

OIT Activity Summary 2016-2017

Introduction

The Office of Information Technology (OIT) at UC Irvine is responsible for providing support and technical partnership across a broad range of IT domains. The following report covers the period of fiscal year 2016-17, highlighting a subset of initiatives OIT is involved in working with partners on and off campus. Significant change has occurred during the reporting period, both internal and external to OIT. At a high level, activity domains include but are not limited to:

Infrastructure

- Network, Telephone, and Radio Services
- Data Center Services (servers, storage, backups, and co-location)
- Cloud Services (AWS)
- Enterprise Services (email, mailing lists, web site hosting, streaming media)
- Windows and Unix Server Administration

Education

- Classroom and Lab Technology Support
- Teaching and Learning Management Systems Support
- Comprehensive Analytics for Student Success (Compass)

Research (via the Research Cyberinfrastructure Center)

- High Performance Research Computing Infrastructure and Support
- Specialized Research Computing Expertise
- Research Storage System
- Collaborative Research Networking Infrastructure

Enterprise Applications

- Enrollment Services Systems
- Graduate Division Systems
- Student Financial Systems
- Enterprise Financial and Administrative Systems (Accounting, Purchasing, Facilities, EH&S, Transportation)
- Human Resources Systems
- Research Administration Systems

Unit Application Support

- Full campus unit IT support for Academic Initiatives, Academic Senate, Accounting/Financial Services, Environmental Health & Safety, Procurement, Facilities Management, Transportation and Distribution Services, Student Housing, Bookstore and Student Center, Human Resources, Student Affairs (Central and Auxiliary), Office of Institutional Research, Budget Office, Graduate Division, Department of Undergraduate Education, School of Biological Sciences, Alumni Association, Office of Research, Chancellor's Office, Athletics, UCI Police.

Central IT Services

- IT Security, Identity and Access Management and Risk and Compliance
- Enterprise Data Warehouse and Business Intelligence
- IT Architecture and Middleware
- Electronic Document Management
- Database Administration and Management Service
- Software Quality Assurance and Monitoring Service
- Operations Support and Production Control
- Project Management Office

Client Support Services

- Campus Communications and Outreach
- Web Content Management
- IT Service and Student Support Desk
- Standardized and Specialized Desktop Support
- Enterprise Licensing and Procurements

Key Initiatives

OIT has identified five, over-arching, strategic priorities as follows:

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 based applications.**
4. **Evolve as an enterprise IT organization through continual improvement.**
5. **Foster technology innovation and collaboration with campus and externally.**

The remainder of this report summarizes activities and progress along each of these areas.

1. Build out and maintain scalable IT infrastructure and services.

- **Disaster Recovery Planning** – Data preservation and service continuity are the objectives that fold into broader UC readiness/business continuity work. Three critical systems (KFS – Enterprise Financial, KC – Sponsored Research Proposal Management, Point-and-Click – Student Health Electronic Medical Records) now have disaster redundancy in San Diego and mock DR drills have been conducted to validate services. We have also expanded breadth/depth of institutional data backups and data preservation using the San Diego DR location and Amazon Web Services and completed most of the management corrective actions from the DR internal audit. We have added a full time Disaster Recovery Coordinator.
- **Emergency Communications** – We have enhanced ZotAlert emergency communications by enabling emergency alerts to computers (through the Alertus desktop notification system). We have also improved reliability of campus emergency phones by upgrading the electronics, and completed a proof of concept project to install emergency alert beacons in seven classrooms.
- **Campus Information Security Program** – Highlights of the year’s efforts to improve network and data security include: one-time process of requiring more secure passwords and retiring over 100,000 inactive accounts, deploying multi-factor authentication, improved network usage analytics, implementing campus-wide vulnerability management program using Tenable SecurityCenter, and implementing enterprise file-encryption tools for OIT managed desktop systems. We have introduced the concept of “embedded” security engineers to assist high risk asset owners in OIT and on campus to implement stronger security controls. Many security services (including firewall support, access requests to vulnerability scanning, Duo hardware tokens, etc.) are now offered through self-service forms. The campus border firewall was upgraded to handle our rapidly growing campus network load.
 - **Security Training** – We supported UCI’s efforts in promoting CyberSecurity awareness, with over 80% of faculty and staff completing the online training. Phishing training has started for select campus units.
 - **Tracking and securing sensitive data** – OIT maintains an inventory of electronic information resources (EIR) which contains all high risk data stores throughout the campus. Information Security Coordinators (ISCs) in each area of the campus update the EIR database every year to assist in managing high risk data assets. Use of Identify Finder to find PII on campus is increasing.
 - **Core Security Infrastructure** – We have replaced the campus intrusion detection system with next generation device and technology, implemented UC wide threat detection and identification monitoring tools (FireEye), implemented a backup system for researchers using cluster computing, upgraded campus VPN hardware, and upgraded and consolidated aging departmental firewalls on campus.

