Chief Information Officer

Annual Report 2015

Berkeley
UNIVERSITY OF CALIFORNIA

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View this report online: technology.berkeley.edu/annual-report

To our campus community,

Technology touches all our lives at many points every day here at UC Berkeley. We in IT aim to serve our students, faculty, and staff proactively, so that the tools you need to do your work function seamlessly and responsively when you need them. From checking your email, to accessing course information, to connecting and collaborating with colleagues near and far, our community of IT professionals are working together to help redefine what is possible for students and faculty, so they can redefine what's possible for the world. To that end, we focus on:

1. Building research environments that enable academics to create new knowledge;
2. Providing tools and support that make it easier to learn, collaborate, teach and discover;
3. Sustaining the technology infrastructure and managing the data that power the campus experience.

This past year we've completed many projects outlined in our IT Action Plan and continued to build partnerships campus-wide, while maintaining and improving our core systems and services. The IT Action Plan projects and initiatives support both immediate and longer-term needs for our community while enabling University leadership strategies and objectives. This annual report highlights some of the accomplishments in 2015 and shares some of the exciting goals we have planned for 2016.

For a more comprehensive list of all our projects, please visit:

- Projects Completed in 2015 for all projects and major milestones completed last year.
- Campus IT Action Plan to view projects currently in progress.

On behalf of the IT Leadership Group, I'd like to thank our One IT family of dedicated professionals across campus whose daily contributions allow us, together, to meet our goals and deliver on our commitment to continuous improvement of our campus customer experiences.

CIO Larry Conrad stands with the Savio servers, providing high performance computing to campus researchers and supporting students learning computational method.

"Our community of IT professionals are working together to help redefine what is possible for students and faculty, so they can redefine what's possible for the world."

Larry Conrad,
Associate Vice Chancellor for IT and
Chief Information Officer

Supporting University Goals

Everything we do in IT aims to not only empower our community of students, faculty, and staff in their daily work, but also support the institutional goals set forth by campus leadership. As you review our accomplishments over the past year and some of our 2016 objectives, use the key below as a reference to help demonstrate how these goals align.

Chancellor Dirks Pillars

- D1 Undergraduate Education
- D2 Innovation in Research
- D3 Global Engagement
- D4 Promoting the Arts

Executive Vice Chancellor and Provost (EVCP) Claude Steele Strategic Initiatives

- S1 Undergraduate Education
- S2 Campus Climate
- S3 Fundraising 2.0
- S4 Financial Reform

Vice Chancellor for Administration and Finance (VCAF) John Wilton Goals

- W1 Achieve Financial Strength
- W2 Foster Administrative Excellence
- W3 Establish & Maintain a Robust Campus Infrastructure & Safe, Healthy Campus Environment

Chief Information Officer (CIO) Larry Conrad IT Action Plan

- C1 Focus on Fundamentals of IT Service Management
- C2 Deliver Excellent Customer Service
- C3 Implement Governance and Expand Customer Engagement
- C4 Improve Security of University Data and IT Assets
- C5 Improve Research, Teaching, and Learning Technologies
- C6 Enable Campus Shared Services
- C7 Continuous Improvement of IT Applications and Services

