UCLA IT Strategic Plan: 2009 – 2018

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WORKING DOCUMENT

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Executive Summary

The draft academic plan *Transforming UCLA for the Twenty-first Century* gives voice to UCLA's aspiration to be the leading 21st century public research university. Realization of that aspiration will depend, as never before, on our ability to leverage technology. Information technology, once largely limited to esoteric natural science research applications and administrative data processing, now pervades all academic disciplines and all university operations.

Information Technology as Differentiator and Enabler of the Future

While raw computing power has become a commodity, the ability to apply information technology creatively has become a key institutional differentiator. The Information Technology Planning Task Force (ITPTF) has taken that realization to heart. We envision a future in which leveraging information technology is a key component of furthering the mission of UCLA. That fundamental concept is encapsulated in these four phrases:

UCLA Anytime, Anywhere – *UCLA uses IT to increase its global intellectual impact by enabling scholarly interaction among its communities and collaborators, anytime and anywhere.*

IT Leadership and Innovation – *UCLA is recognized as an innovator and leader in applying IT to advance its academic mission.*

Digital Citizens – *UCLA faculty, students, and staff are digital citizens with (1) the knowledge and skills to use IT to do the best possible research, scholarship, teaching, learning, service, and administration and (2) the understanding that each has not only individual but also institutional responsibilities for the management, protection, and or availability of digital information.*

IT as an Institutional Asset – *UCLA employs an institutional perspective for managing IT that transcends and magnifies central, regional, local, and individual IT capabilities, from the research group or department, to the campus as a whole, and the UC system or the broader higher education community.*

Over the years UCLA has made progress in all of these areas, but there is something very different this time. Past efforts have for the most part been *unit* focused; the future is one of balanced *institutional and unit* focus. The environmental landscape has changed, and to thrive in this new environment UCLA's deployment models must change as well.

A New Operating Model for Information Technology

Our current model for delivering information technology reflects the university culture: it fosters creation of new capabilities through local experimentation and innovation. But sharing or commoditization of many information technology services—in fact, the whole contemporary notion of information technology as a *service*—requires a new deployment model.

We now need a new deployment model that allows us to create, and take advantage, of commoditized capabilities—a model that will allow the institution to push ahead with bold innovation on a macro scale.

While innovation at the individual and unit levels remains important, large-scale innovation is where opportunities for future differentiation lie. Shared commoditized services are our key to stronger, more pliable intellectual connectedness, to shared intellectual content, to resource accessibility and capability, to interdisciplinary and inter-institutional collaboration, and to the anytime-anywhere impact of UCLA's intellectual content.

The institution will derive the greatest benefit if we can fan the spark of innovation with seamlessly applied local and institutional resources. The strategic challenge is to keep the innovation alive that got us to where we are today and, at the same time, develop a silo-free approach that leads to creating true *institutional* capabilities. Achieving this goal will require an across-the-board cultural change for the campus.

The proposed IT Services Model allows the appropriate balance in the integration of differentiating and commoditized services. The model allows the University to realize potential economies of scale from commoditized services without sacrificing the ability to innovate at the unit level.

This approach is in line with industry trends that will, within the 2018 planning horizon, see many such services "move to the cloud." That is, a service provider will perform them, whether outsourced or captive, without the users being aware where or how the service is provided. Microsoft, Google, and Amazon already provide such on-demand services to the general public; others are bound to follow.

How the New IT Services Model Changes Service Delivery

Our current model has approached information technology as "a cacophony of independent operations:" each IT shop is expected to furnish "everything" for a given capability. The new model disaggregates each capability into its component services. It considers whether service components are infrastructure or not, and whether they are institutional or locally differentiating, as shown in Figure 1. (A component is considered institutional [non-differentiating] if it is one that any [research] university needs, but that, even with world-class execution, does not directly influence research or educational outcomes, quality, or quantity.)

	Institutional	Regional	Local
End user & Support			
Process & Information	Institutional Processes Integrated or Shared Applications & Data		Local Processes Local Applications, Shared Application Extensions & Data
Application & Data			
Middle Applications			
OS & Platforms			
Server & Device	Institutionally Provisioned Shared Infrastructure (Central or Blended)		Locally Provisioned Unique Infrastructure (Decentralized or Blended)
Data Centers			
Networking & Comm			

Figure 1 - The Four Quadrant Operating Model

The new model can be visualized by imagining all IT services stacked vertically: services that directly support the end-user at the top (such as desktop support) and services deeply embedded in the infrastructure at the bottom (such as network connectivity). Generally, the transition between infrastructure and process-specific services will be at the applications and database level as shown by the horizontal line. Services in any category range from those that are purely institutional (i.e., those that can be shared by everyone) to those that are highly differentiated from department to department. For example:

- The Payroll application serves everyone on campus; it falls in the upper left quadrant.

- The campus backbone network is also used by everyone, but is a "nearly invisible" piece of commodity infrastructure; it falls in the lower left quadrant.

- An experimental network in Computer Science would fall in the lower right: it is fundamentally an infrastructure component, but it is unique to their research work.

- A specialized research application would fall in the upper right quadrant.

How each component service is delivered will depend on where it places in the resulting four technology classes. The model's first paradigm is that non-differentiating services will be delivered institutionally. The second, that future development will take advantage of institutional infrastructure resources to the maximum extent instead of duplicating an existing capability.

The first corollary is that all units furnishing institutional services must provide a robust, capable set of offerings. This also means that the service specifications must embody the totality of institutional needs or state specifically which needs will be out of scope. If a needed capability is outside the scope, then the involved parties are jointly responsible to develop the solution.

The second corollary is that institution-wide applications not only leverage the common infrastructure, but if the processes they support or enable are non-differentiating (e.g., many of our administrative processes) they must encompass the end-to-end process. That is, such applications should meet the complete institutional needs, not just the needs of a specific unit that performs one or more tasks in that process. When IT deployment is not focused on automating *tasks* but on the end-to-end *processes* that they enable, a more integrated and seamless architecture will result, from which the campus can only benefit.

The model recognizes that many activities occur outside the realm of common, often administrative, institutional processes and infrastructure: a university is a collection of units with very different research and instructional needs. Infrastructure and administrative support may be largely commodity; research and teaching are usually not. The Common Collaboration and Learning Environment (CCLE) initiative, for example, furnishes the institutional infrastructure for teaching and collaboration, yet enables the customization needed to innovate at the unit level as well as have local control over the instructional content.

Commonality may exist among related academic disciplines, but rarely at the institutional level. Thus, the model expects that "regions" of collaboration will form to leverage their common knowledge base as well as the institutional infrastructure. As shown in Figure 1, "regions" are expected to form along the somewhat fuzzy boundary between "local" and "institutional."

Finally, the model recognizes that one-of-a-kind research activities are the lifeblood of a research university. The intent is that the close collaboration between research faculty and IT professionals continues. Stronger yet, the model aims to provide the capacity to increase the local focus on these tasks by providing non-differentiating services efficiently and effectively at the institutional level.

The End State

Today, cyber research and research informatics are already forming a third pillar of research, joining theory and experiment. Cyber learning, combining ubiquitous access and connectedness to people with content, is also becoming essential in a global education enterprise, and soon will be a primary means of collaborative, interdisciplinary, and community engagement.

In 2018 information technology will have evolved into an essential means of research, education, community involvement, communication, scholarly, and social interaction, as well as a primary means of interacting with and relating to the University. At that time, UCLA aims to have a world-wide and world-class *digital presence* and provide *world access* to its research, education, business, and community data and content.

To that end, we will develop our internal community to acquire and to apply new digital skills innovatively to further their academic agendas. We will expect our faculty, staff, and students to play an even more active part in the development, evolution, and governance of UCLA's IT services. At the end of the planning period we envision to have achieved these goals:

- Students at all levels will have an educational experience characterized by immersion in a rich research-oriented environment enabled by innovative use of IT.

- Incentives will be in place to encourage the innovative application of IT in all areas that directly support the academic mission. Processes will be established to expand new services from test bed, to pilot, to broadly-based production services.

- The information technology environment will support spontaneous (i.e., without IT intervention) peer-to-peer research and education projects, content sharing, and collaboration. It will support interdisciplinary programs, cross-unit course sharing, and inter-institutional resource sharing without IT intervention.

- The "central/local" dichotomy will have vanished from the lexicon. The migration to a model in which services, costs, and roles are defined and optimized, regardless of originating unit, will be complete. Resources of central and local IT will have been brought into a campus capability that is highly responsive to the end user.

- Work processes will have been optimized for the end user functionality, effective-ness, and meet the requirements of the units involved. Application silos will have been replaced by end-to-end, cross-unit service capabilities and processes.

- Institutional knowledge of devices, platforms, applications, data, and approaches for meeting compliance requirements will allow UCLA to assure campus compliance and to mitigate and manage security risks.

- The infrastructure will be designed to scale with increasing data and applications demands, robustly supporting consistent networked-based campus services - campus sensor networks, mobile wireless (such as in transportation vehicles), VoIP, and campus PDA data features.

- UCLA will educate and encourage its internal community to acquire the skills and understanding to apply sophisticated IT tools to new areas of teaching and research.

- A new investment model will be in place that links IT investment to the broader strategy of the campus, and distributes responsibility for covering the costs of shared IT services to all sectors of the campus that benefit from them.

In short, we will have built an environment in which IT requirements are systematically developed and differentiated with respect to academic and institutional competitiveness. By 2018, we will have realized an ambitious goal set in 2009 at a time of severe cost constraints, when vision and leadership prevailed over the panic of the day and wise tradeoffs were made to position us for the future. We can prepare to celebrate our first centennial knowing that we are ready for whatever the next century will bring us.

A New IT Strategic Vision and Planning Cycle for UCLA

UCLA is in the midst of planning its role as a 21st century institution. Changes in global interactions as well as social and environmental challenges along with higher education requirements, national research investments, technology, and individual expectations have formed a converged set of opportunities that call for a transformed university.

Given how information technology has become embedded in nearly everything we do, developing the corresponding IT plan for the next decade is essential to the University meeting its aspirations. Information technology is a key enabler for institutional strategy and is a major area of investment.

Thus, UCLA's aspiration to be a leading 21st century public research university is a prime motivator for planning for information technology. The *draft academic plan Transforming UCLA for the Twenty-first Century* has put a planning and transformation process into motion aimed at making UCLA:

- Known for its world leading programs and academic excellence;

- A residential academic community bringing faculty, staff, and students together to create a highly integrated academic community with significant aspirations for excellence, civic engagement, and diversity;

- An exemplar for problem-based teaching and research through local and international engagement and for bringing research, teaching, and service together on problem-based and translational scholarship;

- A leader in new forms of collaborative, multidisciplinary research and teaching for innovation, academic excellence, and civic engagement, especially at interdisciplinary intersections.

In the context of these academic aspirations, this specific focus on IT planning reflects the recognition that the world has not only transitioned into a digital economy but has also entered a knowledge economy. Information technology threads through almost every aspect of university work and has become an essential means of research, education, community involvement, communication, scholarly interaction, and social interaction as well as a primary means of interacting with and relating to the University:

- UCLA is already embracing the advent of cyber research and research informatics as a third pillar of research, joining theory and experiment.

- 'Cyberlearning', combining ubiquitous access and connectedness to people with content, has become essential in a global education and a primary means of collaborative, interdisciplinary, and community engagement.

- UCLA has made strong moves in using IT to fuse research and education and is preparing for the burgeoning role of Institutional Informatics in which *digital presence* and *world access* to UCLA's research, education, business and community data,

content, and results become synonymous with intellectual capital, reputation, and impact.

Another important dimension of change for information technology over the last 10 years is in the areas of regulation, policy, and ethical behavior. Information technology has generated change in social norms and has entered a much more highly regulated space. Digital behavior, regulation, and policy, if not addressed carefully, can challenge scholarly interaction, discovery, and innovation.

Each person within UCLA and its extended community has new responsibilities and the concept of the digital citizen has real meaning. Privacy, security, copyright, intellectual property, and digital ethics have all seen significant new regulation and policy:

- The ease of digital plagiarism and illegal file sharing has created ethical dilemmas, as well as generated new models for legal content use.

- Hacking was once the pastime of lone computer hobbyists with questionable ethics, a form of cyber vandalism, but today's hacker is often part of a ring of IT professionals, using automated tools and financed by organized crime or governments.

- Identity theft has put a high premium on personal data and its protection.

- Privacy issues constantly complete with digital convenience and security. Digital monitoring challenges privacy and the need to protect valued open communication as a driver of innovation and discovery.

UCLA's planning effort is largely driven from the recognition that UCLA's research, academic, and administrative requirements, both current and future, have changed significantly compared with the needs of ten years ago.

 Over the past decade, UCLA has made regular investments in its IT infrastructure and services under guidance of an enlightened and engaged governance apparatus. A similar level of IT deployment at the department, divisional, and school level has more than matched campus-wide IT investment. Much was achieved, but there were also issues. Sometimes institutional or environmental requirements or the underlying technology changed faster than we could respond, or funding or organizational limitations hampered our ability to act.

UCLA can better deploy new technologies and thereby ensure a greater return on campus IT investments. We have no lack of talent but UCLA's IT operating model requires realignment to present-day reality.

- Students used to have their first encounter with information technology after they entered the university. Today's students arrive with expectations for technology that are shaped by many years' exposure to commercial websites, sophisticated on-line virtual reality games and video-enabled wireless telephones—expectations that we are hard-pressed to meet.

- Our central administrative systems are nearing the end of their useful lives and must be replaced over the next decade. We anticipate these undertakings collectively to cost over a hundred million dollars and require massive changes throughout the business processes of the campus.

- UCLA's network and telecommunications infrastructures, while traditionally robust and powerful, are approaching significant technology renewal and new technology decision points. In particular, the campus will soon need to embrace the further convergence of voice, video, and data and a much wider array of digital communication and data networks.

- This planning effort comes at a time when the campus is facing significant budgetary reductions with expectations that UCLA's state, fee, and revenue funding profile will not return to former levels, while research volume continues to grow.

Information technology is, in aggregate, a very large area of investment and expenditure. An overarching objective for this planning effort is to recommend strategic initiatives that maximize the IT investment for the mission, objectives, and reputation of the University moving forward. That is, we need to manage IT to not only maximize value produced by IT investment but also to enable us to do more with less, especially in support of the research and education mission.

The Plan Cycle in Context

In late 1999, UCLA's new CIO, the Executive Vice Chancellor and the Academic Senate formed the Information Technology Planning Board (ITPB), setting into motion the formation of a campus IT governance structure and a number of associated processes.

In the early 2000's the ITPB began discussions across the campus and subsequently developed a set of principles and areas of strategic emphasis that were published in 2003. This ITPB campus study created the first IT vision for the future around these five areas of emphasis:

- Integrate students into an IT-enhanced, individualized teaching, learning, and research environment.

- Use UCLA's IT resources to improve interaction with external communities.

- Make UCLA a leader in three key IT areas: data management and analysis; digital media; and computation-based research.

