

# Office of Information Technology Strategic Goals

June 1, 2016

In support of UCI operations and initiatives, the Office of Information Technology (OIT) provides IT infrastructure and technical partnership across a broad range of IT domains. Overarching OIT goals are to:

1. Build out and maintain scalable IT infrastructure and services;
2. Support academic goals through educational and research computing initiatives and services;
3. Partner with functional units to implement enterprise and unit applications;
4. Evolve as an enterprise IT organization through continual improvement; and
5. Foster technology innovation and collaboration within the campus and externally.

Information Technology plays a pervasive role in campus endeavors; as a result, OIT will contribute directly or indirectly to achieving most of the goals presented in the UCI Strategic Plan. Particularly important connections are highlighted in this document.

## **Build out and maintain scalable IT infrastructure and services.**

*UCI strategic plan goal 4.5: Ensure a high-quality, ubiquitous, secure, and robust information technology infrastructure.*

The university depends on robust IT infrastructure and responsive IT services to fulfill its mission of research, education and public service. Every academic and business function requires IT for efficient and effective operations; virtually all campus and unit strategic goals have an important IT component. Maintaining and enhancing IT infrastructure is the top priority for OIT. Much infrastructure is essentially invisible and can be taken for granted. A large amount of staff support is necessary to maintain infrastructure and provide client services.

UCI's IT infrastructure is extensive with many components including a central data center, secondary data facilities on campus and off, the network, and security mechanisms. The data center houses environmental, processing, storage, and network equipment required to support campus applications and services. The campus network consists of cabling, routers, and switches required in buildings and for external connectivity, along with the campus backbone that interconnects it all. Redundant border firewalls, facility and application firewalls, a campus intrusion protection system, and other devices comprise key components of maintaining information security. OIT staff possess the broad assortment of IT expertise required to maintain IT infrastructure and provide services to the UCI community.

Campus IT requirements have been growing steadily for many years and will continue to do so. OIT monitors the responsiveness and capacities of IT services and plans enhancements through internal assessment and prioritization processes. The overall state of IT infrastructure is reviewed annually through the budget process and ongoing interactions with leadership and stakeholder groups. OIT will continue and refine these processes as technology and campus needs evolve.

### **Mitigating IT Related Risk**

An important OIT focus is mitigating campus risk related to IT, most notably in the realms of information security, disaster preparedness/recovery (DR), replacement of legacy enterprise application systems, and IT Accessibility.

Efforts to enhance information security controls, practices, and awareness will continue to be a top priority for OIT and the campus as a whole. OIT provides leadership and the foundation for these efforts, which must be informed by thoughtful assessment of risk. Intrusion protection, firewall, vulnerability scanning, incident response, endpoint safeguards and other services will be maintained and enhanced.

Campus operations have become increasingly dependent on the equipment housed in the main data center located in Engineering Gateway. A water pipe burst, fire, or other environmental issue could take down key campus applications for weeks at a time. In response to this, OIT is developing an offsite data center to house a subset of critical IT services including enterprise financial, contracts and grants management, and student health systems. As this is a costly approach that does not scale well to cover all IT services, future plans include accelerating migration of campus services to Amazon Web Services and other cloud mechanisms. These provide a number of advantages including built-in redundancy and failover.

Compliance with the UC IT Accessibility Policy is a challenge considering the large scope and distributed nature of web resources and other information technology services. In conjunction with Strategic Communication and other units, OIT leads a sustainable IT accessibility program that incrementally addresses policy requirements and facilitates inclusive excellence.

### **Additional Infrastructure Initiatives**

- *Consolidation of distributed data center assets* – OIT will continue to consolidate data center equipment into the central data center which provides physical and network security, uninterrupted redundant power, environmental controls including redundant environmentally efficient cooling systems, continuous monitoring of critical systems, water leak detection, temperature monitoring, and robust high performance networking.
- *Utilization of Cloud Services* – OIT will continue to facilitate the relocation of website content to the Amazon Web Service cloud platform and will produce a cloud “toolkit” for developers and system administrators to facilitate moving applications as well. OIT will move key core services (authentication, DNS,

enterprise service bus) for better fault tolerance and will expand application hosting in the cloud starting with our enterprise timekeeping system (TRS).

- *Network Upgrade* – UCI’s external network connectivity bandwidth will be increased by adding a 100 Gbps connection. Other planned network enhancements include a new high-speed backbone core, increased speeds to campus buildings, expanded wireless network coverage and performance, and improved data center networking.
- *Enterprise Service Bus (ESB)* - Information technology is becoming increasingly complex and technology consumers require that data, software and devices be linked and work together seamlessly. In order to accommodate this, IT projects are becoming increasingly about integration, data interfaces and platform scalability. In coming years, the ESB will provide flexibility and scalability for the SIS and other systems as well as expansion into real time data exchange with other UC locations.