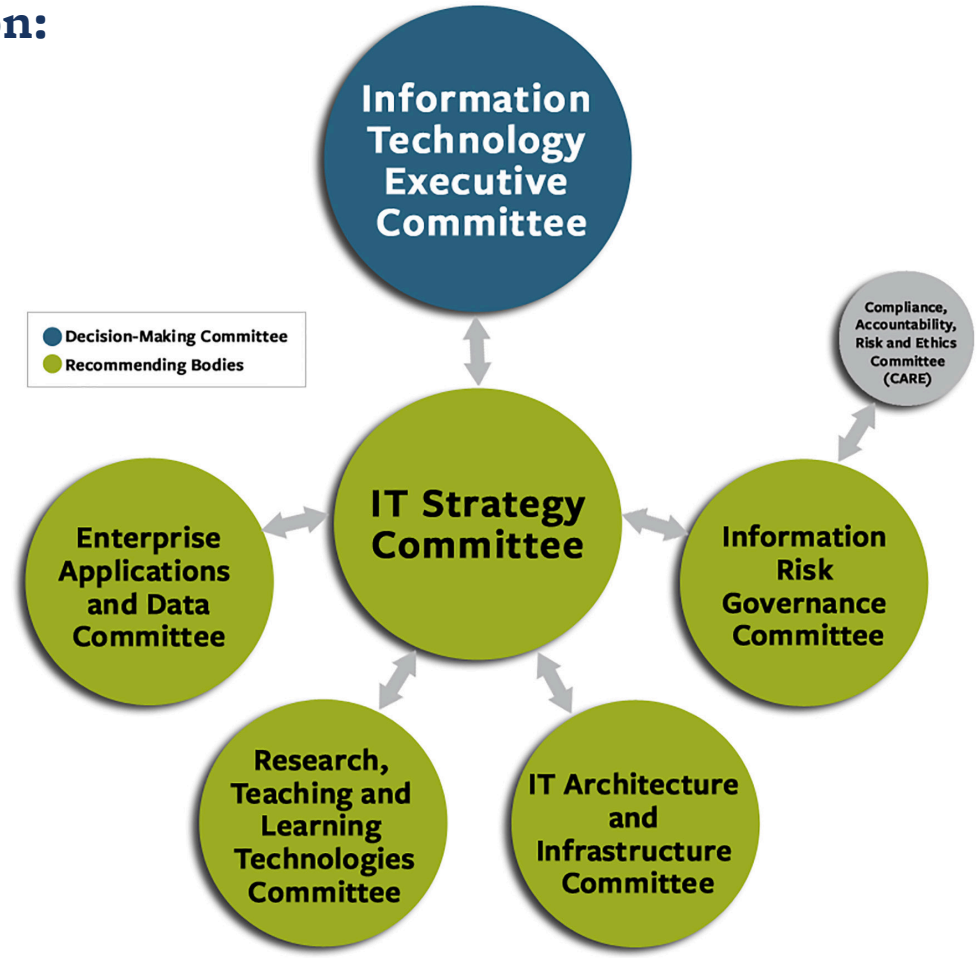
Looking Back | Forward

In the following pages we share highlights from our campus-wide IT Action Plan as well as select future goals. Please visit technology.berkeley.edu/action-plan for a more comprehensive look at everything in progress and completed to date.

Laying the Foundation: IT Governance

S2 S4 W1 W2 W3 C3

In 2015, we implemented a new campus-wide IT Governance structure. Each of the governance committees spent the year working on identifying the areas of strategic focus to develop roadmaps and started to discuss a number of longer term topics. Two key outcomes were the development of a campus-wide Project Management Policy, and a proposed IT Operating Model initiative, both of which were given final approval by ITEC in December. More information about the IT Governance model can be found at technology.berkeley.edu/governance.



"The vision for IT at UC Berkeley is to enable the mission of the campus through efficient and effective delivery of IT services, supported by a rationalized funding model and overseen by a strategically focused, collaborative IT governance model."

Liz Marsh, Director
Strategic Initiatives and Chief of Staff
Office of the Chief Information Officer

In the context of our current financial reality, we must continue to pursue increased efficiency and cost savings, both to reduce the overall IT spend and to allow us to redirect funds to emerging strategic priorities. The proposed project aims to transform the IT Operating Model to not just collaborate as One IT across campus like we do today, but operate as One IT to achieve efficiencies and enable more strategic alignment and decision-making for the campus IT portfolio. Goals of this project include:

- Reducing the campus IT operating budget.
- Rationalizing the IT funding model to reduce complexity and administrative overhead.
- Leveraging the IT governance model to prioritize and manage the campus IT portfolio.
- Enabling the campus to make trade-offs between existing services and emerging needs.
- Minimizing IT expense growth in the face of increasing demand.

One IT: Building Community and Enabling Collaboration

S2 W2 W3 C2 C3

Entering the third year of this program, we continued to co-sponsor One IT events every few months throughout the year. These events are aimed to increase engagement with the campus IT community, improve partnerships, identify potential for collaboration, and align strategies toward delivering IT services in a more effective and coordinated way. Each event includes opportunities for participants to network with IT colleagues and engage with leadership.

- March 3, CSS IT Open House
- April 8, Building a Bridge hosted by the SIS Project
- June 8-10, IT Summit 2015: Sharing Success and Rising to the Challenge
- July 29, 2nd Annual One IT Community Picnic with SAIT
- Oct. 21, You're IT! One IT Staff Appreciation sponsored by ITLG

Visit technology.berkeley.edu/one-it to view photos of past events and see what we have planned for 2016.

co-sponsored 5 campus events plus outreach at UCCSC

350+ attended 3 days of sessions at the IT Summit

17 sessions offered by different IT teams & leaders

Pay IT Forward program 250+ recipients

"I liked learning about the cool IT projects that are in progress on campus and being amongst my peers; meeting new people and rediscovering colleagues from the past."

- IT Summit Participant

save the date

BUILDING THE FUTURE OF IT @ UC BERKELEY

IT Summit - May 24, 2016

Protecting our Community Against Ongoing Threats

W3 C4

Securing our personal and University data from compromise is an ongoing challenge as attackers become more sophisticated with their methods.

This year, the Security team:

- Completed foundational improvements to expand security operations capabilities against the growing number of threats that attempt to tap into our campus community.
- Supported campus units and contracting offices with a new privacy and data security contracts review program to set minimum standards.
- Convened the newly formed Information Risk Governance Committee (IRGC) to address privacy and information security balancing. Learn more at technology.berkeley.edu/IRGC.

Understanding that we each play an important role in securing the devices and networks we use, we enhanced our training and awareness program to include an ongoing educational campaign to provide security tips and best practices to the campus. These resources can be accessed at security.berkeley.edu/resources/phishing.

"We need our campus community to know that phishing attacks and stolen CalNet credentials remain the top threats to our individual and institutional online security."

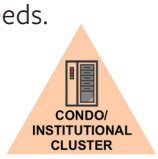
Paul Rivers,
Chief Information Security Officer

Berkeley Research Computing (BRC): Redefining What's Possible for Researchers

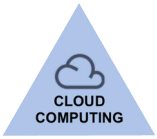
D2 S1 W2 C5

This year, Research IT's Berkeley Research Computing (BRC) program expanded the services that support research across a range of computation and data analysis needs.