- Use the Internet to support centers of scholarly interaction, both to engage students and to enhance external access to UCLA.

- Provide information to increase productivity and to enhance the relationships of individuals to the University.

This vision outlined major goals and paths to the future that have provided significant guidance to the development of strategic initiatives for the past six years. Over this time UCLA also evolved a more coherent institutional approach to IT, laying a foundation from which this 2009-2018 plan could naturally evolve.

While this document is UCLA's first comprehensive institutional IT Strategic Plan, IT strategic planning has nonetheless been an ongoing activity for the past decade on the campus. This planning occurred as different areas of campus developed the capacity and structures for institutional planning.

- In 1999, UCLA Administration, the College of Letters and Sciences, and Student Affairs organizations collaborated to produce the Information Systems Transitional Infrastructure Plan (ISTIP) which articulated a strategy for central business and student applications as well as key elements of the IT infrastructure for a four year period.

- This plan was followed in 2002 by the University Technology Infrastructure and Productivity Plan (UTIPP) and in 2006 by UTIPP2.

- Most recently, the campus created a process to prioritize campus investment in large IT systems.

This series of plans, in combination with the Committee for IT Infrastructure (CITI) process, has provided the roadmap and project initiatives that have guided UCLA's administrative IT infrastructure. The result of this prioritization exercise by CITI has produced major portions of the campus IT plan.

In parallel, in the 2004 – 2006 timeframe, the campus engaged in major academic efforts:

- The Repositioning and Technology Infrastructure for Education and Research (TIER) initiatives provided planning for the next generation campus wired and wireless networks.

- The Institute for Digital Research and Education (IDRE), formed in 2006, undertook planning for UCLA's computational research infrastructure.

- The Common Collaboration and Learning Environment (CCLE), launched in 2007, generated the plans for UCLA's educational and collaboration infrastructure.

- Most recently, UCLA committed to launch the planning for institutional research informatics.

These initiatives in combination have been the drivers for building UCLA's Research and Education Cyberinfrastructure which, using a National Science Foundation definition, is:

> …the coordinated aggregation of software, hardware and other technologies as well as human expertise to support current development and future discovery and to integrate relevant and often disparate resources to provide a useful, usable and enabling computational and data framework characterized by broad access.

With the creation of a campus strategic vision for academic excellence, led by Chancellor Gene Block, the timing was right to develop a corresponding comprehensive IT strategic plan that could support these overarching aspirations for UCLA and build upon earlier planning to create a strategic view of IT at UCLA.

Consequently, in October 2008, Executive Vice Chancellor and Provost Scott Waugh created the IT Planning Task Force and charged it with developing a strategic plan for IT at UCLA. This report is the first plan to capture all campus strategic initiatives and to address the necessary support for operating, funding, and governing UCLA's IT services.

UCLA's Strengths, Weaknesses, Opportunities and Threats

This IT strategic planning effort took place in the face of significant environmental changes that will have broad and lasting impact on UCLA and public higher education research institutions in general. This planning process has afforded the opportunity to examine these in an IT context and compare them with UCLA's strengths and weaknesses.

Strengths

- ❖ Investment in IT
- ❖ Organized IT committees
- ❖ Scale and capabilities
- ❖ Engagement of faculty, staff and students
- ❖ Institutional intellectual property management

Threats

- ❖ Budget cuts will force the wrong decisions on IT
- ❖ Research and education "data deluge"
- ❖ Increase in security threats
- ❖ Inability to recover from disaster

IT Enables UCLA Anytime, Anywhere

Foster IT Leadership & Innovation

Develop Digital Citizens

Manage IT as an Institutional Asset

Weaknesses

- ❖ No coherent plan for IT at UCLA
- ❖ Fragmentation of IT infrastructure
- ❖ Approaching end of useful life of some IT infrastructure
- ❖ Too many system interfaces
- ❖ Introverted to the outside world

Opportunities

- ❖ Leadership is interested in using IT to solve real problems
- ❖ Balance local autonomy with institutional IT needs
- ❖ Leverage UC initiatives
- ❖ Augment our IT capabilities around a UCLA brand and IT Vision
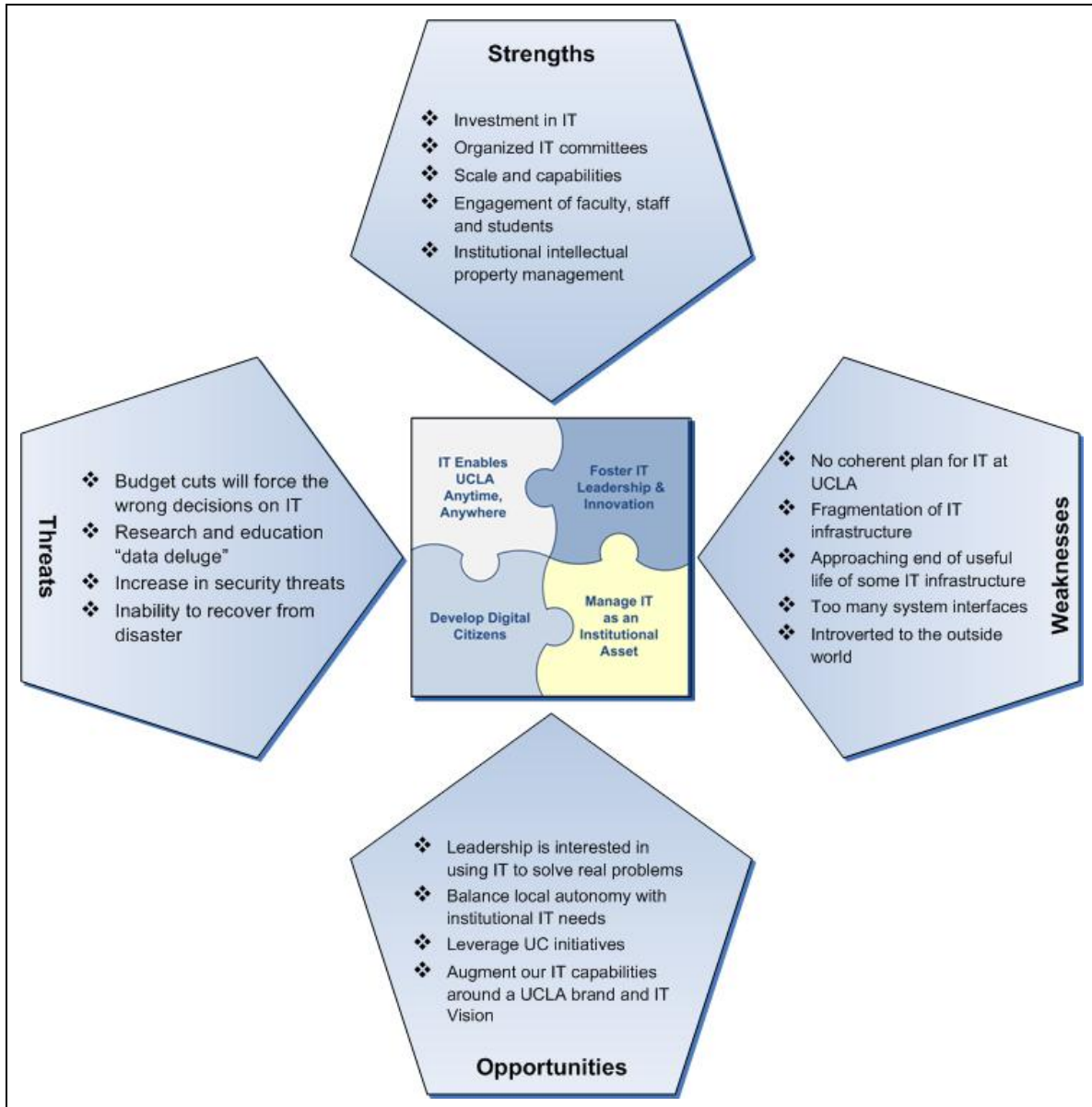
Figure 2 - SWOT: Strengths, Weaknesses, Opportunities and Threats

The Financial Climate

There is no doubt that the unexpected and precipitous downturn of the economy, which has resulted in severe budget cuts in nearly every program on campus, presents an inhibiter to investment and advancing strategic initiatives that far exceeds any in recent memory. In such a climate, it would seem that the best that can be hoped for is to resist the erosion of existing service levels – and even that may be difficult, if not impossible, to achieve.

When times are hard, leaders may be tempted to view IT as a cost center, an expense category that can and should absorb cuts on an equal footing with other line items in the budget. However, IT investments are often among the best tools for extracting savings from campus administrative processes and they provide a vital prerequisite for attaining strategic excellence in the academic enterprise.

A particularly useful aspect of IT applications is that they necessarily map how trans-actions and work processes are actually done. This is exactly the on-the-ground information needed to review and streamline processes or to identify areas in which IT could generate greater efficiencies.

On the academic program side, it has become clear that the University will need to re-think and take action on how course content is brought to students, how the number of similar courses across departments can be reduced in favor of shared courses and content, and other ways that core courses can be accommodated, including summer courses and on-line courses. IT can facilitate this change in needs.

Many IT services and applications are foundational to activities that are closely aligned with the University's mission. Even short-term cuts can create substantial opportunity costs for years to come and have the potential to impact the campus as a whole dramatically.

The Data Deluge

The exponential accumulation of data in the research and education sectors continues unabated, as it does in our Internet-based society as a whole.[1] UCLA's rapidly expanding accumulation of research data–a key component of the University's intellectual capital–needs to be properly collected and cared for and federally funded projects will soon be required to preserve and provide access to data.

The scholarly need, as well as imminent external requirements to make a burgeoning amount of research data accessible and reusable beyond the life of a particular project, represents a massive new and near-term aspect of data management that needs to be addressed.

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[1] A 2008 International Data Corporation (IDC) white paper sponsored by EMC Corporation described the world we live in as awash in digital data – an estimated 281 exabytes in 2007, the equivalent of 281 trillion novels. By IDC's estimates, the amount of digital data in our cyberworld will have increased hundredfold by 2023. (Adapted from "Got Data? A Guide to Data Preservation in the Information Age", Francine Berman, Communications of the ACM, December 2008, Vol. 51, No. 12.)

As an example, the Protein Data Bank (PDB), a database that stores information about the structure of biological molecules, which began its life in 1971 by documenting seven structures, is estimated to grow to over 150,000 structures by 2014.[2] Databases in other areas of research have experienced similar growth patterns.

While some large data collections are well-managed, other research data may be scattered across the campus, perhaps stored in small, faculty-run labs and/or without data management plans. Dealing with this data deluge is a significantly important element to research and education.

UCLA has an opportunity here to combine the strength of its campus and medical enterprises. For example, our proven ability to both conceive of and support interdisciplinary medical- and social sciences-oriented research that depends on petabytes of data is considered a key area of potential competitiveness.

Administrative Infrastructure

Since 1999 the campus has followed a strategy that sought to enhance the legacy financial systems, extending their useful lives and postponing replacement. This approach has served the University well, permitting the campus to take on significant additional workload, including processing for UC Merced and UCOP.

A recent study by BearingPoint Consulting suggests that UCLA's financial systems will soon need to be replaced. They recommended that the campus initiate a planning process immediately to begin the analysis of business processes and prepare for the eventual replacement of these systems.

Acquisition and implementation of new core systems is very costly and time consuming, especially when one considers the process improvement and reengineering that must precede the purchase of a new system. This substantial but necessary investment could not come at a more difficult fiscal time.

Similarly, the campus has made a large investment in its student records system, but there are significant needs still to be addressed with much of the frontline functionality. While investments have extended the student systems for perhaps another 10 years, within the horizon of this plan UCLA can expect to address the replacement of its student systems.

Both Research Administration and the Medical Enterprise are currently involved in comprehensive reviews of their processes, producing greater expectations for the IT systems that support these important functions such that UCLA must anticipate large-scale costs of replacing systems for both of these very critical areas as well.

In light of these projected investment requirements, campus leadership has already begun to discuss new models for funding IT investment on an ongoing basis that could amortize the implementation and maintenance costs of major systems over their useful lives and provide a more reliable basis for providing appropriate and predictable funding.

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[2] "Sustaining the Digital Investment: Issues and Challenges of Economically Sustainable Digital Preservation", December 2008, Interim Report of the Blue Ribbon Task Force on Sustainable Digital Preservation and Access.

As these end-of-life system replacement activities queue up, it will be both an essential task as well as a major strategic opportunity to reexamine core business processes for improvements in efficiency and effectiveness.

Organizational Challenges

In some ways, UCLA is ill-prepared to meet the current set of institutional threats and challenges. IT planning has been done in the past within particular sectors, such as the Common Collaboration and Learning Environment (CCLE) and IDRE/Research Cyberinfrastructure in the research and education sectors, and the ISTIP and UTIPP plans for administration. These sector-oriented plans have not been considered together: no comprehensive strategic plan for how the campus would deploy, operate, and fund IT has previously been undertaken.

As future plans were being contemplated, it became clear that the campus must have a broadly inclusive IT strategic plan that closely correlates with the campus' overall strategic goals and provides an institutional response to current challenges. Creating such a broadly inclusive plan has been particularly difficult at a campus like UCLA where IT infrastructure and services are so highly decentralized and difficult to analyze in the aggregate.

Through efforts within the medical center and general campus there has been substantial progress toward a more coordinated enterprise approach and to reduce the number of separate networks and e-mail systems. However, there still remains much to be done.

With fragmentation comes duplication of effort and systems, tremendous diversity among purchased products and technologies, a highly complex set of interfaces and interdependencies among disparate applications, and a large variation in service levels and standards.

Given our diversity, finding a way to move the entire campus in a coherent strategic IT direction is a challenge. One such challenge is protecting all of the campus' important systems and data from security threats and unplanned disruptions of service. Because of the high degree of interdependency of applications across the campus, this may mean that our systems will be only as strong as the weakest link.

Additionally, like all institutions, UCLA needs to understand and can expect to be part of the massive trend toward "cloud–outsourced" services for those services that can be commoditized on regional, national, and global scales.

Our challenges have been exacerbated by a belief that we are "unique." It has led to the creation of customized solutions rather than seeking to collaborate with our peer institutions, or even other departments on campus. Given the magnitude of the challenges now facing the campus, in the future UCLA will have no choice but to work together as an institution.

Institutional Strengths and Opportunities

Notwithstanding the challenges we face, there is much to celebrate about UCLA's IT capabilities and its capacity for improving them.

Campus leadership well understands the potential for IT to further the mission of the University and has demonstrated this commitment through sustained investment in IT infrastructure and applications. These investments have not only included development costs, but also the ongoing funding necessary to maintain new systems. This campus-wide development has been complemented by substantial investment at the school and organizational level throughout the campus. As a result, when compared with similar major research universities, UCLA's IT capability is in many respects enviable.

A robust governance structure with active campus-wide involvement serves the campus well in evaluating and selecting strategic goals and projects. Our efforts have gone far toward creating an institutional focus for IT on campus. Certainly, UCLA's faculty, students, and staff have demonstrated a strong interest and engagement in the IT services the campus provides.