## **Support academic goals through educational and research computing.**

*UCI strategic plan goals 1.1: Expand the number and impact of UCI faculty; 1.2: Increase research expenditures to over \$500 million annually; 2.3: Utilize modern technological tools to create the most effective learning environments.*

Education and research depends on the IT infrastructure described above; both require high-quality network connectivity, data center, and client support services. Each also has unique needs beyond pervasive IT infrastructure. Campus educational technology services are supported through the Educational Technology Initiative, in conjunction with its Advisory Committee (ETIAC). The committee reviews annual core instructional technology refresh plans, along with educational technology requirements submitted by schools.

OIT will continue to leverage eTech funding and partner with the Office of the Vice Provost of Teaching and Learning to maintain and enhance educational technology on many fronts. OIT has been working with faculty and academic leadership to define a vision for Research Cyberinfrastructure (RCI) and expects to begin implementation of this through establishment of the RCI Center in 2016/17 (see [sites.uci.edu/rci](http://sites.uci.edu/rci)).

### **Educational Technology Initiatives**

- *Learning Management* -- The Electronic Educational Environment (EEE) suite of course management tools has served the campus well since its inception in 1996. Commercial products have since caught up to EEE and provide new functionality as well as better integration with rapidly evolving external learning tools. After a successful pilot, OIT is in the process of implementing Instructure Canvas, while maintaining unique EEE functionality, to provide enhanced learning management system capabilities for instructors and students.

- *Classroom Technology and Active Learning Spaces* – eTech funding has allowed complete refresh of classroom technology over a five-year period. Working with Teaching and Learning and other partners, attention will now be turned to determining how technology can be further leveraged to enhance learning. Study of effective technology and configuration in the Social Ecology 101 active learning classroom will be used to inform design of new campus classrooms and incremental enhancements of existing classrooms.
- *Instructional Media Management* – The ability to record, provide and archive digital video media is increasingly important for online classes, flipped teaching approaches, and the use of Internet content. OIT will improve current services used to capture and manage video using cloud services integrated with Canvas.
- *Student Success* – OIT is partnering with Teaching and Learning, Institutional Research, Academic Planning, and others to enhance the campus student success program. Experience from the EAB Student Success Collaborative pilot, now discontinued, will inform student success plans going forward.

### **Research Cyberinfrastructure Initiatives**

- *Campus Compute Cluster* - OIT continues to support and expand the campus “HPC” compute cluster used by many research groups. This is an important technology resource that must be regularly updated as described in the RCI Vision document ([sites.uci.edu/rci](http://sites.uci.edu/rci)).
- *Storage* – OIT will work to make existing HPC storage more robust and provide enhanced capabilities through cloud services, piloting access to UCLA’s research storage system, and implementing a campus storage system as described in the RCI Vision. OIT will develop “secure storage” options to support research using restricted data sets that must comply with a variety of security frameworks.
- *RCI Staff Services* – Through the RCI Center proposal, OIT will enhance the staff services available to researchers to facilitate their use of technology.
- *Research Networking* – OIT will work to expand and extend UCI-LightPath, UCI’s dedicated science network, and to enhance UCInet connectivity to academic buildings. OIT will also participate in the Pacific Region Platform (PRP) in support of its goal to connect dedicated science networks across many institutions.

### **Partner with functional units to implement enterprise and unit based applications.**

*UCI strategic plan goals 1.2: Increase research expenditures to over \$500 million annually; 4.3: Bolster and position staff to more effectively support the academic mission.*

University business functions are managed through an array of administrative software applications. These range from broad enterprise applications used by virtually all units, to function-specific applications. Applications are “owned” by the functional units, but OIT plays a key partnership role in maintaining them and working as a part of project teams to update or replace functionality.

Major enterprise system initiatives include the Quali Financial System, Student Information System, and Quali Research Administration (Coeus). OIT will work with its partners to complete KFS refinements, bring core software to the current release, and stabilize support requirements. SIS is a major project to replace legacy student information systems with the Ellucian Banner platform that will complete in 2019. Implementation of Quali Research (Coeus) is well along; it provides an integrated research administration system that supports the management of research projects from “cradle to grave.” Current Quali Research plans will complete in summer of 2018, but OIT will support Office of Research and Accounting and Fiscal Services efforts to review grant management tools available to ensure they support UCI’s goal to increase research funding.

OIT will continue to work closely with units to enhance the applications each relies on to carry out business functions. Efforts are ongoing in Facilities Management, the Division of Undergraduate Education, Human Resources, Student Affairs, Transportation and Distribution Services, Academic Personnel, Alumni Relations, and virtually all other units.

Reporting is an important component of both enterprise and unit application projects, as is the thoughtful collection of data and establishment of data models in support of Business Intelligence (BI). OIT will work with Institutional Research and other partners to build out data analysis capabilities in the financial, Human Resource, research, and student domains and to establish an enterprise data warehouse that provides self-service BI capabilities across domains.