Consulting and Community – BRC includes consulting that ensures faculty are matched to the appropriate resources, and that the computation and data resources meet their needs.



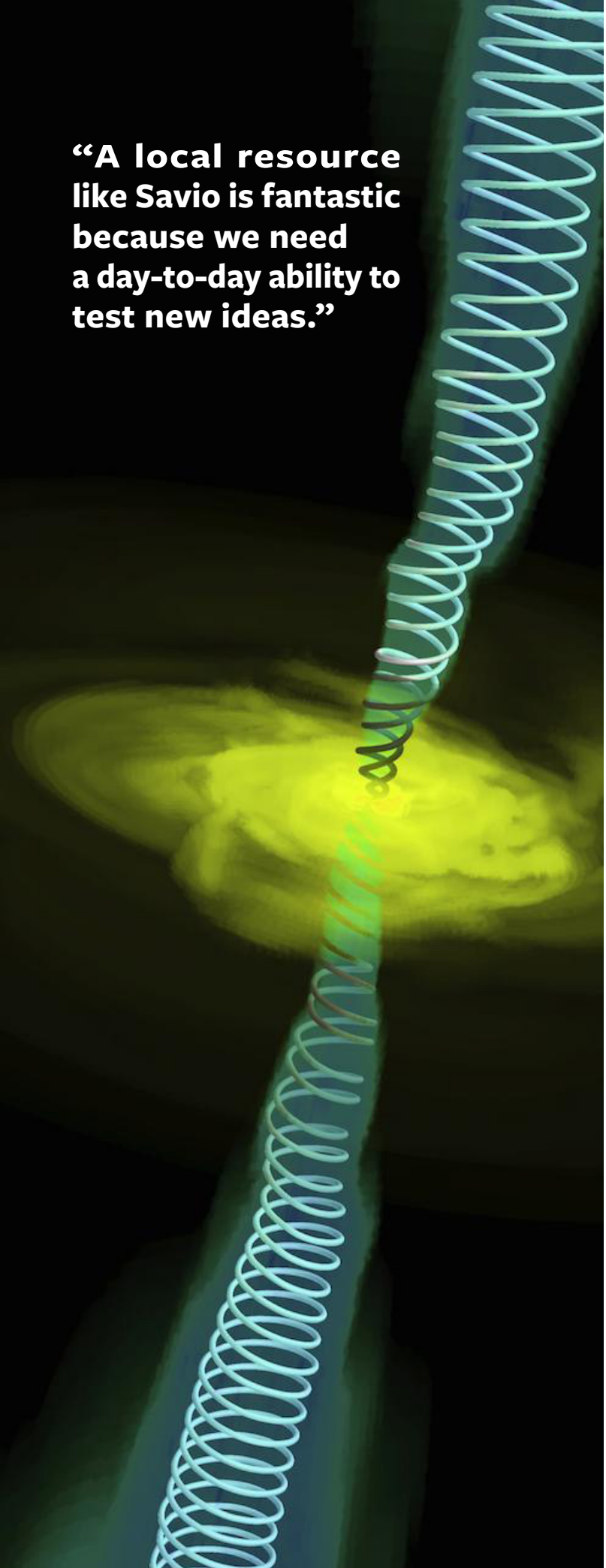
Savio Condo/Institutional Cluster – BRC significantly expanded the capacity of the Savio High Performance Computing (HPC) cluster, and new computing models were added to support additional types of workflows across a broad range of research domains. The BRC condo program has seen rapid adoption, along with a jump in the number of users on Savio as additional researchers took advantage of the Faculty Computing Allowance launched in May 2015. At no cost, each UC Berkeley faculty member is eligible for an allowance of up to 200,000 core-hours of computation per academic year on Savio. This annual faculty allowance can be written into start-up and retention letters and can be used as institutional cost-share on grant proposals. Visit research-it.berkeley.edu/brc/fca to learn more.



Cloud Computing – To help accommodate the growing demand for cloud computing resources from UC Berkeley faculty and other campus researchers, the BRC team has launched a Cloud Computing Support service, consisting of consulting services, documentation, and tools to help facilitate cloud computing access.

Analytics Environments On-Demand (Æod) – Researchers need easy access to analytic computing environments that are designed to fit their needs. BRC's new Analytics Environments On-Demand service, currently under development, is intended for researchers who need to run analytic software packages (such as Stata, SPSS, R Studio, etc.) on a platform that is scaled up from a standard laptop or workstation, in an environment that is readily accessible and secure.

faculty in 16 departments and labs across campus have contributed over 3,700 compute cores to Savio, with a combined value of nearly $1,000,000



Savio helps Berkeley astrophysicists achieve breakthroughs in understanding of black hole behavior

“Around a black hole, there is whirlpool of material, the ‘accretion disk’, which glows (radiates) as it falls into the black hole. As gas falls in, the tremendous heat strips protons and electrons apart. Most simulations model protons (which get most of the heat), but we had no idea what the electrons are doing, and they are what radiate. The existing models assumed electrons are cooler, but their predictions did not match observations of radiation detected from Sagittarius A* [the black hole at the center of our Milky Way Galaxy]. Monica Moscibrodzka and collaborators found they needed to ‘paint’ the regions above and below black holes with high temperature, high energy electrons. That model matches observations, but it does not explain why electrons are hot. We took a forward modeling approach. We started from simulations, and added our best understanding of the physics of electrons. We used Savio to test and refine the models, ran the simulations for weeks, and computed and analyzed the resulting radiated spectra and images. We got results that matched observations! Electrons are heated more effectively in regions of high magnetic fields, which explains the observed phenomena. This is an important fundamental result for a question that people have been looking at for some time. A local resource like Savio is fantastic because we need a day-to-day ability to test new ideas.”