- **Service and Tool Consolidation** – We have developed training for Cognos reporting and data analytics, rolled out a secure electronic document storage solution (FileNet), selected and built out an automated Data Extract/Transform/Load Tool (Informatica ETL), and purchased and deployed a software versioning tool for improved institution-wide software assets management (program code, files, etc) for faculty, staff, and students (GitHub). Our focus will now shift to re-packaging central tools into technology services available for the general campus to consume. We are in the process of assessing if our service health monitoring tool (Netreo) can be extended into the AWS cloud.
- **Consolidate Infrastructure and Leverage Enterprise Services** – Many application servers have been consolidated to better leverage our enterprise infrastructure. Databases have been consolidated, secured, and their administration moved from departments to the enterprise Database Administrator (DBA) team. OIT's new production operations team continues to absorb formerly distributed operations into a central execution and monitoring framework. We are now implementing an asset management and tracking system for more informed planning decisions and improved service uptime.
- **Utilization of Public Cloud Services** – 100% of all Exchange clients are now using Microsoft Office 365 cloud email, and all new students and many faculty and staff are using Google Apps and Gmail. UC Recruit has migrated to the cloud and with 10 instances running UC-wide. Many websites and services have been migrated to Amazon Web Services (AWS). The Time and Attendance (TRS) for UC Hastings was implemented in the AWS cloud with plans to move UCI TRS to the cloud. We implemented a secure shared core services environment in AWS cloud to support the migration of applications to AWS, moved over 60 websites to AWS, and are keeping long-term backups in AWS Glacier.
- **Network, Telephone and Radio Services** – We have replaced or upgraded the campus phone and voice mail systems and the campus radio system. We have completed year 3 of a 5-year network upgrade plan, including replacing the Facnet core, upgrading aging building routers in Langston Library, Aldrich Hall and Science Library, improving wireless network coverage and performance in strategic and high-density locations, and adding a 100 gigabit/second connection from CENIC (initially to the Lightpath research network).
- **Data Center Improvements** – We have improved reliability and high availability of services within the OIT Data Center and have improved server and storage infrastructure capacity planning. We have increased physical security controls and implemented a monitoring and control system to alert and notify us of problems and to automate failover to redundant systems.
- **IT Accessibility Program** – Compliance with the UC IT accessibility policy is challenging given the distributed nature of information technology at each campus and the lack of dedicated resources. UCI is working on an IT accessibility approach that includes a mix of representatives from OIT and campus stakeholders. The intent is to provide a sustainable IT accessibility program for UCI that directly addresses policy requirements, along with communication and outreach, monitoring, and centralized vendor management (captioning products and services).