UCLA has developed a culture and practice of responsiveness at the research and education frontlines that is unique among its peers. Through its distributed IT organizations, UCLA's IT services have been customized to serve the unique needs of faculty and staff in each unit on campus with service levels that are often precisely matched to local demand. By providing these services locally within each unit, responsiveness has been maximized and direct interaction with constituents has optimized the nature and delivery of the services to end-users.

There are opportunities to coordinate the campus' powerful but somewhat fragmented IT capability, while preserving what is best about it. Recognizing the value of locally focused delivery of services, important to UCLA's faculty, students, and staff, a balance can be struck between local autonomy and an institutional instantiation of services.

It should be possible to construct service continuums using a blended service model that permits local provisioning, support, and delivery of services that originate in a shared central or regional instance. In this way, local IT service providers preserve their ability to deliver timely and locally optimized services to their constituency, while they are relieved of managing much of the non-differentiating IT infrastructure.

UCLA's intellectual property is one of its greatest differentiating strengths. The content and data created at UCLA have tremendous value to the academic enterprise, here and at other institutions. UCLA has embarked on a Common Collaboration and Learning Environment, but the full benefits of this environment will only accrue when content can be readily accessed and shared across disciplinary and institutional boundaries.

The notion of UCLA content that can be used anytime and anywhere depends heavily on addressing and navigating intellectual property constraints to make content available and accessible.

The same is true with data. Intellectual and institutional content are often in the form of data and archives. These data are essential to insight, impact, the ability to make decisions and take action, and/or to advance scholarly understandings. UCLA has the opportunity to move to a data and informatics infrastructure in which research data remains discoverable and accessible so that it can be used and combined with related data by other researchers and used in subsequent research projects.

Institutional data should be an institutionally managed resource that is appropriately accessible by all who can benefit from it. At the same time, this openness with data must be balanced with careful management and promotion of intellectual property that is of financial value to the university and careful management of personally identifiable and other regulated, restricted, and sensitive data.

Clarity in the management of copyrighted content will be of critical value for scholarly interaction. The UCLA and UC libraries are already engaged in sorting out significant tension between ownership and open scholarly interaction with respect to published, licensed, copyrighted, and fair use of content generated at UCLA and elsewhere.

New distribution and communication vehicles such as GoogleBooks present challenges as well as new opportunities. As UCLA more strongly engages open source, peer-to-peer, and cloud technologies for interdisciplinary and inter-institutional sharing of content and data, relevant legal interpretations, institutional positions, and institutional risks will need to be addressed.

A particular UCLA strength is its strong culture of privacy not only as a protection of individual identities but also as a quality that supports open communication and inspires innovation. By treating data about our community with great care internally, by preventing its external use, and with strong policies against individual monitoring, UCLA has created an environment that fosters trust and open scholarly exploration. Indeed UCLA's Data Protection and Privacy Board has continued to support strong positions and policies that protect these fundamental principles for open research and scholarly interaction while protecting individuals and their personal data.

UCLA will derive significant benefit from a common IT vision, standards, and campus identity. Faculty, students, and staff can enjoy a consistent and predictable IT experience as they use web applications to gather information or perform a transaction. This does not mean centralizing and standardizing all applications – instead, it means viewing them in aggregate through the eyes of the users of the applications, and making them appear to have a unified and common approach to design, presentation, taxonomy, and navigation.

UCLA's scale and reputation among research universities places it in a unique position to play a prominent role among its peers in the development of IT solutions and to influence its vendor partners to meet campus needs.

Moving forward there are many opportunities for UCLA to create closer ties to its sister institutions by collaborating in joint-development projects, open source initiatives, and by sharing innovations with other campuses. Given the strength of its IT capability, the campus has the potential to be a strong participant or leader, especially within the UC system, as new multi-campus development initiatives and collaborative services are proposed.

UCLA's 2018 IT Vision and Priorities

UCLA's vision for Information Technology for the next decade serves as the foundation for future planning and the ultimate goal for concerted action. It describes the future state to which we aspire and articulates four complementary and mutually supporting visionary elements that describe our collective aspirations for UCLA. It supports the Chancellor's vision for UCLA's future, expressed in the draft academic plan, *Transforming UCLA for the Twenty-first Century*, the planning work done by the ITPB described earlier, and is cognizant of the need to respond to the potential of emerging technological innovation.
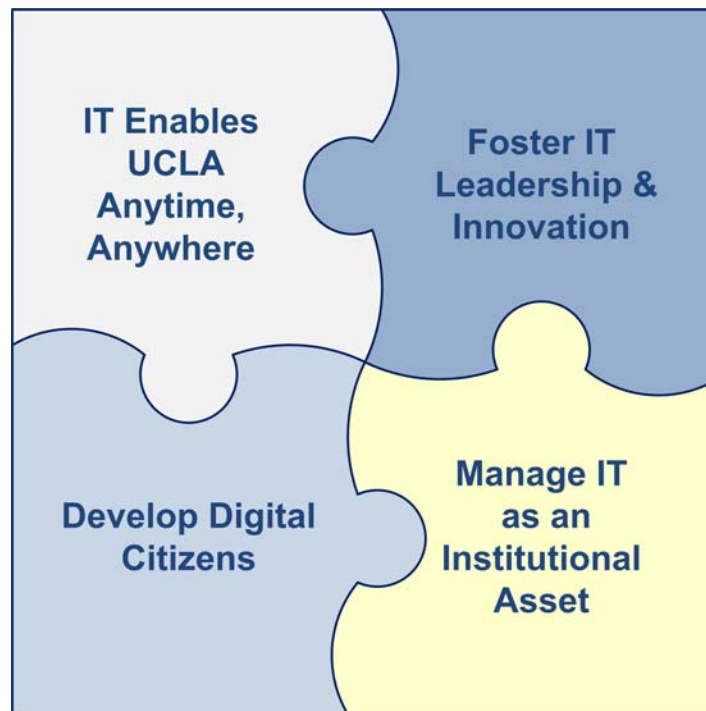

Figure 3 – The Four Themes that Encapsulate the IT Vision

UCLA Anytime, Anywhere

UCLA uses IT to increase its global intellectual impact by enabling scholarly interaction among its communities and collaborators, anytime and anywhere.

Scholarly interaction has become a global enterprise. Researchers find collaborators not only on other university campuses throughout the nation, but on other continents as well. UCLA's educational outreach has now extended far beyond its local community to encompass national and international programs.

Modern scholars expect much from technology to support their academic pursuits, at all times of the day and night and from every possible time zone. Here at home, IT can do more to enhance scholarly interaction among students and between students and faculty, with fewer constraints on time and place and in ways that make face-to-face interactions

even more valuable. Expectations are high for IT to foster the fusion of education and research, interdisciplinary scholarly interaction across both the campus and over great distances, and to support international programs. Use of educational technology is, for example, one of the key themes in our WASC accreditation process.

To meet the expectations of an increasingly technical and mobile constituency, future campus applications must be designed to support a wide range of devices in any number of mobile computing modalities.

With the exponential growth of research data, the campus will need to develop an institutional view of stewardship and archival preservation, and adopt tools for globally exchanging massive amounts of data.[3]

This vision element supports the institutional goals of draft academic plan *Transforming UCLA for the Twenty-first Century* to enhance academic excellence, increase diversity, and deepen public engagement by broadening connectedness and outreach and creating a "level playing field" through increased access for members of all communities.

IT Leadership and Innovation

UCLA is recognized as an innovator and leader in applying IT to advance its academic mission.

UCLA is a major research university with tremendous talent and assets. Thus, given the extensive and growing role of IT in research, education, and civic engagement, UCLA aspires to be viewed as a leader among similar institutions for its innovative use of technology to further its academic goals.

Each cohort of new students that comes to the campus brings new skills and expectations for their use of technology throughout their educational career. Researchers, too, expect state-of-the-art infrastructure as a basis for their innovation. There is significant interest in the campus becoming a leader in the areas of data analysis, digital media, and computational-based research.

UCLA will strive to meet these expectations by continuously evolving its IT tools and services. Further, the campus must have the flexibility to evaluate and adopt new technologies as they emerge in a timely manner, while maintaining a cohesive architecture and remaining selective about the technologies it chooses to embrace – a "technological agility."

A necessary prerequisite will be for the campus to build upon the work done at other universities and collaborate with them in the creation of new applications of technology for higher education. Incentives must be created to encourage and support technological innovation in the academic units, where most innovation will occur.

This vision element supports the institutional goals of draft academic plan *Transforming UCLA for the Twenty-first Century* to enhance academic excellence through innovation and leadership in research and education. It also supports the goal to deepen public

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[3] See section *The Data Deluge* on page 14

engagement through the creation of new modalities for the delivery of information and interaction with the community.

Digital Citizens

UCLA faculty, students, and staff are digital citizens with (1) the knowledge and skills to use IT to do the best possible research, scholarship, teaching, learning, service, and administration and (2) the understanding that each has not only individual but also institutional responsibilities with the management, protection, and or availability of digital information.

The campus will develop training to insure that faculty and students have the IT skills required for effective teaching, learning, and research. UCLA will work with K-12 schools through the NSF Cyberlearning initiative and other programs to prepare future students better, before they come to the campus.

But digital citizenship goes far beyond basic "computer literacy". In our view it includes the ability and understanding to apply sophisticated IT tools to accomplish UCLA's academic mission better. UCLA's faculty, students, and staff will need to become ever more comfortable with IT and engaged in applying it in new areas of teaching and research.

We expect digital citizens to also use IT tools in an ethical way, respecting intellectual property rights and the privacy of personal data. UCLA's digital citizens understand that each has individual responsibilities that are institutional in nature. Each individual has responsibilities for ensuring the security of the devices that are connected to the UCLA network, with recognition that they can impact others in the community. A virus or captured logon credentials from an individual device can impact the entire university. A breach or loss of protected data has both local and institutional ramifications. With full respect for privacy, each also understands that research, education, and business data they collect, manage, or submit has institutional value.

With digital citizenship come rights and responsibilities. Among the rights are:

- Digital connectivity wherever UCLA operates.

- Appropriate access to institutional data.

- Representation in the IT governance process.

Among the individual and/or collective responsibilities are:

- Commitment to personal development of IT skills to apply evolving technology to the betterment of the UCLA digital community.

- Compliance with University policies regarding data security, intellectual property, and privacy.

- Commitment to the value of institutional data.

- Active participation in IT governance.

- Contributions to the financial support of shared institutional IT services.

- Facilitate institutional planning by providing information about campus IT needs, services and associated plans.

This vision element supports the institutional goals of draft academic plan *Transforming UCLA for the Twenty-first Century* to enhance academic excellence and increase diversity by providing our faculty, staff, and students with tools that permit them to leverage information technology to the greatest extent possible.

Institutional Stewardship of IT Assets

UCLA employs an institutional perspective for managing IT that transcends and magnifies central, regional, local and individual IT capabilities, from the research group or department, to the campus as a whole, and the UC system or broader higher education community.

To move its ambitious goals forward, UCLA will need to achieve greater focus in the application of its IT assets and investments. Independent units must pull together as one. Many IT resources and assets will, appropriately, continue to be distributed, especially for research and education and school, division, and department competitiveness. Local autonomy is recognized as highly valuable, especially to innovation and to sustaining research and educational competitiveness. It is embraced as part of a UCLA IT enterprise architecture that harmonizes local and institutional needs and finds an appropriate balance between autonomy and standardization and thereby allows a commoditized infrastructure to be shared and blended to satisfy end users' needs.

To remain responsive, UCLA must manage campus processes, and the IT applications and services that support these, institutionally, so that services are provided with the highest standards of security, reliability, efficiency, functionality, and recoverability. This institutional approach will require transparency of IT investment across the campus and a comprehensive understanding of assets and services. It also requires development and adoption of shared standards to reduce complexity and interdependency among different technologies and applications.

In the future, non-differentiating services, especially infrastructure, will be delivered through a blended service model that preserves local support, customization, responsive-ness, and provisioning, while operations and other back-end IT services are provided regionally or centrally. Likewise, shared research IT infrastructure can provide leverage for grants and enhance faculty recruitment. Coordination and cooperation between IT service providers on campus will be vital to the success of these efforts.

Key to accomplishing these aspirations will be a robust, nimble, transparent, and broadly representative governance, prioritization and decision-making process that is integrated with campus budget and planning processes. This governance structure must address the needs of the broader institution while providing the greatest benefit possible to individual faculty, students, and staff.

While this strategic plan focuses of necessity on the model by which future services will be delivered, technology will not carry the day without our professional staff. In many

ways these staff members are the most crucial asset: they understand the critical details of the research and education enterprises that they support. Generic IT skills may perhaps be readily available, the specialized knowledge of our staff is difficult to replicate. Thus, the emphasis will be on leveraging their skills and knowledge in support of the core missions of the institution, even though adjustments in assignments and/or job content will be unavoidable.

This vision element supports the institutional goals of draft academic plan *Transforming UCLA for the Twenty-first Century* by optimizing the application of IT resources and creating an inclusive and cooperative atmosphere in which services are delivered.

IT Principles

In developing a set of principles that will guide UCLA's future planning, it is important to establish a common vocabulary to describe IT and its deployment. Equally important are several key assumptions and understandings that are the foundational considerations upon which the plan is based.

Vocabulary

Presented first is the vocabulary that the IT Planning Task Force has agreed to use so that various options could be discussed with the required clarity of understanding. The key assumptions and understandings follow. The principles themselves are presented last.

Institutional or campus IT – a general term that refers to any information technology service deployment or impact that has institutional considerations.

Local IT – a general term that refers to any information technology service deployment or impact that has only local considerations.

IT Service –A *Service* provided to one or more *Customers*, by an *IT Service Provider*. An IT Service is based on the use of *Information Technology* and supports the *Customer's Business Process*. An *IT Service* is made up from a combination of people, *Processes* and technology and should be defined in a *Service Level Agreement*. [From ITILv3]

Application & Data IT Service – An IT Service that includes one or more applications and databases with staff support that enable a customer's business process.

Integrated Application & Data IT Services – applications & databases that need to interface and/or interoperate to form a complete end-user service.

IT-Enabled Business Process – an orchestration of integrated application and data services within a unit or across units.

IT Infrastructure Service – Non-differentiating IT services and staff support that enable Application & Data Services and Processes.

Centralized IT Service – a campus-wide service that is provisioned and delivered to the end-user and functional support staff without involvement of a local IT operation. These parties can still be impacted if the assumed infrastructure is not consistent, e.g., web browser dependencies.

Decentralized IT Service – a locally deployed service that is provisioned and delivered to the end-user and functional support staff without the involvement of a centralized or regionalized IT operation. These can have upstream impacts (e.g., impacts on integrated applications or infrastructure.)

Blended IT Infrastructure Service – an infrastructure IT service created by sharing institutional components of a centralized service and components of local services to form an overall service that is provisioned and delivered with joint accountability to the end user.