Alexander Tchekhovskoy,
post-doc in UC Berkeley’s Theoretical Astrophysics Center working with Eliot Quataert, Director of the Center

Providing Tools to Support UC Berkeley's Mission

Improving Institutional Decision Making

D1 S1 W2 C7

Cal Answers is an analytical tool that allows the UC Berkeley community to view centralized, integrated information about students, finance, research, and human resources, culled from various campus systems. The tool makes data accessible to all, enabling staff, faculty, and students to locate reliable, consistent answers to critical campus questions. Whether you're developing your unit's annual budget, managing your financial aid offerings, reviewing last month's on-contract spending, or researching your students' graduation rates, Cal Answers can help you find the data to inform your work.

Throughout the past year and continuing into 2016, the IST Enterprise Data Warehouse team, in partnership with the campus CFO, Human Resources and other functional partners, has developed new dashboards to enhance the user experience and the usefulness of the data provided by Cal Answers:

- Staff Retirement Metrics - enables workforce strategy planning and risk analysis by provide data that can help managers anticipate their retirement attrition and plan for it. Intuitive interface and compelling visualization provide managers a helpful tool to understand their workforce and better plan resources.
- Graduation, Retention and Time to Degree - makes it easier to compare student data, find answers to questions about student graduation and retention rates, and see trends.
- What's Next: In spring 2016 the PI Portfolio dashboard will include the ability to create and review financial projections for faculty-managed funds and sponsored awards utilizing a Chartfield2 (CF2).

Visit calanswers.berkeley.edu to learn more about the data available in the tool and to and use your CalNet authentication info to login and view the dashboards.

Mining the Data

"When I first started in CED I created a very simple student demographic snapshot, with help from people I knew who had access to institutional data. A couple of years ago, Berkeley launched Cal Answers. This allowed us to easily see how our college population compared to the other colleges and to the campus as a whole on a number of demographic factors. It also prompted us to ask more questions about the student experience, based on what the data was telling us. We learned that, not only was our college home to the highest percentage of first generation and low-income students, but that we were home to the highest percentage of historically underrepresented minority students.

We realized we needed to get a better handle on costs associated with studio classes so we created a studio expenses inventory, with help from our students. We discovered that our college has the highest percentage of Pell Grant recipients and one of the most expensive programs in terms of materials and supplies. We were putting our students in an impossible situation.

Our advising team began proactively identifying financial barriers and brainstorming ways to remove/reduce them.

As a result we:

- **Made financial aid budget appeal materials easily accessible to all (on the web and in our major handbooks).**
- **Created a computer lab and fabrication shop fee waiver program for our Pell/Dream recipients.**
- **Created an in-house materials store to sell supplies more conveniently, with a percentage of profit going into the fee waiver program.**
- **Approached financial aid about increasing the standard budget for students in studio courses.**
- **Created a fundraising effort to help cover facility fees for our Pell recipients.**
- **Started asking more specific questions in our Senior Exit Survey.**

One of our next efforts will be to educate our faculty on our students' socio-economic demographics to help them better understand the impact of their assignments and expectations.

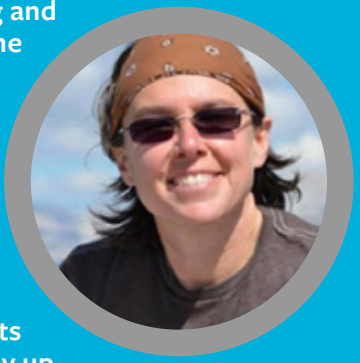
Susan Hagstrom,
Director of Undergraduate Advising
in the College of Environmental Design

Progress on the SIS Project

D1 S1 W2 C7

Student Information Systems (SIS) is UC Berkeley's largest, most complex, and most comprehensive student technology project in the past 30 years. By investing in the modern technology behind SIS, Berkeley will transform the student experience to match our information technology with our University's high caliber of faculty and students.

Berkeley is investing in our future. With University leadership support, SIS is consolidating and modernizing 187 existing information systems into one integrated software solution. The new SIS will include all crucial student information: admissions, financial aid, registration, enrollment, course management, advising, billing and payment, records, and more. When the project is completed in the fall of 2016, students will access all of their key information through a single point-of-entry: CalCentral.



From the start, the project team has partnered with students, faculty, functional experts, campus leaders, and technology colleagues to design, develop, test, and roll-out the new SIS. In 2015, SIS completed three out of seven go-lives. The remaining four go-lives will be completed by September 2016. In the end, our entire campus community will enjoy the benefits of a more reliable, secure, fully-integrated student information system that will set Berkeley up for a brighter future for our students and our University.