### **Enterprise Application Initiatives**

- *UC Path* – UCI has been participating in the UCOP led initiative to centralize HR/Payroll functions within UC. UC will be retiring a 35 year old legacy payroll/HR system (PPS) and adopting the Peoplesoft platform in 2018.
- *Electronic Document Management and Workflow* – OIT has implemented IBM FileNet to handle enterprise electronic document management. This initially supports Human Resource and Accounting requirements, but will expand to other uses, including sensitive data management and special document handling. The robust and flexible FileNet platform will also help reduce the need for distributed imaging systems over time, providing increased efficiencies.
- *Sensitive Data Management* – a number of units work with sensitive data in the course of their operations. OIT is assessing a combination of products and solutions to address the unmet need of secure file transfer, sensitive data protection in transit, along with tools required to communicate with external entities in a secure fashion.

- *Enterprise Access Management* – The KSAMS system provides an enterprise roles and access management system with electronic workflow and approvals. OIT will expand use of KSAMS through integration with enterprise tools such as the Student Information System and Research Administration.

## **Evolve as an enterprise IT organization through continual improvement.**

OIT is a strong organization, with capable staff and leadership. It must continue to evolve across multiple dimensions, including those of service integration, organization, competitive compensation, work processes, and tools. Ongoing continual improvement objectives include:

1. Better serving of academic and administrative communities by aligning OIT support structures with best practices in higher education IT.
2. Improved identification and fulfillment of customer needs through collecting information on customer priorities, improving customer communication and streamlining the service delivery chain.
3. Improved organizational mobility by streamlining communication and decision-making through clear accountability structures and governance mechanisms.
4. Reduce time to implement major new initiatives by working with our peers on campus and in the UC community through the pooling of resources and plans – starting with our own organization.

The key to a strong organization that delivers effective and responsive IT services is hiring and retaining a strong complement of staff and supporting their success. This involves providing a collaborative environment that embraces current technology in which staff can learn and grow, connecting staff to the educational and research end product of the university in meaningful ways, excellent personnel management, and keeping pace with market salaries.

### **Organizational Initiatives**

- *IT Service Management Platform* – OIT is leveraging ServiceNow to enhance and unify IT service delivery management. Incident management is in place and OIT is working to add project, vendor contract, technology asset, and budget management over time.
- *Development of Organizational Performance KPIs* – OIT is adopting ITIL concepts in ServiceNow and starting to gather new performance analytic metrics on our *workforce* (work queue depth and trending, work queue average per FTE) *service delivery* (SLA compliance, average fulfillment times), *costs* (infrastructure and labor spend breakdowns), and *risk* (process breakdown metrics and risk rating for work across the service portfolio).
- *Strategic Cost Management* – OIT will seek out opportunities for cost control and leveraged economies of scale throughout its efforts.

- *Operational Risk assessments* – OIT is assessing operational risk across a spectrum of services and activities. Resulting plans will include staff cross training, infrastructure replacement/upgrades, documentation and dissemination.

## **Foster technology innovation and collaboration within the campus and externally.**

Continuing technology evolution challenges everyone, especially IT organizations such as OIT. In order to best serve the needs of faculty, staff and students, OIT must look for opportunities to augment and build upon its services. This is done through experimentation, innovation and collaboration with other groups both at UCI and other campuses. Additionally, OIT is continually engaged with its external partners to provide insight on future strategy and direction for campus infrastructure, applications and services. Significant efforts to work together to solve common problems continue within the UC IT community.

### **Collaborative Initiatives**

- *Kuali Foundation contributing partnership* – In conjunction with UCI's role as a Kuali contributing partner, OIT is participating in the collaborative effort to move KFS campuses to a common code base, allowing the community to better leverage collective product build out and maintenance.
- *Instructional Technology Workshop offerings for instructors* – OIT is working with campus partners to support faculty-focused workshops on instructional technology, pedagogical approaches, and third party tools for instructors. Collaborative projects include instructional tool workshops, Faculty Institute for Hybrid Learning (FIHL), the Introduction to Hybrid Learning, Flipped Classroom workshop, and the New Faculty Orientation.
- *Multi-Campus Time and Attendance Pilot* – The time and attendance system written and used by UCI (TRS) has been architected in a way that it can be adopted by other UC campuses. The system is currently used by UCLA, UC Davis, UCOP and UCI. OIT is working with UC Hastings to have UCI implement and host TRS for them and is in discussions with UCSB and UCANR to potentially host the system as well.
- *Data Warehouse* - OIT is engaged in planning discussions to host the HR/Payroll data warehouses and business intelligence infrastructure for UCSB and UCANR. This will save other UC locations significant costs instead of the alternative of building and supporting these locally at each of the aforementioned campuses.