Regionalized IT Infrastructure Service – a type of blended service in which a subset of unit-based infrastructure services are consolidated for the region formed by those units.

Federated IT – a general term referring to an organization structure in which staff reporting lines and service provisioning are independent and distributed but operate in concert to form an institutional capability.

Operating Model – "The necessary level of business process integration and standardization for delivering goods and services to customers" (Ross & Weill) – *for our purposes, the operating model is the methodology by which we implement the principles that follow.*

Institutional IT Architecture – "The organizing logic for business process and IT infrastructure capabilities reflecting the integration and standardization requirements of the firm's operating model" (from Ross & Weill) - *for our purposes, architecture is an IT consideration that follows from the Operating Model. Technical recommendations for a specific IT architecture are beyond the scope of this document.*

Assumptions

In developing a set of principles that will guide UCLA's future planning, the following key assumptions and understandings were foundational considerations:

1. The commissioning of the IT Planning Task Force is fundamentally driven by the beliefs that UCLA's current operating model is no longer optimal and that there is significant capacity to realign resources for a greater return to UCLA.

2. At the time the IT Planning Task Force was commissioned, the current negative budget climate was not a fundamental driver. However, it has now come strongly into play. Realigning resources for greater return is now a high priority driver. This notion of return is not just about dollars. Cross-campus service levels and capability, greater efficiencies, better security, redundancy, reduced energy usage, disaster recovery, and business continuity are all needed even if money is not saved. The University must also be positioned for a future of outsourced, system, and cloud services.

3. Local autonomy at the research and education frontlines is highly valued in UCLA's primary economy of innovation and disciplinary competitiveness.

4. Privacy is highly valued in UCLA's research and education economy as a vital component to open comment and scholarly pursuit.

5. The campus network is an important strategic capability, viewed as the fundamental nervous system of the campus. It must evolve to reflect UCLA's research, education, and civic aspirations, culture, policies on privacy, communication, approach to security, and the operating models of the campus.

6. Data and knowledge are primary products of the university. "Institutional data" refers to the concept that data are key institutional resources that should be managed and exploited to drive self-directed, self-managed review and decision-making. Data must be accessible and its use maximized to influence behaviors and to have impact. It must be organized, structured, and provisioned through useful applications for people

to build constructive relations with the University. Managers of data are stewards of data on behalf of the campus and the user community.

7. Institutional IT and centralized IT are not synonymous.

Principles

The vision articulates what we want to accomplish; principles define how we wish to accomplish it. The following high-level principles are provided to guide UCLA's future implementation planning. They reflect the elements of our culture that we choose to preserve as well as the areas where we want to effect change.

1. Federated and Blended IT Infrastructure Services Model

> *The university will operate in a federated IT deployment modality in which shared infrastructure services will be collaboratively deployed using a "Blended IT Services Model." It enables core services to be operated institutionally as shared services that are supported and managed by local service providers in a timely manner.*

The Blended IT Infrastructure Services Model is a hybrid model that allows for the appropriate balancing of centralized and decentralized approaches for delivering IT infrastructure services.

Local autonomy, especially at the research and education front lines, is highly valuable and will remain explicitly embraced at UCLA. The IT service model will respect and enable this key operating principle while also enabling local units to lever institutional capabilities.

That is, IT infrastructure services will be created as a combination of local delivery components (services and staff) on top of shared institutional service components, allowing regionalization and specialization at the local level. IT services will be delivered and managed through a shared accountability structure comprised of centralized and local providers.

Shared, common IT services will render better economies of scale while assuring appropriate baseline levels of service for the campus to meet its responsibilities and allowing IT services to be built more rapidly and cost effectively upon a common institutional IT infrastructure.

Consolidations should not be undertaken at the expense of service quality or without an understanding and assessment of the risk/reward tradeoffs, and, whatever the blend between central and local services, it will be important that all institutional IT services meet agreed-upon institutional production standards.

The Blended IT Services Model will require collaboration and accountability across units to identify opportunities and determine appropriate balances in blending. Careful consideration must be given to determine when purely local IT solutions or purely shared solutions or a blended mixture would provide more appropriate value to a unit.

In addition to considering sharing across regions or the campus as a whole, design of the federated and blended model should consider blending IT services among campuses within the UC system as well as broader research and teaching communities.

An ongoing review of potentially duplicative efforts and multiple provisioning models for broadly prevalent technologies and services across campus should be conducted by established IT oversight committees and reported on annually.

Current funding models should not be a barrier to the implementation of this IT principle, especially where they require separation of funds on an instruction, research, or other basis. The cost structure for provisioning and support of institutional IT services, whether provided centrally or locally, should be incorporated into the institution's IT funding strategy.

2. Institutional Strategic IT Investment

Our need for widely varying, rapid, and responsive deployment of IT in support of innovation and discovery must be carefully balanced with strategic investment in institutionally managed common use, standards-based, collaboration-oriented information technology infrastructure and IT-enabled processes.

Intra- and inter-institutional connectedness, collaboration, and shared infrastructure and coordinated, end-to-end processes are as critically important to innovation and the success of UCLA's mission, especially in research and education, as local variation, rapid experimentation, and responsiveness. To appropriately plan, invest, and ensure alignment locally, regionally, and institutionally, all IT plans with impacts or implications beyond a strictly defined local implementation must be visible and within consideration of the campus operating model.

Every organizational unit strategic plan must include an IT plan that incorporates any infrastructure or systems-enabled process investments that have general use or multi-user impacts. Local and institutional IT planning should be done together -- local IT decisions should not be made to the detriment of institutional goals and likewise institutional decisions should not be made to the detriment of local goals.

Planning and budgeting for IT in any shared-use, common application or multi-user enabled process must be integrated with the institution's overall planning and budgeting processes and alignment with the campus-wide IT strategic plan must be a prerequisite for approval of funding for institutional IT projects.

Appropriate tools will be needed that can report institutional IT investment at any given time and that provide guidance on what the level of IT investment needs to be. Institutional and regional IT projects regardless of funding source will be justified on the basis of the value they generate for the university. Such IT proposals will be approved only when there is compelling cost/benefit substantiation.

This principle requires an institutional commitment to the IT Governance structure and process. It implies that the IT planning process at all levels must involve faculty, staff, and students and that it should be followed by a transparent and understood process for

setting and reviewing priorities for funding. All of the beneficiaries of institutional IT services should pay their fair share of the costs of shared systems and cost allocation methodologies should create desirable incentives and avoid undesirable ones. Some activities and investments are in the best interests of the institution and must be supported by all units irrespective of level of use or perceived benefit.

IT funding should address the Total Cost of Ownership and Operation (TCOO) over the life of the IT solution including: initial capital investments, implementation support, operational funding, and depreciation. TCOO should be considered from the broadest perspective to avoid the "domino effect" where a unit fails to consider the cost of system implementation across other affected units.

Costing practices and related allocation parameters should be easily understood, and all necessary local and institutional financial, operational and systems data should be available on a timely basis and easily accessible for use in the strategic planning and budgeting process. Costing should be end-to-end, and comparisons of costs between alternative options should include all hidden subsidies. Replacement cycles should be established for each of the different components of the technology infrastructure (i.e., hardware, software, implementation costs for lifecycle replacement, etc.) and a depreciation reserve that includes the cost of replacement should be incorporated into IT budgets. A contingency reserve fund should be accumulated as appropriate to UCLA's general budget and funding environment, to provide for unanticipated institutional IT expenses that arise that were not funded as part of the strategic planning and budgeting process.

3. Shared Core Communications and Network Connectivity

UCLA's communications and data network infrastructure will be planned and developed to create a shared institutional connectivity capability.

Connectivity is an essential IT contribution to the UCLA mission. Networking provides a wide array of critical services, the selection and operation of which can have a dramatic impact on shared and collaborative activities. The provisioning of connectivity is therefore a campus-wide exercise.

The campus should strive to facilitate and maximize self-directed innovation, discovery, scholarly activity, and sharing among global communities and prevent barriers to institutional effectiveness in the form of restrictive connectivity – except where unique local security requirements pertain. Network security has become an institutional consideration. Security and risk avoidance must be balanced against the need for appropriate access and capability at the institutional level.

The communications and data network infrastructure should act as a UCLA "central nervous system" and enable individual units to take advantage of a robust shared capability when building more specialized local IT solutions. This principle is supported by the principle of a *Federated and Blended IT Infrastructure Services Model* above.

The shared network infrastructure will be built on common IT architectural principles and will be managed to consistently reflect UCLA's policies on privacy, electronic communi-

cations, and security. Furthermore, UCLA's network is part of a state, national, and global fabric and will ensure compatibility and interoperability to maximize scholarly activity. UCLA will strive to ensure that network policies are consistent with innovation, discovery, scholarly interaction, collaboration, and accessibility.

This shared communications infrastructure needs to be designed to support a wide variety of common use cases, yet allow specialization by local units. A UCLA communications and data network architecture and supporting standards will need to be developed, and there will need to be appropriate access and visibility across all elements of the network to support institutional operation.

It is expected that units will collaborate from an institutional perspective on the purchase of infrastructure hardware and software whenever feasible, enabling cost efficient purchasing practices and support for ongoing maintenance. The budget process for these purchases and ongoing support should be coordinated across all organizational units based on an established institutional funding model.

4. Data as an Institutional Asset

There must be a consistent campus-wide policy and behavior for provisioning, accessing, storing, securing, and preserving institutional information, regardless of where it is collected or stored.

UCLA is in the data and knowledge business. Data is a currency that has to be managed, available and accessible as an institutional and strategic resource that underpins our business and academic mission. As an institutional resource, data accessibility and availability should be determined based on its value to the university but always in the context of privacy and the protection of personal or restricted information.

Lack of appropriate data integrity, quality, and security can compromise the university's reputation and impede operational efficiency. Similarly, lack of accessibility to data and/or excessive barriers to making data available can impede the objectives of the University.

When exploited constructively, data is a strategic asset that can build and enhance the reputation of the university in terms of the impact of intellectual content, the ability for new discovery or better decisions, and the relationship each individual has with the university.

Managed access to data is important to quality services supported by the University, directly or through outsourced services. Moreover, the campus must find a way to deal with the "digital data deluge[4]" as a consequence of UCLA's role as a leading research university and with the increasing need for institutional data archival, appraisal, and stewardship. Individual efforts and investments to deal with this issue will be insufficient.

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[4] Berman, Francine. Got Data? *A Guide to Data Preservation in the Information Age.* Communications of the ACM, December 2008, Vol. 51 No.12, 50-56.

Guidelines, policies, and processes will need to be established for institutional data management. Data appraisal processes and policies are needed to determine what data is worth keeping and what data can be or should be discarded.

Researchers and institutional data owners will need assurance that they can put their data into a trusted system and at the same time will need to understand how to provision data at varying levels of verification and validation. Accessibility and availability must take place in a trusted environment along with the protection of data integrity. The campus must strive to achieve an appropriate balance among privacy, openness, transparency, and safeguarding confidential information.

5. Adherence to a Campus IT Architecture

To ensure and improve the synergy of shared IT solutions and infrastructure, local and institutional IT deployments will adhere to an IT architecture defined for the campus.

IT Architecture refers to the specification of the organizing logic for technologies, approaches, and operations that define the integration and standardization requirements of an operating model. The campus IT architecture will encompass both institutional and local requirements and will provide a blueprint for integration and sharing of solutions to create robust local and institutional IT capabilities.

Proliferation of servers, platforms, operating systems, applications, and interfaces can waste valuable resources, as does the creation of redundant IT solutions for shared, interconnected, or integrated services. A well-defined IT architecture enables better top-down planning and bottom-up coordination for developing robust institutional IT capabilities and avoiding the development of piecemeal and redundant IT solutions.

Common technology across the enterprise brings the benefits of economies of scale to the enterprise and technical administration and support costs are better controlled when limited resources can focus on this shared set of technology. Security and other regulatory requirements can be addressed more effectively as well. A cohesive IT Architecture can be a powerful tool to enable the University to increase its return on IT investments and IT assets.

This principle is primarily aimed at shared processes and infrastructure. However, even research and education often benefit from a defined campus architecture. It enables one to be more agile because it is usually easier to build on top of a standardized architecture. That said, the principle recognizes that standardization and technical diversity need to co-exist, especially in the research and education functions.

Where there is potential for solutions with campus-wide impact, these solutions should be aligned with the IT architecture. Prior to acquisition or development of an IT software, hardware or service solution, there will be a review of opportunities for the solution to be leveraged more broadly and the circumstances that maximize the potential. Such solutions must also be designed to be scalable and should consider that they may be used outside the originating unit, or, potentially, by another campus. Examination of reuse of IT solutions must be incorporated in all IT projects and supported regardless of funding

sources. Agile processes must be in place to capitalize on these shared IT opportunities and IT funding must support and encourage these types of projects.

Campus leaders should sponsor and support the adoption of IT standards and a process must be established to define and maintain an appropriate IT architecture for the campus. Divisional and unit IT plans must be visible for IT planning purposes and subject to architectural alignment.

Finally, standards must be developed and implemented for all web solutions to guide the creation of a consistent user experience for broadly used institutional transactional processes, while permitting some level of local/school interpretation when required to address a more focused audience or need.

6. Innovation and IT Project Risk

Innovation should be encouraged and supported locally and institutionally with an appropriate tolerance for risk.

UCLA is in the business of innovation and represents a dynamic marketplace of ideas. UCLA aspires to be externally and internally viewed as innovative in the application of IT to further its academic mission. There need to be mechanisms to handle and encourage innovation with local, central, and external resources, while recognizing that innovation must extend and be informed beyond the boundary of the campus to avoid the replication of solutions already developed by other institutions.

Risk is part of innovation, so the challenge is in identifying true innovation and then balancing the risk against the potential benefit of a positive result. For any innovative project there should be an effort to understand the degree of risk and whether the degree of risk is appropriate to the degree of benefit. Innovative projects with significant risk should start as pilot projects to minimize risk exposure and to gain a better understanding of the risks and challenges involved in a full-scale implementation.

A mechanism should be developed to allow for grant applications for institutional support, or, when possible, for external funding opportunities. The availability of this type of support needs to be made widely known to the faculty.

Innovation projects that rely on campus support in real dollars or through applications for external funding must be defined with a budget and a time line. The project plan should identify in advance how the pilot, if successful, will advance to a full campus resource and how that full campus resource will be funded.

7. Robust IT Project Management

UCLA will apply a robust project management methodology and approach for IT projects.

It is understood and perhaps obvious to state that the campus must apply solid project management to its IT endeavors. UCLA's culture and current fiscal and organizational models make establishing an effective cross-unit project management structure

challenging. It is because of UCLA's culture and history that this normally operational principle rises to a strategic level.

Clearly defined project management is essential to successful management of complex IT projects. Furthermore, a formally appointed single point of authority and accountability for every project will accelerate their progress and improve their probability of success. Clear project management role definitions are necessary but not sufficient; there must also be assigned accountability. Therefore, all IT initiatives must have an unambiguous leader/PM charged with the authority, accountability plus the aligned budget for successful implementation. There is also a need to develop robust institutional project management competencies and capabilities. This will require an investment in training across the campus.