2. Support academic goals through educational and research computing.

- **LCFF+** – Three project proposals were accepted for one-time LCFF+ funding: enabling new student success support opportunities, improving access to key data sources, and providing an IT solution to current manual processes around student support scheduling.
- **Campus Technology Improvements and eTech** – Classroom, Lab and associated facility equipment refreshes continue, with an emphasis on smart classroom technology that integrates with course specific needs. We have improved classroom WiFi coverage and performance, deployed a 2nd innovative classroom on campus, initiated several proof of concept projects in video management, wireless presentation, and RFID equipment tagging and tracking. The Anteater Learning Pavilion building construction is under way. It will include 8 active learning classrooms ranging from 60 to 400 seats that OIT will help support.
- **Canvas Instructional Learning Platform** – the transition to Instructure Canvas learning management system includes increased focus on training and support for instructors, staff, and students. We re-implemented unique EEE functionality as modular services that can be used stand-alone and/or be integrated with the campus Canvas environment. See sites.uci.edu/canvas/
- **Operational Streamlining for Platform Management** – Collaborating with Cal State Fullerton, we rolled out virtual computing labs to all of campus as a service. We have created a new mechanism to monitor and address classroom facility issues and merged the classroom and lab support with managed desktop support groups for better operational synergies. We are standardizing and automating the management of distributed Apple devices.
- **Compass Initiative** – Compass is a multipart “student success” project under the direction of the Vice Provost for Teaching and Learning. It will focus on bringing relevant student data into new reporting tools, providing campus advisors, faculty, and (eventually) students themselves with actionable information to improve student outcomes. Initial delivery was a set of Cognos reports for campus advisors that will lead to greater flexibility in student data retrieval and analysis. Longer term plans include expanded access to data (see LCFF+ projects) for advisors and analysts to continue to build the foundation of student success analytics at UCI.
- **Research Cyberinfrastructure** – the RCI Center proposal was approved with initial funding for staffing build-out and infrastructure refresh. Next steps include building out the RCI Center starting with hiring a director, system administrators, ‘domain scientists’, and support staff, bolstering of infrastructure health and capabilities, and upgrading and renewing UCI’s compute clusters to bring UCI into closer parity with similar R1 institutions. The RCIC plans to initiate construction of a scalable storage system that can be accessed by all researchers and leveraged to provide the multiple types of storage and data sharing that assist research endeavors providing increased support for research Data Management and Curation. Another goal is to establish a widely-available and scalable Research Desktop Computing Environment (RDCE) to facilitate computational and data science research and teaching. See sites.uci.edu/rci

- **Secure Research Environment (SRE)** – the RCIC and OIT built a proof of concept for secure storage and computation, serving School of Social Ecology research groups with the intent to scale to other secure research needs across UCI. The environment conforms with the new NIST/FISMA security standards for sponsored research and provides new options for future research needs. A pilot service is being tested by faculty in the schools of Social Ecology, Social Science, and Education.
- **eSports Facility** – OIT provided significant support for UCI's eSports initiative, which is being delivered by Student Affairs. The initiative established a dedicated facility for competition, leisure, and academics. The facility uses high-performance technology to support both students as well as the broader campus community. Faculty will be able to plan research centered on gaming psychology in addition to utilizing the facility as a lab for testing out gaming design and development. Competition is the soul of the facility with a team of players who will compete in tournaments and events against other universities. See <http://esports.uci.edu/>
- **Grad Expo Cap and Gown** – Grad Expo is an event hosted by the Alumni Association (UCIAA) and the Bookstore, where graduating students purchase their commencement regalia. OIT developed the Cap and Gown application to allow students to place orders at self-service stations, including the choice to divert a portion of their order payments to fund scholarships. Diversion is a form of alumni giving, which is a metric in university rankings. By working closely with UCIAA, OIT developed a new ordering workflow to improve the diversion rate by nearly 25 percentage points. We also added new reporting tools to simplify the reconciliation process for UCIAA staff.

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

- **Retiring Legacy Systems and Infrastructure** – Locally managed email, identity management and legacy mainframe documents (EDL) have been retired reducing software costs, simplifying support and reduced daily paper printing of reports by 90%. Legacy HR electronic records, background check, and AP executive files systems are all planned to migrate to the new secure document management system. OIT's legacy billing system has been migrated to the new Pinnacle platform.
- **Student Information System** – OIT is heavily involved in the SIS project along with business unit stakeholders. The project is well under way with numerous Banner configurations being implemented. Undergraduate Admissions went live with SLATE CRM for email campaigns to prospective students. Undergraduate and Graduate Admissions will go live in Sept 2018 using the SLATE product. See sisproject.uci.edu
- **Kuali and Financial Systems IT** – Accounting and OIT implemented controls to protect data integrity, made workflow improvements to streamline speed and visibility of processes, enhanced the PI Report system to track and manage research expenditures, and enhanced the Payroll Certification System for all Principal Investigators to use as an alternative to traditional sponsored projects effort reporting. The focus has been on automation and resolving issues identified by the campus. OIT, Accounting and its other business partners began work on upgrading KFS from version 4.1 to version 7.x (latest version).