Angela Blackstone,
Senior SIS Project Executive & ACIO

Go-Live 1: June 2015

Launched "Outreach to Prospects" module, a new technology that combines several separate applications into one tool that enables prospective students to complete a student interest form and register for presentations. Staff will ultimately enjoy the streamlined ease of facilitating a student's progress through each stage of admission, from prospect to enrollment.

Go-Live 2: Aug. 2015

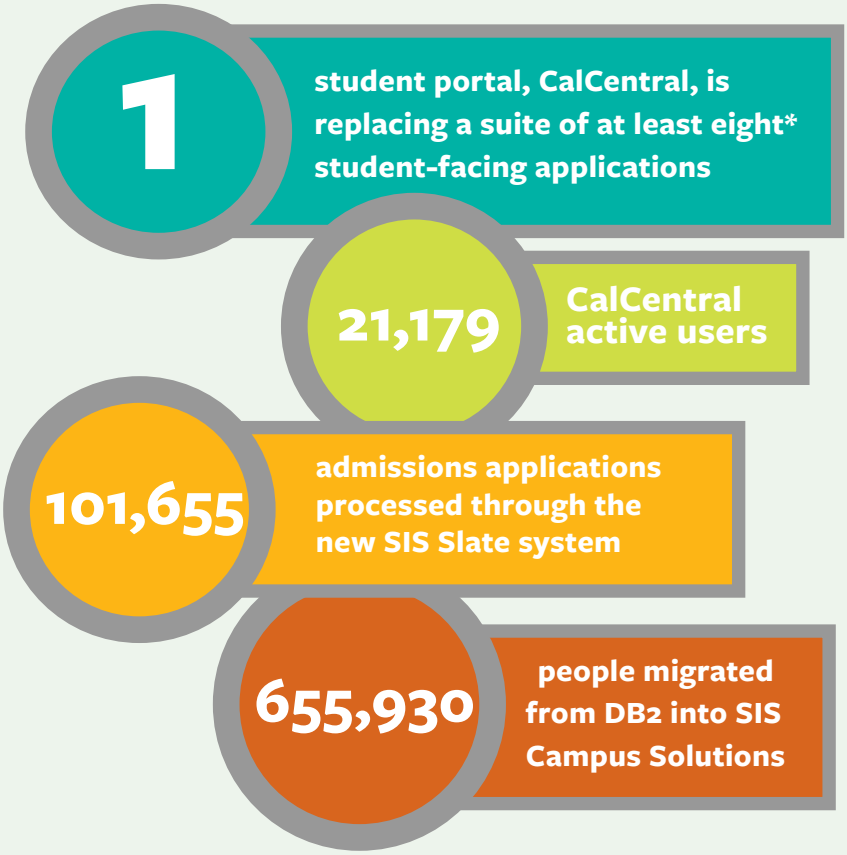
Began the conversion of course catalog data to the new SIS and the creation of bio-demographic data. Also launched new functionality for Fall 2016 class scheduling and tools for managing student applications.

Go-Live 3: Dec. 2015

Enabled UC Berkeley students to update their profile information in CalCentral, and allowed admitted graduate and professional students to process their Statement of Intent to Register (SIR) and receive campus onboarding messages and checklists in CalCentral. Student groups and staff can also now make classroom reservations for events in fall semester 2016 through SIS.

Go-Live 4: Feb. 2016

Allowed fall semester 2016 admitted undergraduate students to use CalCentral to process their Statement of Intent to Register (SIR) and receive campus onboarding messages and checklists. Now, Undergraduate Admissions staff can use SIS to admit the new cohort of fall semester 2016 freshmen, and Financial Aid and Scholarships Office (FASO) staff will access 2016-17 awarding cycle functionality in SIS. The new SIS functionality also enabled Admissions staff to admit a limited number of high-achieving and high-potential undergraduate students early for the first time.



*Tele-BEARS, BearFacts, mBA, myFinAid, ScheduleBuilder, DARS , bHive, and CARS

Learn more about this project and view a detailed timeline at sisproject.berkeley.edu.

New LMS Improves the Experience for Instructors and their Students

D1 S1 W2 C7

Spring 2015 marked an important closing milestone in the Learning Management System (LMS) Replacement Project, with bCourses fully replacing the legacy bSpace LMS. Educational Technology Services (ETS) provided numerous tools and resources to help users prepare for the retirement of bSpace, and worked closely with the bConnected Team (bDrive, Box, and CalShare) to help users find the right location to archive files.

bCourses is integrated with ETS's Academic Integrity, Clickers, CalCentral, and Course Capture services. Instructors can create new or upload existing course materials and build graded activities within bCourses, while also using it to communicate with and provide feedback to students. It offers a variety of built-in assessment tools, as well as an opportunity to integrate external tools to customize the course experience.