8. Institutional IT Oversight and Governance

Institutional oversight of IT should continue to guide the realization of the IT strategic vision and to ensure close alignment of IT efforts in support of the campus strategic direction through a process in which decision rights are allocated and understood. The institutional IT governance structure and processes should be reviewed periodically to ensure a nimble and effective decision-making framework.

UCLA has already recognized that IT governance is the framework of decision rights and accountability that drives desirable behaviors around the use of IT (IT strategic direction, policy, collaboration, architecture, standards, needs, initiatives, and investments).

The current structure and allocated decision rights have served UCLA well and should continue as the structure to move this plan forward institutionally. The structure, its processes and decision rights should be periodically reviewed, adjusted, and tuned. As of this writing, the following structure is in place:

- Information Technology Planning Board (ITPB) for overall institutional strategic direction and policy – appointed by the Executive Vice Chancellor and the Chair of the Academic Senate.

- Committee for IT Infrastructure (CITI) for campus application and infrastructure service prioritization – appointed by the Executive Vice Chancellor on behalf of the Deans and Vice Chancellors.

- Common Systems Group (CSG) - Academic and Administrative IT Directors with representation from the Campus Computing Council (CCC) (Academic IT Directors) providing critical technical and operational input – the CSG is appointed by the Associate Vice Chancellor – IT; the CCC is a self-formed group.

- Faculty Committee on Educational Technology (FCET), which is appointed by the Vice Provost for Undergraduate Education and the Associate Vice Chancellor – IT.

- Executive Board of the Institute for Digital Research and Education (IDRE), appointed by the Vice Chancellor Research and the Executive Director of IDRE.

- Privacy and Data Protection Advisory Board (Privacy Board) appointed by the Executive Vice Chancellor, for strategic direction in educational, research, and privacy/open communication.

- Deans and Vice Chancellors are collectively the executive sponsors of any campus IT initiative and critical stakeholder groups.

Successful achievement of the strategic IT vision requires the orchestration and integration of the governance structure and process, with many different stakeholders' needs and initiatives to create appropriate synergy and forward momentum toward the vision.

At times this will require difficult trade-offs to be made between local needs and the overall needs of the campus. The CIO will provide a single point of accountability and the leadership to accomplish this task in an objective manner that maximizes the benefits of IT for the entire institution. Final accountability for the IT governance structure and allocated decision rights rests with the Chancellor/Executive Vice Chancellor and Academic Senate Chair.

The CIO through the Office of Information Technology (OIT) is responsible for management oversight of the execution of the UCLA IT Strategy, and implementing the IT governance framework by which campus leaders can actively participate in the achievement of the strategic IT vision. The Office of Information Technology is also responsible for and has oversight of the IT architecture definition and standards, project management standards, and the standards, oversight, review and reporting structures for projects.

Additionally, campus-wide application development projects, infrastructure services, blended service approaches, application and data services, and the specification of the IT architecture are all subject to vetting by executive sponsor(s), functional oversight, and project management structures.

The current IT governance framework should itself develop a process by which it is periodically reviewed for its effectiveness and efficiency in terms of structure, process, and alignment with the new vision, principles, and strategies.

The distinction between IT governance and operational management responsibilities for IT efforts must be clarified to avoid conflict and to enable organizational agility. In some cases today, lines are blurred between the responsibility of IT governance entities and the fiduciary obligations of operational managers. All key IT stakeholders and sponsors need to understand and know how to use the UCLA IT governance structure when required and how it will integrate with operational management. IT governance "calendaring" may be required to manage expectations on the timeline for decisions by the governance bodies and to accelerate the process.

A New Operating Model for IT

Since the 1990s, most IT services provided to the campus have originated almost entirely within the individual units. This operating model[5] has served the campus well in that it has made it possible for units to create innovative new services quickly, depending only on their own priorities and resources, and with the flexibility to optimize responsiveness to individual faculty, students, and staff.

Until recently, each organization on campus was by and large responsible for its own IT stack of services, illustrated in Figure 4. It shows a logical grouping of the IT services that may need to be in place to enable an end user to accomplish something of value.

Applicable Governance & Management	Defined Quality & Transparent Costs	Secure, Reliable, Responsive		
			End user & Support	•End user transaction and decision •Help desk •End user desktop, network, security support
			Process & Information	•Business process and workflow •Data mining and manipulation •Search and information access
			Application & Data	•IT workflow and transaction applications •Data models and data reporting
			Middle Applications	•Identity management, portal •Web access, data base •Search, reporting
			OS & Platforms	•Operating system •Software platforms •Database management systems
			Server & Device	•Server and database processors •Virtual architectural services •Server management, sys admin
			Data centers	•Data centers, hubs, security, power, UPS, network •hosting, monitoring
			Networking & Comm	•Network, VPN, wireless, DNS, NOC •Voice mail, tele/video conference, email, chat •Phone, PDA, cell, telecom, text, web meeting

Figure 4 - The IT Services Stack

Such IT-enabled activities include a wide variety of tasks from conducting computational research to conducting, managing and delivering the instructional content for a credit course or managing a grant award. Or it may be a student enrolling in a class, a parent

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[5] We use the term Operating Model to refer to the necessary level of business process integration and standardization for delivering goods and services to customers (Ross & Weill) and specifically for our purposes the methodology by which we implement our stated IT principles.

paying fees and tuition bills; or any of the thousands of other everyday activities in which the general public interacts with the University.

UCLA has traditionally functioned with an IT operating model that assumes each unit is responsible for its own full technology services stack. UCLA's current decentralized IT service delivery environment has resulted in a highly complex IT environment. There are significant variations in approaches to service delivery among the units, differing and sometimes incompatible technologies in place, and wide variations in service levels and service quality.

Given the high degree of interdependence among campus systems, any areas of weakness in services such as security and disaster recovery can place the entire campus at risk.

Over time, processes, functions, and systems have become more and more integrated, and functionality and requirements have become more complex in their own right. In turn, that has increased the need for and complexity of IT interventions to address cross-unit and cross-department requirements.

Service constituents who must cross organizational boundaries, such as faculty with interdisciplinary research projects or students who are taking courses in more than one academic area, experience variations in applications, systems, and policy that can be confusing and can inhibit the free exchange of ideas and data. The challenges of the current operating model and ways they may be addressed by the new one are outlined in Table I, page 37 et seq.

All operating models have pros and cons depending on the situation to which they are applied. The current decentralized IT operating model has strongly supported local innovation and responsiveness and, at the time it was initiated, was relatively unhampered by many of the forces that are now in play.

The forces of expectation, integration, connectedness, sharing, and collaboration have steadily grown to a point where it is time to rethink the current model because its limitations have become more prominent. There are compelling reasons to increase connectedness, shared content, access to data, collaboration, and shared resources.

At the same time there are many aspects of the existing operating model that need to be preserved. In particular, academic units must have the freedom and capacity to use IT in the ways they determine will enhance their respective competitiveness and that enable researchers to use IT to the greatest extent possible to address their particular needs.

How, then, can the campus create an operating model that on the one hand reduces complexity, redundancy, inconsistency, and cost, and yet on the other still retains the advantages of locally deployed and supported services?

To be successful in addressing the campus' aspirations for the future, a new operating model must:

- Bring the resources of central and local IT into a combined campus capability that is highly responsive to the end user.

- Build end-to-end, cross-unit service capabilities.

- Support spontaneous peer-to-peer research and education projects, content sharing, and collaboration without requiring IT intervention.

- Create an environment that supports interdisciplinary programs, cross-unit course sharing, and inter-institutional resource sharing without IT intervention.

- Address campus compliance and security risks associated with a lack of institutional knowledge of devices, platforms, applications, data, and approaches for meeting compliance requirements.

- Establish an infrastructure that can scale with increasing data and applications demands.

- Robustly support consistent network-based campus services - campus sensor networks, mobile wireless (such as in transportation vehicles), VoIP, campus PDA data features.

- Enable work processes that are optimized for the end user function and requirements of the units involved.

- Optimize services, costs, and roles, regardless of whether they are central or local.

- Create an environment in which IT requirements are systematically developed and differentiated with respect to academic and institutional competitiveness.

Originally, only the campus backbone network, telephones, and BOL email were provided as institutional infrastructure services. In the past decade, new general infrastructure services have been created to provide additional shared services. These have included the campus data warehouse and reporting environment; IAMUCLA, which provides an institutional set of directory, authentication and authorization services; the Enterprise Messaging email system; wireless connectivity services, especially in common spaces; security scanning services; shared research computation and storage cluster services; and the Moodle course and content management system environment that underpins the Common Collaboration and Learning Environment initiative. Network services have substantially regionalized and VoIP services have been implemented in the medical center. Disaster recovery and data center services are two more services on the near horizon.

These new services were created to provide essential commoditized services to the campus, allowing consistency of service, reduced complexity and redundancy, and equal or better performance and functionality. They also provide us with an example of a working operating model where services provided centrally and locally are blended so that local technologists are involved in the definition of the services and their delivery to their constituents.

Following on the successes of these earlier shared infrastructure services, we now extend the model to be able to share any common services in any end-to-end service continuum, while providing the flexibility, within reason, to adapt them to the specific requirements of each unit on campus. It is a model in which most services, even if they originate in a shared environment at the back-end, should be provisioned and supported locally.

When aligned with the technology stack depicted earlier, most IT services exist along a continuum stretching between complete centralization to entirely localized delivery.
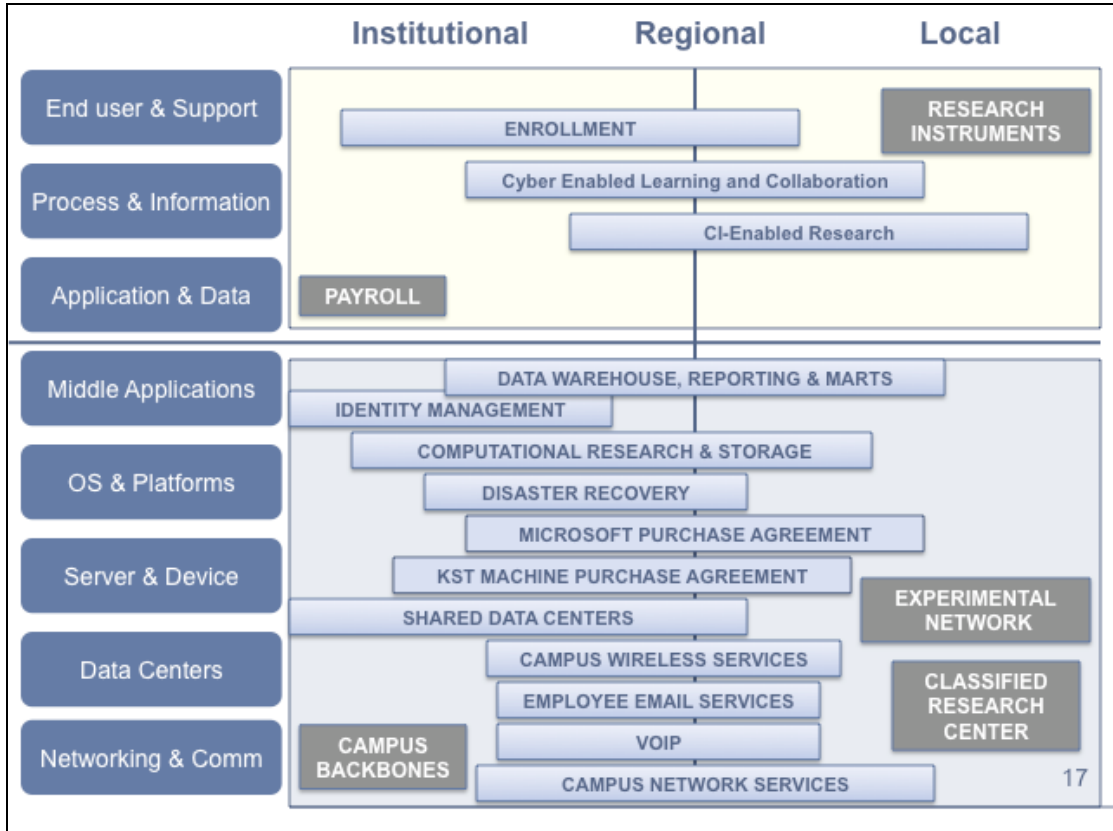

Figure 5 - Placing Typical IT Services onto the Four Quadrants

Some applications, such as Payroll, have traditionally been provided centrally. Others, that are specific to certain academic areas, such as the use of research equipment (DNA sequencers, laboratory monitoring equipment, etc.), have always been deployed locally. Below the Application and Data line in the IT services stack, the campus backbone has always been a common good for the campus, while the Computer Science Department runs experimental networks for their research.

Most IT services have opportunity for sharing. For example, the deployment model for Enterprise Messaging is to provide back-end servers operated centrally, while service levels and functionality are customized for each unit to which email service is delivered. Local support personnel manage the provisioning of the services (creating or deleting accounts, setting up lists, etc.) and provide direct support to their constituents in the use of the client software. Consequently, "Employee Email Services" spans an area between Institutional and Local deployment. This *blended service approach* can be applied to any number of services in the technology services stack to a greater or lesser degree as appropriate.

For the applications and data above the horizontal line, the notion of sharing has to do with process overlap or integration. For example, a local unit may have a unique admissions process that still draws upon data from the campus systems. We refer to this

kind of sharing as process integration. In general, services in the upper left hand quadrant support campus-wide processes, used across units and end-user populations. Services in the upper right hand quadrant support local processes that can exist independently of campus data and systems. Most often, as in the example above, local processes integrate with campus processes either through data or process.

As a rule of thumb, this new Blended (lower quadrants) and Integrated IT Application Services (upper quadrants) operating model acknowledges multiple operating and fiscal models for delivering campus IT services:

- It assumes first that specialized research and educational IT infrastructure services (lower right quadrant of earlier graphic) must be deployed locally - sharing occurs when value can be demonstrated. (e.g. experimental wireless networks)

- It assumes first that research and teaching processes (upper right quadrant) are locally supported - sharing occurs when value can be demonstrated. (e.g. research computing)

- It assumes first that IT infrastructure services (lower left quadrant) are based upon institutional or regional instantiations with blended delivery of services - local deployments are by exception. (e.g. data centers/machine rooms)

- It assumes first that broad business processes (upper left quadrant) are institutional - local deployments or locally integrated service components are by exception. (e.g. time & attendance applications)

There is also the recognition that reasonable exceptions can and should be honored where appropriate. Adoption of this operating model will require determining the specific point for each key service where blended service delivery, responsibility, and accountability resonate between local and institutional needs. The determination of this "sweet spot" of optimum resonance for each service will require constructive dialog facilitated by the Office of Information Technology and collaboration between multiple service providers.