- **Research Administration** – Working with the Office of Research, we deployed KC Negotiations for Federal Awards, KC Clinical Trial Tracking, KC Conflict of Interest, KC-Cayuse Integration for proposal submissions, and various systems enhancements to match SPA organizational changes. The Research Management System (Tick@Lab) went live for animal research protocol management, animal procurement/management and ULAR service billing. The Research Administration Data Warehouse was developed for improved internal reporting of sponsored research proposal and award data. Proposal/Award Annual Reports and Monthly/Quarterly Reports were developed and delivered via Cognos. Going forward, OR and OIT will migrate Quali Coeus to the latest version of Quali Research, begin on the KR Award module implementation, and continue building out the Research Administration Data Warehouse and enable access for schools, departments and other campus units.
- **Data Warehouse and Electronic Document Management** – The data warehouse has experienced rapid growth with the modeling of financial, payroll, HR, purchasing, budget, student and research data stores this year. Many more useful reports and dashboards were added in 2016. FileNet is replacing distributed document management systems as well as being tied in with KFS data. FileNet continues to mature as a secure document storage platform which is driving a number of campus customers to plan migrations onto the platform. Going forward, we will be supporting major campus projects (SIS, KFS and UC Path), as well as building out more self-service data reporting and training for campus.
- **Facilities Management** – In collaboration with Facilities Management, we rolled out a new implementation of Capital Projects for Facilities Management with many new features and capabilities. This project involved a year of collaboration between Facilities Management business users and OIT personnel. In the past, a project of this scope would have been executed by an IBM Tririga partner but in this case, the OIT Facilities team developed the technical expertise to implement this in-house. Tririga Capital Projects was designed and deployed to support the Quali Financial System (KFS).
- **Transportation and Distribution Services** – We developed the Park by Plate service and the new BOTS bike registration system as well as enhanced the inField parking enforcement system.
- **Webfiles** – The Webfiles service was upgraded, providing better stability and security (encryption), and a refreshed user interface.
- **UC Recruit** – The partnership among OIT, Academic Personnel at UCI and across UC campuses continues to facilitate use and enhancements of the UC Recruit system. This year Recruit became the one place where campuses can conduct and track all of their academic hires by incorporating recruitments, waivers, and exemptions. This unifies the academic hiring experience and provides UCOP with improved and simplified capabilities for reporting and analysis. Additionally, we have made accessibility improvements to Recruit – this is a continuous initiative that includes adding captions to Recruit training videos, adding HTML tags and skip-to-content navigation for screen readers throughout Recruit, and applying other techniques to make our product more accessible. We also welcomed UCANR to the UC Recruit system – the UC division of Agriculture and Natural Resources is the 11th location to use UC Recruit.

- **UCPath** – UCI has made good progress in working with the 90+ systems and offices that depend on payroll and HR data across the campus and Medical Center. Integration design work continues with the central team as well as the support of the Pilot and Deployment 1 locations.
- **OEOD** – OIT helped the Office of Equal Opportunity and Diversity (OEOD) migrate from their legacy case management system to a modern, commercial application. This application, also used by other UC campuses, will reduce the amount of paperwork and provide better tracking of cases for the university community.

