

ITGC staff:

Katherine Mitchell, UCB, ITGC planning design, facilitation, and coordination

Nancy Scott-Noennig: committee and campus consultation administrative assistance

Resources & More Information

ITGC web site: <http://www.universityofcalifornia.edu/itgc/>

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