Foundational to a successful implementation of this model is a robust governance and management structure where accountability can be shared between central, regional, and local service providers. Shared IT services must be created to agreed-upon campus specifications. Services, service quality, and costs must be transparent, and service design must be an open process that directly involves providers and consumers of the service alike.

Table I- Limitations and Approaches to Their Solutions

LIMITATIONS IN CURRENT MODEL…	WILL BE ADDRESSED BY…
Uneven service levels across the campus Currently, service levels for core IT infrastructure services provided locally are subject to local budgetary pressures and priorities and have, at times, been reduced below minimum expectations for service campus-wide. For example, choices are made that can affect the security of protected data, interdisciplinary collaboration, availability of more recent desktop hardware and software for use with centralized applications, etc. Local choices without the benefit of institutional considerations, institutional decisions without considering local infrastructure or any decision attempting to address infrastructure variations can also result in unnecessarily expensive (overpowered) approaches.	Institutionally managed infrastructure services would be funded and managed collectively, ensuring at least a minimally appropriate service level for everyone.
Need for greater infrastructure fungibility and depth of staff coverage of services Scattered services often rely on a single server, varying support and maintenance, and just one system administrator who may not be available on weekends and evenings. When a particular service is part of a larger business process, that service becomes the weak link.	With respect to infrastructure, consolidated services spread the cost of additional redundancy of servers, network paths, power (e.g. generators), and cooling across a larger base of users, thereby reducing the per-user cost and improving reliability and business continuity. A consolidated infrastructure or application service also reduces dependency on access to solitary staff with specialized technical skills and can make 24x7 operations possible.
Lack of adequate disaster recovery capabilities Based on a recent IBM survey, disaster recovery plans for the campus' critical business processes are uneven across campus. Some units do not have a plan for restoring IT services following a disaster, most have not tested recovery, and many do not store backups in a secure off-campus location.	After a disaster, it is much easier and quicker to recover a single system at a remote location, for example, than to recover dozens of them. Fewer independent services make disaster recovery simpler.
Slow and unreliable emergency notification services In the past, attempts at rapid notification of real or simulated emergency situations (e.g. an active shooter scenario) have been hampered by variations in email systems across campus. In many cases it has taken hours to get a message out, and some departments never received it due to unexpected changes in configurations over time.	A single email system permits tighter integration with emergency notification systems, enabling greater efficiency and speed of delivery.

LIMITATIONS IN CURRENT MODEL…	WILL BE ADDRESSED BY…
Inability to move the campus as a whole to new technologies Because of the diversity of technologies in use across the campus and the dependencies of applications and other systems on them, it is difficult to move the entire campus in new technological directions. Some units move more quickly than others to adopt new technologies.	Having consistency in IT infrastructure services across the campus, positions the campus to address technologies or functionality that need to be deployed campus-wide: campus network services like voice, sensor networks, etc. Additionally, it is easier to move commodity (services that are not differentiating) infrastructure to new services. For example, it is easier to move from one email system to converged voicemail and email, or to outsource the service entirely than it is to do so with 40 independent services. Planning is also easier because data on existing services is consolidated and easier to gather, update, and analyze.
Inability to share calendars and perform cross-unit scheduling At present, because there is not a shared directory tree for campus email systems, it is difficult to share calendars across units that run independent email/calendaring systems.	With a single email service, it can be possible to share calendars across the entire campus and make it easier for staff to plan meetings and schedule shared resources such as meeting rooms, etc. (It is understood that this may be a benefit to many users of email, while others may not wish to use it.)
Increased need for training because of widely varying user interfaces and IT services Faculty who work on interdisciplinary projects are often faced with learning multiple ways to share files, email, network, etc. as they move from department to department and school to school. Students who take classes in multiple areas face similar confusion.	For those faculty, students, or staff that must use different services (e.g. email, networking) in multiple departments or schools, a campus-wide service would allow them to learn how to use that service only once.
Impediments to connecting across departmental boundaries Departmental firewalls may prevent sharing and collaboration by faculty in different schools or departments on campus unless they are manually reconfigured to accommodate specific needs.	A campus-wide trust architecture for the campus network would permit interdisciplinary researchers to collaborate spontaneously (without IT intervention) with researchers in other departments or schools or at other campuses. With standardized network products in use, there would be fewer incompatibilities between third-party commercial network products.
Reduced leverage on procurement A lack of technical standards and a plethora of vended products have reduced the campus' ability to achieve leverage with venders to negotiate better volume-based procurement contracts.	Standardizing on fewer products and configurations can increase leverage with vendors for discounts.

LIMITATIONS IN CURRENT MODEL…	WILL BE ADDRESSED BY…
Difficulty in reducing energy consumption across server rooms The energy required to cool hundreds of server rooms across the campus, is greater than that of a consolidated data center approach – especially when virtual servers are also employed. When local server rooms are also dependent on building cooling, this can result in a requirement for buildings to maintain cooling over holiday break periods, when they might otherwise be shut down.	An integrated data center service would allow optimizations of energy use and higher density server configurations. Virtualization and sharing of servers can permit greater usage of servers with less unused computing cycles.
Inconsistent security Independent services are built to varying levels of security – sometimes insufficient to prevent service outages or break-ins. Variations in physical and logical security are themselves a liability when it comes to anything regulated. From the outside, security is an institutional matter.	A single security architecture and suite of services can provide more consistent security for campus servers and workstations.
Too much complexity and interdependency Currently campus services are brittle because a change in one area can lead to unexpected results in another, dependent area. A wide variety of technologies in place makes development or integration of campus systems more expensive, particularly when third-party products must be supported.	Fewer interdependent services can reduce the complexity of the campus IT architecture and simplify disaster recovery, improve reliability, and reduce the cost of service maintenance and development. For example, making a change in one service can be easier if there are fewer services that depend upon it (e.g. Payroll application and dozens of time reporting applications that feed into it).
Few economies of scale Currently, development and eventual replacement costs are often duplicated in dozens of separate service instantiations. UCLA is unable to take advantage of server and load management tools and tools for managing databases because they cannot be justified for small scale situations.	With larger implementations, shared by more users, it is often possible to save on per-user costs or increase functionality or performance at the same per user cost (when compared to smaller services providing identical functionality, reliability, recoverability, and service level). In some cases, with more users sharing a product it is possible to acquire more functionality through the purchase of a premier software or hardware product that would not otherwise be affordable with fewer users.
Lack of alignment and allocation of campus-wide resources to support an Institutional Strategy IT funding decisions to date have been made with assumptions about a predetermined fixed set of resources. This level of funding is not derived from a plan to meet the University's objectives.	A new funding model that aligns with an institutional operating model would provide sufficient funding to effectively operate campus IT services.

Institutional Requirements and Investment Model

Creating an Institutional View of IT Investment

Until very recently UCLA has not had an institutional approach toward IT and IT funding, nor has there been a systematic way of linking IT investments to the broader strategy of the campus. Twenty years ago, when IT services were almost entirely centralized, the Chancellor provided funding in response to proposals by central service providers. With the proliferation of personal computers and local area networks in the 1980s and 1990s, the approach has become more a *de facto* process in which owners of IT infrastructure have developed plans for supporting particular needs within their organizations. Proposals for institutional IT services have competed for contributions from the Chancellor's funds, more or less independently. Consultation and discussions may have occurred, but IT investment decisions by units using local funds were, by and large, made unilaterally.

This situation has begun to change in recent years, as UCLA established and matured its IT governance mechanism. Today, the Committee on IT Infrastructure (CITI) has responsibility for taking an institutional view of campus services and initiatives. However, there are still weaknesses in the process. Some of this is due to lack of experience and some of it is due to a general lack of complete information about IT services and development activity on campus. Last year was the first time the CITI process attempted to take a comprehensive and systematic approach to institutional needs. However different portions of campus had differing interest and engagement in this process, less so if they were sufficiently self-funded for their IT efforts and did not require Chancellorial resources. Thus CITI does not have campus-wide visibility into all the IT infrastructure investments being made by separate units. This fractionation of IT spending means that it is not possible to access or understand the entire potential of the University in terms of strategic IT investment. While the investment process has improved with respect to the use of Chancellorial funds, it still lacks an institutional view and scope and, ultimately, still primarily depends upon bargaining and collaboration.

Linking IT Funding and IT Strategy

IT funding decisions to date have been made with assumptions about a predetermined fixed set of resources. This level of funding is not derived from a plan to meet the University's objectives - it is merely the amount of money the Chancellor and individual units have available for IT investment after competing needs are addressed. The resultant decision-making process thus reduces to a zero-sum game in which various units compete for inadequate funds to sustain core IT infrastructure. There is no linkage between funding and overall strategy. The approach also does not address the ongoing maintenance and renewal of existing shared IT infrastructure.

At the same time, there is currently no method to determine the appropriate allocation of campus-wide resources to IT. Historically, the Chancellor has provided most funding for shared IT investment from state funding sources. Twenty to twenty-five years ago state support constituted a greater percentage of the campus' budget and IT demands were much smaller, but today IT is pervasive and the lion's share of funding is from contracts and grants and gifts and endowments, while state funding has experienced regular and dramatic cuts. The need for core IT infrastructure increases year after year, but the resources available to provide it are shrinking. UCLA can no longer afford to sustain this funding and operational model. What is needed is an integrated way to think about how organizations across campus can share responsibility for IT infrastructure and services that are commonly used. A mechanism is needed to allocate the costs of these services equitably across the constituents that consume them.

Creation of a New IT Investment Model

A new IT investment model is required to address and draw upon all potential resources, how they might be procured, and how they can best be deployed in line with the priorities of the institution as a whole, its IT strategy, and vision.

The first step in creating an appropriate IT funding model is to establish the base line for annual IT investment. A full cost financial model for each institutional IT service must be constructed that includes annual operating costs and amortizes replacement costs of hardware and software over the predicted useful lifespan for the service to produce an annualized total cost of ownership.

Institutional services should include those currently provided centrally, as well as shared portions of those that are currently provided locally, but that could be provided with the blended services and the integrated process described earlier. They include common benefit applications (such as Payroll or the General Ledger), IT infrastructure, and non-differentiating commodity services.

To understand the current situation better, an assessment of the total scope of the campus' current IT services will be needed. Since a majority of these are provided by local IT operations, this will require considerable survey work and the cooperation of central and local IT service providers.

Creation of an IT Reserve Fund

Once the total cost of ownership for all of the IT services required by the campus is understood, a fund can then be created that will provide annualized development and operational funding for all current and anticipated institutional IT services. An adequate margin should also be added to account for unexpected needs over a 10-year horizon.

A governance process must also be established to administer the campus services portfolio and the reserve fund. Through an annual process, IT systems and services will be evaluated for alignment with strategic goals, new initiatives can be funded, and old services can be replaced or retired. Project approval decisions must be timely and keyed to occur within each fiscal year's budget cycle.

The reserve fund may be formed by a combination of potential resources:

- Existing funding from the Chancellor

- Unit Operating Funds

- A new allocation model to include all users of the systems

- Partnerships with vendors of major systems

- Extramural funding

Aligning Funding Models with each of the Four Quadrants

To implement the four-quadrant operating model it is necessary to align funding sources and funding mechanisms with each of the quadrants. The task force reviewed some funding possibilities relative to the four quadrants to create a starting point for a campus discussion. Example preliminary alignments are outlined in Figure 6:

Figure 6 - Example Funding Models by Quadrant

UCLA Health System

The Health System operates differently from the academic campus. However, although the School of Medicine is part of the Health System, it largely follows the pattern of IT usage seen in the non-medical part of the university.

In supporting the strategy outlined in this document, it is deemed important to describe explicitly the ways in which the principles, models, and proposals of this strategy would be applied in the Health System.

The four building blocks of the envisaged future are entirely relevant to and resonant of the mission of the Medical Sciences**.**

UCLA Anytime, Anywhere – *enables staff and faculty to access appropriate information regardless of location, against a backdrop of data security as established by law, policy, and regulation. It is clearly relevant in the increasing use of telemedicine and to advance the global reach of UCLA's academic and caring missions.*

IT Leadership and Innovation – *The Health System is pleased to be both a source of and a collaborator in technical innovation, not only in the specific field of medical science but also in the emerging technologies that contribute to our purpose.*

Digital Citizens – *The Medical Center caters to both patients and those linked with patients in addition to the traditional UCLA campus community. Additional to the north campus focus, our aim includes enabling our broad range of stakeholders in their role as digital citizens.*

IT as an Institutional Asset – *The Health System regards its investment in IT as central to advancing the health mission both in research, medical education, and patient care.*

Our fundamental assumption is that the Health System is an equal partner in this strategy, with an understanding that unique requirements will be reflected in execution of this strategy without deviation from the underlying principles.

The Medical Sciences have contributed to the evolution of the underlying principles and view them as both relevant and influential in the application of information technology in the Medical Center, Faculty Practice Group, and School of Medicine in the future:

1. **Federated and Blended IT Infrastructure Services Model**
   The Medical Sciences have a provider of central IT services in the Health System IT Department. Continued efforts to balance the value of central services against the needs of individual service consumers will be required with the end state being a blended model as indicated by this strategy.

2. **Institutional Strategic IT Investment**
   The leverage of broad-based purchasing, category purchasing, and the use of Medical Center funds for Enterprise requirements is a demonstration of the Health System's existing commitment to this principle.

3. **Shared Core Communications Connectivity**
   The Medical Sciences recognize this as a target against which some progress has been and will continue to be made, and recognize that the intention is to share infrastructure where possible and to differentiate where necessary using technical architecture, specialist applications, or separated instances of technology.

4. **Data is an Institutional Asset**
   As a major generator of clinical data, the Health System acknowledges the value which has been and has yet to be derived from data as an asset. Although clinical data has unique management requirements, it is undoubtedly an enterprise asset which, when managed correctly, has potential to return greater value in support of our collective purpose.

5. **Adherence to a Campus IT Architecture**
   Leveraging the blended model, the Health System recognizes the value of standard architectures while maintaining the unique integrity of clinical data, security, and appropriate access.

6. **Innovation and IT Project Risk**
   The Health System heralds innovation while retaining the control necessary to reduce risk to patients and adhere to the breadth of regulation which applies uniquely to our operations.

7. **Robust IT Project Management**
   The target to use the Medical Center IT PMO processes, standards and capabilities across the Medical Enterprise is a reflection of commitment to this principle. The work already completed will be made available across the campus to contribute to the drive towards industry standard project management.

8. **IT Oversight and Governance**
   The Medical Enterprise has a central IT Governance Model and is committed to its evolution and improvement in line with this strategy.

In summary, this IT strategy has been developed with the full collaboration of the Health System and reflects its interest. Where unique requirements exist, it is recognized that the execution of this strategy may vary in detail or operational actions from that of other stakeholders. It is further recognized that the nature of the Medical Center or FPG Operations and the regulated environment of clinical data may drive greater differentiation than other Departments. This does not detract from the clear commitment of Medical Sciences to support the UCLA IT Strategic Plan.