4. Evolve as an enterprise IT organization through continual improvement.

- **IT Service Management Platform** – Significant progress has been made on harmonizing OIT work into incidents, requests, changes and projects which are all now being tracked in a unified work management platform – ServiceNow. Service data is now driving decisions regarding resources, funding, work prioritization and critical events. Emphasis going forward will be around tracking distributed assets and managing dependencies in a real-time database, centralized change control, and growing the number of self-service request processes and workflows.
- **Strategic Cost Management** – High value vendor contracts (Cisco, IBM, ServiceNow, etc) are being negotiated to better leverage the scale of the UC system for deeper discounts where possible. Where feasible, we have used a pre-paid multi-year strategy for contracts to lock in rates for years and achieve up-front discounts. We have also made good use of implementation partners and contractors to help scale up labor on demand without committing to long term staffing. We are expanding our recharge service offerings and validating existing service charges against actual costs.
- **Improve Interoperability, Scalability, Flexibility** – The IT Architecture Review Board (ARB) was formed to address enterprise architecture and has published dozens of standards, reviewed tools and developed technical recommendations. The ARB implemented technical standards, mandatory review of new architecturally significant projects, rollout and publication of campus guidance on approved technologies.
- **Campus Support Streamlining Improvements** – Many OIT groups have switched their service support models to leverage central infrastructure and service teams, allowing IT staff resources to be more effectively allocated. Going forward, we will continue to move local workloads to centralized service groups and review OIT's internal delivery processes with the intent to streamline for better results in quality and time to delivery.

- **Customer Service Program** – we implemented a customer satisfaction survey with detailed service metrics. Many of the changes OIT made in 2016-17 were driven by customer requests and comments. We created a new Help Center and other customer information pages (Bits and Bytes, What’s Happening). We are developing internal Customer service training to improve OIT-customer interactions. Other training is being planned in partnership with service groups regarding campus facing communications and training. OIT will be reaching out to major constituencies with information about services, service improvements, and soliciting addition community guidance. We launched a new self-service portal in ServiceNow (OIT’s service management software). We implemented Portfolio Management of Services and Initiatives to improve project tracking. OIT now has the ability to systematically review the top projects on a regular basis for obstacles, changes in direction, funding needs and relative prioritization. Additionally, with service data now gleaned from the customer satisfaction survey we can look at the portfolio holistically and make strategic decisions about where OIT’s service focus should be. We implemented critical decision gates for major projects around technical design and change in scope, cost or schedule.

5. Foster technology innovation and collaboration with campus and externally.

- **UC Data Center collaboration** – UCI is making use of San Diego Supercomputer Center (SDSC) hosting services at UCSD to house a redundant data center site to provide business continuity and rapid recovery in the event of a disaster affecting critical UCI campus infrastructure.
- **CSU Fullerton VCL collaboration** – The Virtual Computing Lab (VCL) capabilities OIT is providing UCI students mentioned earlier uses California State University Fullerton’s (CSUF) Virtual Computing Lab services. UCI and CSUF have partnered to expand the use of VCL while funding CSUF to further develop the VCL service.
- **Kuali Community** – UCI is an active, sustaining partner with both the Kuali Financial System and Kuali Research consortiums. Business unit and technical representatives from OIT and across campus participate actively in Kuali communities to help sustain and expand these essential, community-source software systems. UCI’s CIO is the current chair of the Kuali Foundation KFS Executive Sponsor Team (EST).
- **Instructional Technology Workshop offerings for instructors** – OIT is working with the Division of Teaching and Learning and other 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.
- **UCI GitHub** – GitHub helps developers keep track of changes to code. It helps keep revisions straight and stores modifications in a central repository so developers can collaborate. Every developer can see the new changes, download them, and contribute. UCI now has two GitHub’s: one for employees and one for academic use.

- **Santa Ana/UCI Innovation grant** – OIT has established a server and is configuring a database and Tableau data analysis software. As part of the Center for Educational Partnerships (CFEP's) Innovation Grant, the Santa Ana Partnership (SAP) is exploring using Tableau Desktop and Server to develop dashboards to report on Santa Ana Unified School District (SAUSD) students college going rate to Santa Ana College (SAC), California State University, Fullerton (CSUF) or University of California, Irvine (UCI). The project will involve sharing data from each institution.
- **Zoom** – The affordable new teleconferencing software, chosen by a UC system-wide RFP, is now available to faculty and staff at UCI. OIT is promoting and supporting the use of this flexible tool, but licensing remains under local departmental control.