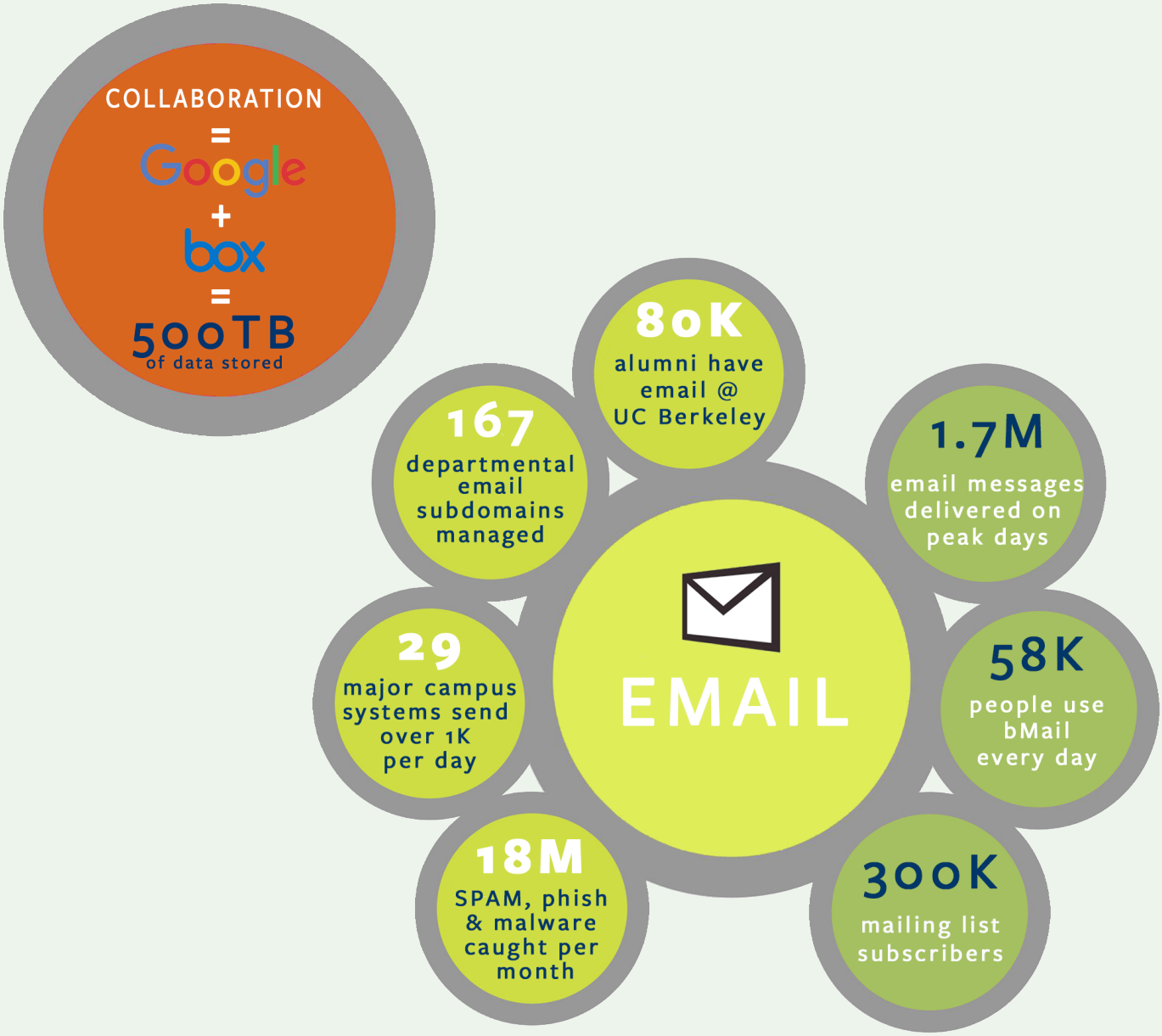
"I used bCourses to reach out to international students ahead of their first trip to campus to make sure they have the information they need for a successful day one at Berkeley. I incorporated online quizzes and other bCourses tools to enable the students to connect to each other and campus, and learn about the services the International Office provides ahead of their arrival. Nearly 2,000 students used the bCourses site in fall 2015."

Heidi Church,
Student Advisor
Berkeley International Office

Continuing to Enhance Ability to Collaborate and Communicate

D2 D3 S1 W2 C5 C7

bConnected provides a common set of powerful, industry-standard tools—including Google Apps for Education, Box, and SharePoint—that improve our ability to collaborate and communicate with the UC Berkeley community and beyond.