Strategies, Goals, and Initiatives

Strategies define the broad categories of actions that the Institution will undertake to meet the threats and exploit the opportunities that are identified by the environmental analysis (see section UCLA's Strengths, Weaknesses, Opportunities and Threats, page 11 et seq.) but are not actionable. Goals translate strategies into specific achievements or targets for a particular time frame. Initiatives are the execution steps that enable goal achievement.

Strategies

Drawing upon the principles expressed earlier, the following strategies define how the campus will achieve its future vision for information technology:

1. Implement a new IT Operating Model that provides an optimum balance between strategic management of institutional IT capabilities and the need for local control and IT innovation.

2. Strengthen and expand a research and educational technology environment that facilitates ready student and faculty involvement in interdisciplinary programs, cross-unit and inter-institutional collaborations, and on-line and distance education accessibility. Maintain a computing environment that supports the interdisciplinary programs, cross-unit sharing, and inter-institutional partnerships without IT intervention.

3. Employ a shared UCLA Cyberinfrastructure that can scale as cyber-learning, cyber-enabled research, collaboration, and interdisciplinary, inter-institutional and international education and research needs increase, thereby improving our leadership and competitiveness as a research institution.

4. Build upon a core set of end-to-end, cross-unit IT infrastructure capabilities that blend local and consolidated services to provide high-quality, highly responsive, and shared IT services that are robust, secure, recoverable, cost efficient, and scalable.

5. Apply business process analysis and design approaches as a precursor to IT automation of common administrative processes to build coherent, end-user oriented processes. We will extend system support of processes out to departments to better address local IT enablement needs.

6. Encourage innovation through internal grant funding of pilot initiatives, sharing of key IT resources and competencies, and proactive institutional sponsorship of IT innovation opportunities.

7. Create informed and engaged Digital Citizens through education and by encouraging faculty, students, and staff to play more active roles in IT security, data, governance, innovation, and development initiatives.

Goals

These strategies suggest the following nearer term goals for UCLA for the next 3 years:

1. An ongoing and transparent process of data collection about IT investment and service deployments across the campus and the medical enterprise will be created to facilitate institutional planning.

2. The campus will move to an institutionally managed, integrated, and shared IT infrastructure in those areas that are well into planning and implementation:

    a. Campus faculty-staff email will be consolidated upon the Enterprise Messaging or MCCS services by the end of FY 09-10. Student email will be consolidated on BOL or outsourced by FY 09-10.

    b. Campus wired and wireless networks will be deployed and operated according to the Next Generation Networking (NGN) specifications by FY 10-11.

    c. All software applications involved in campus-wide or cross-unit processes will be positioned to use campus and medical enterprise identity management systems, data warehouses, and reporting tools by FY 10-11 as data becomes available.

    d. An action plan and schedule will be developed for creating an institutional data center, server, and platform services architecture in FY 09-10.

3. IT-enabled institutional processes, applications, and data will be examined, coalesced, and optimized from end-to-end.

    a. The campus will develop a business process reengineering capability.

    b. Student web-based administrative processes will be examined, streamlined, and end-user delivery systems will be integrated.

    c. UCLA's financial systems and corresponding business processes will be documented and evaluated for replacement over the next 3-5 years.

    d. UCLA's research administration processes will be documented and mapped to systems. The associated business processes are already being reviewed and changed. Over the next 3 years the business processes will be significantly re-engineered and existing systems aligned and optimized for these process needs.

4. The campus and the medical enterprise will as a first assumption begin to share processes and IT services whenever possible but make active decisions on exceptions.

5. Programs will be put in place to instill UCLA's values in its digital citizens and prepare them for the future.

6. Incentives will be established to encourage innovation in the application of IT to scholarship, research, and the delivery of instruction, and a process will be created to generalize these ideas into services that can be shared across disciplines.

7. An Organizational Change Management process will be established to communicate these changes effectively and to assist staff in making transitions to new roles and duties.

8. UCLA's governance structure and processes will be reevaluated and adjusted to support the new strategies and goals.

9. IT funding models will be realigned to support these strategies.

Initiatives

With reference to the vision statements that the IT Planning Task Force has put forward, a major finding in this review is that UCLA has already done substantial planning for the "UCLA Anytime, Anywhere" and portions of the "Manage IT as an Institutional Asset" vision components. Through an already robust governance process, the campus has identified, prioritized, and is acting on major systems, applications, and data that enable important institutional academic and business processes and provide capabilities for research, education, civic engagement, and administration.

New initiatives must be undertaken to support the other two components of the IT vision: Build a campus community of digital citizens, and those focusing on building UCLA's reputation of IT innovation to further its research and educational mission. Additionally governance initiatives must be undertaken to communicate and vet the IT Plan, and to implement the new operating model and associated funding models.

An important thread throughout all these actions is to organize and plan for transitioning to an appropriately integrated set of common processes and shared infrastructure across the medical enterprise and the campus. The initiatives presented create these transitions by focusing primarily on the actual implementation:

- *how* IT applications and operations at UCLA are planned and deployed,

- *how* these applications and operations are deployed to support innovation and discovery and the directions emerging from UCLA's 21st century campus plan,

- *how* they are funded and what funding models drive IT in the desired directions, and

- *how* we can realign our campus IT culture.

Taken together, these initiatives will impact the entire university, spanning academic, administrative, and medical center information technology and will require multi-year planning, transition, and deployment.

These initiatives begin to frame a new operating model as well as move implementation forward in areas where progress has already been made. Substantial change from current operational and funding practices may be required, including processes and decisions to determine what processes or services primarily land in what operating model quadrants,

what criteria determines when to deliver services locally, regionally, or centrally, and when to blend local services on to central or regional services.

Successful implementation of these initiatives will require governance, prioritization processes, charging/coordinating of campus planning and service development teams, development of campus and local management structures, neutral measurement and review, broad consultation, program management, and policy development. It is recommended that the CIO and the Office of Information Technology be formally charged with the responsibility and oversight for moving these initiatives forward.

An icon indicating which quadrants of the new operating model they are intended to address precedes the descriptions of the initiatives that follow.

1. Communications and Organizational Change Management

NEW INITIATIVE: The most prevalent factor contributing to failed change projects is a lack of commitment by people. Building the necessary commitment to implement the IT Strategy must begin with clear and open communications, but it also must be sustained with the active sponsorship from campus leaders and supported by a deliberate change management effort. At the outset, communication with the campus is critical and the new operating model will require the support and endorsement of the Chancellor, Executive Vice Chancellor, UCLA Executive Committee, the ITPB, VCs (CITI), and the Deans, with input from the CSG, CCC, and FCET as well as the Executive Committee of the Academic Senate. There is a need to frame and develop a communications plan that uses the UCLA Cabinet, existing governance entities, the Vice Chancellors, the Dean's Council, the Senate, the student body leadership, and the staff leadership. A general outline for such a plan is included in the Appendix. With Chancellor and Executive Vice Chancellor endorsement to proceed, the Task Force recommends that the development of the communications plan be given a high priority and that it proceed immediately during Summer and Fall 09.

Many organizations have learned that organizational change can be managed as a process or program with specific approaches and methodologies to improve their success. An Organizational Change Management (OCM) team with broad campus representation will be formed to define such approaches for helping the workforce adjust to the changes inherent in the shift to a new operating model, and to ensure that the human factors for successful implementation are carefully weighed and considered.

2. Inventory and Assessment of IT Assets and Services

NEW INITIATIVE: While there have been a number of one-time reviews and surveys, the necessary data on UCLA's IT service deployment profile and spend across all units has not been collected yet to form a clear and complete institutional picture. We recommend proceeding during the Summer and Fall 2009 with establishing an inventory process and conducting an inventory and assessment of data centers, facilities and platforms, applications, and data to develop a detailed and comprehensive institutional understanding.

It is recognized that establishing a process and gathering and compiling this data is a task that will need to develop levels of detail through repeated campus planning cycles. However, further IT planning and the implementation of the recommendations below

should be based on at least a first level of data and information, and not speculation and anecdotes. Data collected earlier can be used as a starting point. A tool will be needed to facilitate an ongoing process that will keep data about the technology portfolio and IT spending across the campus up-to-date to facilitate annual institutional IT planning. We recommend that an inventory and assessment plan be reviewed and endorsed by CITI.

3. Networking and Communications

NEW INITIATIVE: All units not already using campus EM, MCCS, or BOL email services should proceed with plans to evaluate and schedule with the email teams within FY 09-10. In parallel, the campus should review outsourced email solutions, especially for student email, reach a determination within FY 09-10, and proceed if viable. These evaluations should document comparative cost and service value. If there is a reason for an exception, that reason should be documented and investigated jointly with the campus email teams to determine if an accommodation is possible. Correspondingly, the EM, MCCS, and BOL services are expected to offer an appropriate service suite, with service quality and policy oversight mechanisms that are appropriately representative of the user constituency. Shared email systems should demonstrate positive value and savings relative to existing costs in most cases.

The NGN team needs to be tasked with completing specifications for the institutional network architecture in FY 09-10. Once the specifications are in place, units are expected to work with NGN to develop plans and migrate/transition to the specified architecture by FY 10-11.

4. Middle Applications

NEW INITIATIVE: All units with campus-wide applications not already using the campus middleware services (Identity Management, Data Warehouse, and reporting tools) should plan and migrate to the campus services by FY 10-11. If there is a reason for an exception, that reason should be documented and investigated jointly with the campus services teams to determine if an accommodation is possible. The campus and medical center will form a management oversight group to ensure agreement on the service suite, quality, and operating policies.

5. Data Centers, Servers, and Platforms

NEW INITIATIVE: Create a campus data center and architecture services planning team that will oversee an assessment of data centers and servers and, with the resulting data, be tasked with specifying the institutional data center, server, and platform architecture and services offerings, and a plan of action and schedule to proceed.

6. Research and Education Cyberinfrastructure

This initiative aims to enhance UCLA's competitiveness in computational research and education, both for North Campus and South Campus. IDRE, the Institute for Digital Research and Education, CCLE, the Common Collaboration and Learning Environment, and the Institute for Informatics (soon to be launched) are the institutional, cross-functional entities that will manage and develop the UCLA Cyberinfrastructure (CI) capability in accordance with research and educational program needs. These are key enablers for the UCLA Anytime, Anywhere

theme. Their focus is on harnessing computational power, data, collaboration, scholarly content, and shared capability. These units represent institutional capabilities that they will aggregate in support of and driven by the specific needs of faculty and students in the distributed academic units.

7. Research Administration Processes

This initiative within the Research Administration community is the result of a review of the business practices, processes, support structures, etc. and will streamline the business side of grant- and industry-sponsored research. Present processes are held over from a time when UCLA had far less activity in this area and research volume was growing at a slower pace. Further, the granting agencies have aggressively moved into automated processes. The Huron Group consultancy has been engaged to assist the Office of Research Administration in this re-engineering process.

8. Student and Parent Processes

With "Digital Natives" the prevalent demographic among our student population, the interaction of the institution with its students is already behind in taking on new forms. The campus is nearing the completion of a comprehensive modernization of its student records systems, but this is only the beginning. As a part of the vision of UCLA as a community of digital citizens, planning is proceeding to provide support for the expectations of students (and their parents) for interactions with the institution. This is the student-centric equivalent of the Customer Relations Management systems and ancillary technologies deployed in the commercial sector.

9. Faculty and Senate Academic Processes

Until recently much of the faculty promotion and tenure processes were performed as an entirely manual process. This caused unnecessary delays in and other problems with the academic review process that hampered the activities of the Academic Personnel Office. The systems and processes being put in place cover a wide range of activities from tracking academic dossiers to supporting institutional research, faculty retention, and responding to compliance and reporting requirements.
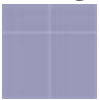
10. Business Administrative Processes

Similar to the work going on in Research Administration, the Administration is on a track of reviewing all institutional processes, converging local systems and approaches into more standardized institutional processes and systems, with an ultimate goal of migrating from current mainframe legacy systems to a new technology base. Current systems are on average around 20 years old, and, although they have been extended and modified as demands have changed, they have become expensive to operate and difficult to maintain. The current budget climate is now also spurring a close look at providing system-wide commodity services. These are not necessarily UCOP-provided, but may be distributed over the various campuses, which then provide software-as-a-service to other campuses.

The campus is already preparing for and can anticipate additional campus process initiatives. We recommend that for each of these campus data and application initiatives that serves institutional business processes, a program structure be established to review the institutional process for end-to-end coherency and effectiveness. We also recommend that all new and revamped IT applications, systems, or infrastructure with the potential to impact upstream or downstream systems or services be reviewed for end-to-end impacts. As the operating model goes into implementation, IDRE, CCLE, the expected Institute for Informatics and others to be identified, should have the responsibility for recommending the process, infrastructure, and business models for their respective academic capabilities.

11. Digital Citizen Initiatives

NEW INITIATIVE: New initiatives are needed to seek to influence positively the knowledge and behaviors of UCLA's faculty, students, and staff to better prepare them for the future state described in the IT vision described earlier and as expressed in strategy #7 (pg. 45). The ITPTF recognizes the importance of a campus culture of digital citizens who understand that each individual is a steward of institutional resources, capability, and infrastructure for achieving individual and institutional goals. It is recommended that ITPB be charged with developing a specific approach to building a campus community of digital citizens.

12. Innovation Initiatives

NEW INITIATIVE: With respect to innovation, the task force wishes to acknowledge that IT innovation can occur anywhere on campus. An approach that supports strategy #6 (pg. 45) should draw upon UCLA's rich capacity for innovation in all of its departments and central organizations. Incentives should be created to support the creation and piloting of new services that can later be shared across multiple departments. It is recommended that ITPB be charged with developing a specific approach to enhance UCLA's reputation in IT innovation to further its research and educational mission.

13. Funding Model

NEW INITIATIVE: This initiative will establish the financial and funding models for supporting and further developing shared applications and infrastructure that contribute to critical academic competitiveness. These models will need to be developed with input from the faculty and endorsed by the Deans and the VC's.

We acknowledge the importance of moving forward now with institutional capability that supports research and education and recognize that UCLA has formed IDRE, CCLE and, expected soon, an Institute for Informatics, to address institutional need. These organizational entities already represent the management oversight and have the program structure for developing recommendations.

Funding mechanisms should reflect a spectrum of approaches that are optimized for each of the operating model quadrants – one size does not fit all. The mechanisms themselves should encourage the principles and behaviors desired for each quadrant. These mechanisms are anticipated to include (1) campus taxing strategies for institutional

common good services that improve the collective institutional capability, (2) total cost of operation strategies that address a specified suite of architectural, security, and operational requirements, (3) individual fee-for-service and unit subscription/membership fee models to drive discretionary services by participation, and (4) general funds approaches. These mechanisms, in addition to accounting for development and operating costs, should be set up to provide financial reserves for future institutional IT initiatives and to provide seed capital for innovation and matching fund incentives.

The VC Finance, Budget, and Capital Programs and the CIO should partner to plan, develop, and implement funding models that align with progressing on implementing the operating model. CITI should be charged with the detailed review of the IT funding models. (Funding amounts and decisions are determined through the campus planning and budget processes, not by CITI).

Implementation Approach

UCLA has already built a robust governance structure and processes for setting "institutional" IT application and process priorities. The IT Planning Task Force recommends therefore that the exiting governance structure be used to launch the implementation of the new operating model.
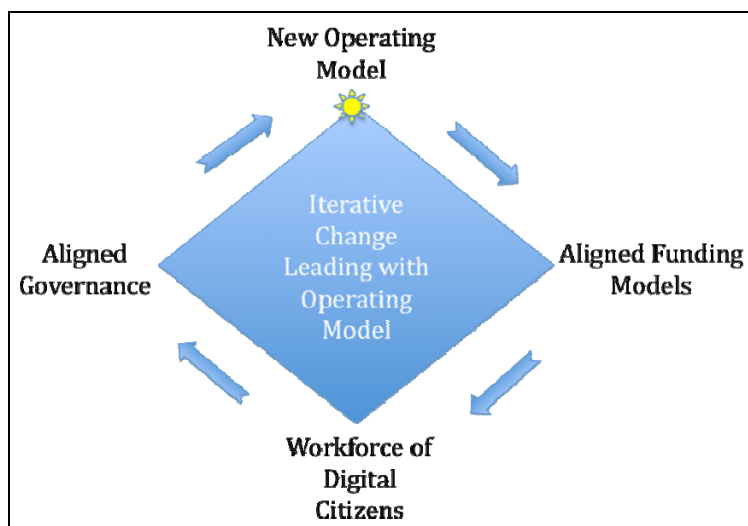

Figure 7 - Iterative Change Model

Launching the new operating model then sets in motion the four-point iterative process illustrated in Figure 7. The implementation flow can be roughly outlined as:

1. Initialize the process with a campus inventory of infrastructure and application facilities and systems both to provide the information for immediate planning but also to baseline and then track how the campus IT is changing.

2. Proceed with the analysis and build-out of institutional capability, and transition those infrastructure services that have already undergone some level of planning and implementation into institutional or regional shared and blended services. That is, start with those that place in the lower left hand quadrant, e.g., email, data

centers and servers, networking, identity management, and data warehouse and reporting, and determine service specifications through campus planning teams.

3. Proceed with the analysis of campus processes and associated applications and databases and transition end-to-end user processes, i.e. upper left hand quadrant. The first processes will be in the areas of common collaboration and learning, computational research, research administration, financial management, enrollment/billing processes for students and parents, and academic promotion process tracking. Establish process specifications with campus steering committees.

4. Work out aligned funding models for upper left hand quadrant processes and lower left hand quadrant infrastructure services.

5. Build the workforce understanding of the implications of the operating model and the implications of IT digital citizen staff. Conduct transitions with institutional oversight of required staffing changes and impacts, mechanisms for retraining and redirecting impacted staff, and mechanisms for internal staff to move with consolidations. Build the campus community understanding of being a digital citizen so that the campus community expectations and responsibilities are in sync with the IT services, the IT staff responsibilities that provide IT, and user support.

6. Adjust the governance structure to reflect the operating, funding, and workforce models that will become more institutional in nature than they are now. Periodically review the governance and oversight structures and processes.

7. Systematically and periodically review the existing campus portfolio and its effectiveness against a review of campus functional priorities. Establish new or next priorities and repeat.

APPENDIX A – PROPOSAL FOR COMMUNICATING THE IT STRATEGY

The IT Planning Task Force believes that the vision and strategies outlined in this document have far reaching consequences for the way those involved in information technology on campus should think and behave over the next 10 years. The fundamental ideas, principles, and strategies presented in this document will feel unfamiliar to many. Successful implementation will require a critical threshold of understanding, acceptance, and sponsorship across the institution.

The ITPTF recommends that a formal communications plan be developed to engage the campus in active dialog on the IT vision, the IT strategy, and their ramifications. This discourse will better equip the campus to understand and deal with the changes that must be made to the IT operating model, their impact on key stakeholders, and how to calibrate and fine tune implementation of the IT strategy.

Communication Goals

The goals of the communication plan are:

- Explain and discuss the IT vision and its future state along with the benefits for UCLA to all key UCLA audiences.

- Discuss the rationale for the proposed changes in the IT operating model and the recommendations of the IT Planning Task Force to key IT stakeholders.

- Enable campus IT stakeholders and audiences to understand how the IT strategy, IT principles, and operating model will affect them as organizational units and as individuals.

- Listen to the campus community and gain feedback and insight into the consequences of implementing the IT strategy.

- Build the critical mass of buy-in and support required for a successful implementation of the strategy and the internalization of the IT principles by all campus digital citizens.

Communication Guidelines and Principles

Construction of a complete communications plan is beyond the scope of this report; however suggestions are provided for some guidelines for the development of a detailed communications plan[6]:

- Communication must be two-way. Leaders must listen, note, and act upon what they hear from campus members.

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[6] Source: Guidelines for internal communications from the UK Government Improvement and Development Agency for local government (I&DeA), see http://www.idea.gov.uk

- Be candid and direct about the unpopular as well as the popular ideas and recommendations in the IT strategic vision and plan.

- Wherever possible communicate in a face-to-face manner with the involvement of local leaders and staff.

- Explain the vision, principles, and messages in such a way that staff can understand how their own work and individual services or projects fit into the bigger picture.

Kick-Off Plan

The plan outlined in Table II below) is offered as a starting point for communicating the existence and content of the IT Strategic Plan. It covers the initial exposure of the plan to the various campus stakeholder groups. It is, however, just the first step in an awareness-building and feedback-gathering process that we expect will take a significant portion of the 2009-2010 academic year.

This IT strategic Plan proposes a set of implementation initiatives (pg. 48 et seq.) that we believe would in principle lead to a realization of the IT vision. These initiatives, which include developing detailed communications and change management plans, need to be vetted with the campus, elaborated upon with the feedback received and ultimately be approved for implementation.

On-Going Communication Strategy

The schedule of events proposed in Table II cover only the first steps in that vetting and data gathering process. Each of these events will likely result in follow-up meetings with ever-broadening campus stakeholder participation as well as in further targeted documents for the various initiatives. Thus, the dates presented indicate the beginning of the process of communicating with the campus, rather than the end.

The strategies and initiatives proposed reflect the broad consensus of a knowledgeable IT Planning Task Force. Strategies may need to be adjusted during implementation as more knowledge and insight is gained on its effectiveness in achieving the stated vision. Thus, the on-going collection of campus feedback as well as periodic review of progress and any adjustment to the strategies through the IT governance process will be part of the implementation plan.

The Task Force considers it very important that the creation of communications materials and key messages be carefully managed by the OIT and the executive sponsorship team to ensure that they retain their fidelity to the long-term vision as the plan unfolds and evolves.

Table II – First Steps for Vetting the IT Strategic Plan

NEAR TERM COMMUNICATION PLAN						
Communication Activity Name	**Purpose/Key Messages**	**Intended Result**	**By Whom?**	**Freq. and Timing**	**Delivery Media**	**Comments**
Chancellor & EVC						
1. IT Planning Task Force Strategy Document Review	Review the draft Strategy Document	Obtain endorsement and approval of the IT Strategic Plan and recommendations	ITPTF Chairs: Jim Davis, & Sam Morabito	One time July 31, 2009	• IT Strategy Document	Completed
2. IT Strategy Campus Announcement	Inform the campus that the IT strategy has been developed and announce the next steps that will be taken.	Create awareness and enable the IT implementation team to implement the IT communications plan.	Chancellor	One time By end of Sept., 2009	• Letter from the Chancellor	
Divisions						
3. Small Group IT Strategy Meetings	Explain the IT Strategy in detail and discuss the implications for each Academic Division and Academic Support Division Key messages: IT Vision, IT Principles, New Operating Model, IT Quadrants	The Deans, VCs and their CIOs have a consistent and accurate understanding of the IT Strategy We all have a better understanding of the implications and impact of the IT Strategy for each Division Deans, VCs & CIOs are equipped to communicate and interpret the IT Strategy for their Division staff	Jim Davis, EVC and ITPTF Members	Multiple meetings during August & Sept. 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	These meetings would be in the format of small group facilitated meetings/work-shops with each Division's leadership team, OIT plus the sponsorship of the EVC. Where possible, the appropriate ITPTF member would participate in the meeting for their area.
4. Deans Council Briefing	Provide a high level review of the IT Strategy	Obtain endorsement of the IT Strategic Plan and recommendations	Jim Davis & EVC	One time By end of Sept., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	

5. Council of Vice Chancellors	Provide a high level review of the IT Strategy	Obtain endorsement of the IT Strategic Plan and recommendations	Jim Davis & EVC	One time By end of Sept., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	
Faculty						
6. Academic Senate Briefing	Review the ITPTF Strategy Document	Obtain initial faculty leadership feedback on IT Strategic Plan and ITPTF recommendations	Jim Davis	Sept./Oct., 2009	• IT Strategy Document • IT strategy PowerPoint overview presentation	Contingent on timing of Communication Activity #1 as a predecessor
Medical Enterprise						
7. Medical Center Leadership Briefing	Review the ITPTF Strategy Document	Obtain initial faculty leadership feedback on IT Strategic Plan and ITPTF recommendations	Jim Davis	Sept./Oct., 2009	• IT Strategy Document • IT strategy PowerPoint overview presentation	
8. Medical Center Small Group IT Strategy Meetings	Explain the IT Strategy in detail and discuss the implications for the medical enterprise Key messages: IT Vision, IT Principles, New Operating Model, IT Quadrants	Key IT leaders have a consistent and accurate understanding of the IT Strategy We all have a better understanding of the implications and impact of the IT Strategy for the medical enterprise Leaders are equipped to communicate and interpret the IT Strategy for their staff	Jim Davis, EVC, Alan Robinson and Virginia McFerran	Multiple meetings August thru Oct. 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	These would be in the format of small group facilitated meetings/work-shops with each Division's leadership team, OIT plus the sponsorship of the EVC.

IT Governance Entities and CCC						
9.	CSG	Review and discuss the IT strategy Explain the key tenets: IT principles, IT operating model Gather feedback	Explain the IT vision and strategy so that the divisions and individuals can understand how their own work, IT services and projects fit into the bigger picture. Listen, learn, and refine the strategy.	Jim Davis and ITPTF Members	One time meeting, Sept. 22 or Oct. 27, 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	
10.	ITPB	Review the ITPTF Strategy Document Transition from the end of the ITPTF to ongoing Strategic IT leadership	Obtain endorsement of the IT Strategic Plan and recommendations	Jim Davis	One time meeting, Sept. or Oct., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	
11.	CITI	Review and discuss the IT strategy Review impact of IT Strategy on existing IT Portfolio and funding	The IT Portfolio is realigned with the new IT Strategy	Steve Olsen and Jim Davis	One time meeting, Oct., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	
12.	IDRE	Review and discuss the IT strategy Explain the key tenets: IT principles, IT operating model Gather feedback	Obtain endorsement of the IT Strategic Plan and recommendations	Jim Davis	One time meeting, By end of Oct., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	
13.	FCET	Review and discuss the IT strategy Explain the key tenets: IT principles, IT operating model Gather feedback	Obtain endorsement of the IT Strategic Plan and recommendations	Jim Davis	One time meeting, By end of Oct., 2009	• IT Strategy Presentation Summary • IT Strategy Document (Handout)	

APPENDIX B – CHARGE LETTER TO THE IT PLANNING TASK FORCE

August 7, 2008

Associate Vice Chancellor Jim Davis (chair)
Vice Chancellor Sam Morabito (co-chair)
Director Julie Austin
Professor Alfonso Cardenas
Associate Vice Chancellor Glyn Davies
Professor Diane Favro
Professor Robin Garrell
Vice Chancellor Janina Montero
Vice Chancellor Steve Olsen
Vice Chancellor Roberto Peccei
Associate Vice Chancellor Alan Robinson
Vice Provost and Dean Judi Smith
University Librarian Gary Strong

Dear Colleagues:

The past decade has seen rapid advances in UCLA's information technology infrastructure, applications, services and governance. It is now time to reflect on and clarify our IT priorities, alignment and investments as the campus proceeds with long range strategic planning.

I am asking that you develop a comprehensive strategic plan for IT at UCLA that supports UCLA's academic plan, although it must also, of course, address the breadth of our administrative needs. This plan will guide decision-making, investment, and assessment related to information systems and services at UCLA. Please vet the committee's findings and proposals through the ITPB and IT governance structure.

I am enclosing a draft of UCLA's academic plan, which will be discussed at the September 2008 Chancellor's Leadership Retreat. I would like to ask that you plan to briefly report on your comprehensive IT planning process to the retreat and complete the plan by the end of the academic year with quarterly updates to me.

While I do not intend to preclude any other planning issues and questions, I ask that the plan address the questions below:

- What should UCLA establish as its highest priorities for strengthening and/or positioning IT over the next five years? What exigencies must be addressed?

- What is needed to sustain and enhance UCLA's academic excellence and administrative efficiency?

- Is the governance structure now in place appropriate for the future decisions and needs that face UCLA? If not, what changes are needed? To what extent do the three major IT governance bodies (Strategic IT planning by the ITPB; Campus application priorities through CITI; and Infrastructure deployment through OIT, Administration, and Finance and Budget) effectively serve the campus. How might coordination and efficiency increase?

- How can we derive more value and efficiency from UCLA's IT infrastructure, including data centers, networking, communications, security services, disaster recovery, identity management, server architecture, and systems and applications administration? To what extent, and in what areas, is consolidation needed? To what extent, and in what areas, is decentralization needed? How can these be achieved?

- How should we balance the needs of individual divisions and departments for applications that serve their needs (e.g., grants management, post doctoral assignments, admissions) against the benefits of integrated systems that are developed as institutional resources?

- What are the strengths and weaknesses of the campus IT organizational, fiscal and operating structures that are currently in place? Will they support the priorities and directions recommended as well as the tactical work and execution of the plans? How can we refine these structures to preserve the strengths and mitigate their weaknesses so that IT plans go forward in the best possible manner?

- How can UCLA develop improved project management, so that systems development proceeds on time and on budget and with consultation and communications as needed?

My thanks to Jim Davis and Sam Morabito, who have agreed to chair and co-chair this effort and to Don Worth, who will develop the written product and provide technical input on behalf of the Task Force. In advance of the plan, I would like to thank the ITPB and other governance groups for contributing to and reviewing the plan. You, of course, may choose to engage others in subcommittees or working groups; in addition, I ask that you consult widely with IT specialists from administration, academic schools and the College, and the medical center.

If you are unable to serve, please contact me. Otherwise, Jim Davis' office will be in contact with you soon to schedule the first meeting.

Thank you for taking on such an important project.

Sincerely,

Scott L. Waugh
Acting Executive Vice Chancellor and Provost

cc: Chancellor Gene Block
        Don Worth
        ITPB