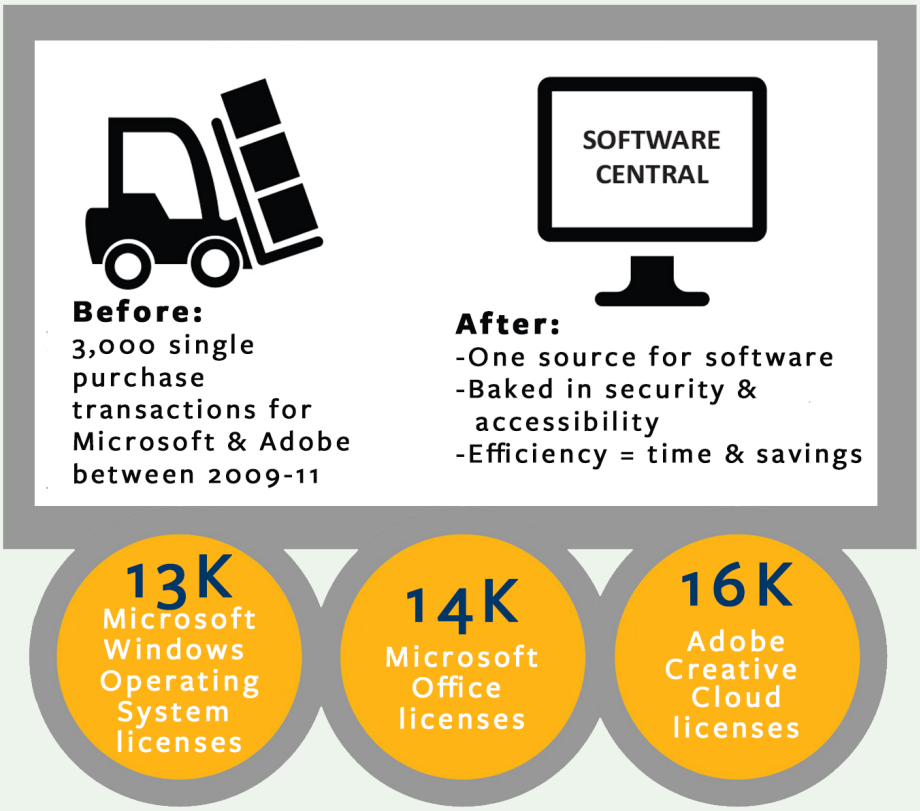


What's next:
Google Groups will replace CalMail mailing lists, providing a richer experience and better integration with bMail, Drive and Calendar. Google Groups will also integrate with CalGroups, allowing for institutional data changes to automatically update group membership within Google and across campus systems.

Improving Software Access and Management

D1 S1 W2 C2 C5 C6 C7

Software Central provides a wide set of campus licensed software to a broad population - faculty, staff, and students - while minimizing the administrative costs of delivery and management. Software Central affects nearly every department on campus by providing software packages for research, teaching, and administration. Available software includes Microsoft Office and Adobe Creative Cloud.



The Berkeley Desktop ecosystem provides a standardized, predictable, and cost-effective computing experience at no additional cost to departments and their users. More than 12,000 devices are now using Berkeley Desktop services. The cornerstone of The Berkeley Desktop is a preconfigured operating system (OS) - offered for both Windows and Mac. Along with the OS, managed machines receive updates and patches to critical vulnerabilities. Self-Service, a feature of The Berkeley Desktop, enables users to install among 50 popular software applications.

"We love the Berkeley Desktop; it has been integral to our efforts to promote standardization on campus. We know what to expect when a computer has The Berkeley Desktop, we find that troubleshooting is more efficient, downtime is minimized and the overall customer experience is improved. In addition, we are able to work with our clients to budget efficiently for computer refresh cycles several years in advance because of The Berkeley Desktop."

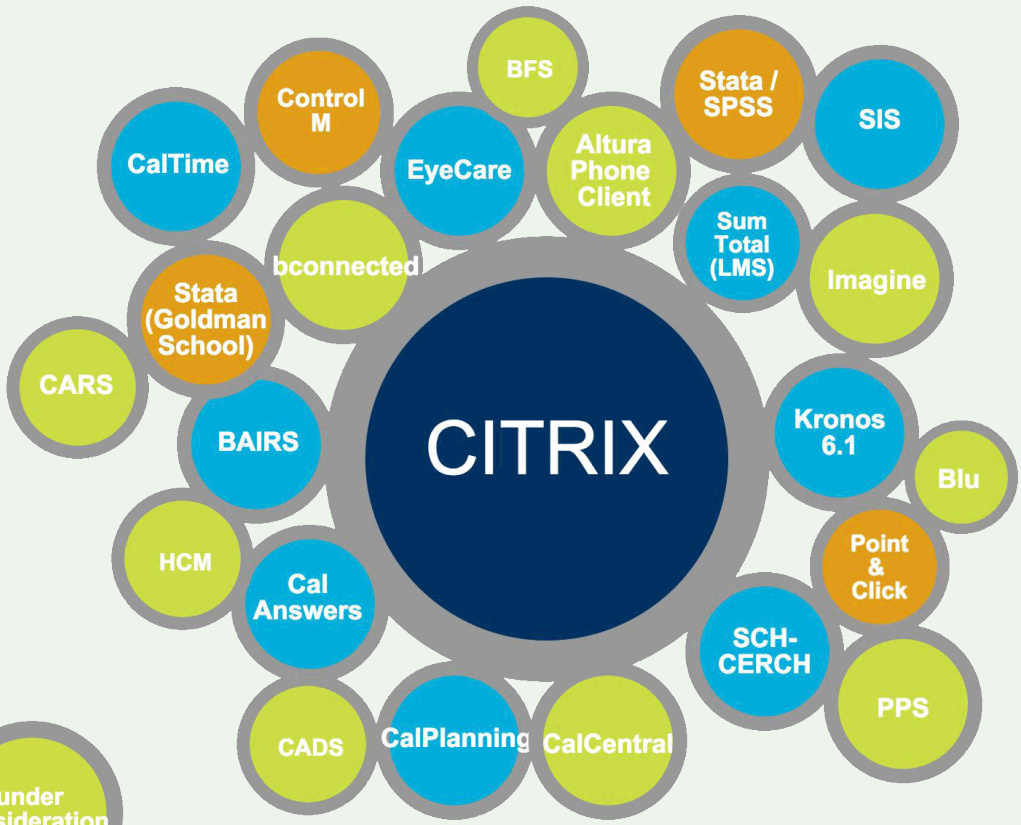
Shirley Davis,
Technical Support Supervisor
Campus Shared Services

Citrix Improves Security and Usability of Enterprise Applications

D1 D2 S1 S2 W2 W3 C2 C4 C5 C7

We have deployed Citrix technology to address the browser and plug-in issues on campus for enterprise applications. This has significantly improved the user experience of these applications, by providing a:

- Consistent and easy-to-use experience across Mac and PC platforms.
- Simplified experience, not needing to have multiple browsers and plugins installed on desktops or having to know the browser requirements for each application.
- Reduced browser Java security risk exposure for campus.
- Streamlined and more controllable campus computing.



Philip Weekly,
Director of Information Systems
School of Optometry Clinic

"Citrix has helped Optometry close deficiencies in the security and architecture of our Electronic Health Record (EHR) software solution. By utilizing the Citrix Gateway for the front-end access, it permitted us the ability to limit file level access to just a few virtual machines and improved our security."

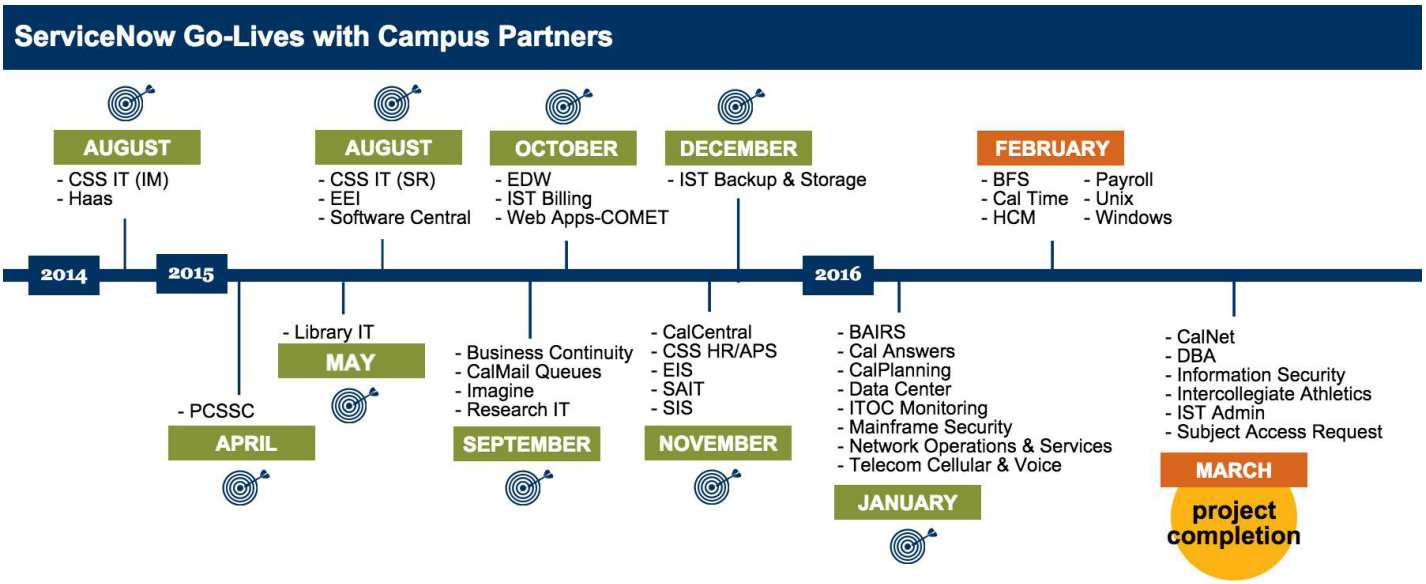
Maturing IT Service Management Delivery for Campus

ServiceNow Incident Management Improves IT Support Experience

S2 W2 C1 C2

We are working to improve the overall customer response and quality of resolution for IT support requests through the the implementation of incident and service request processes in ServiceNow.

Tracking requests for support that span different service teams has been a longstanding challenge for IT. In IST alone, there were over 40 distinct ways used to track incidents, each with its own business process, workflows and configuration. As a result, there was no way to track reported incidents from initiation through resolution across units or to perform root cause analysis to prevent problems from recurring, which lead to increased duplicative work and suboptimal customer service. The ServiceNow Incident and Request Management project has standardized IST, as well as other campus IT partners like Student Affairs IT (SAIT), Educational Technology Services (ETS), the SIS project, and Haas School of Business on a single tool -- ServiceNow -- and a limited, shared set of processes to enable more efficient and effective incident handling, improving customer experience.



"Implementing ServiceNow at Haas has made service delivery easier. We are now able to categorize incoming requests and are seeing the advantages of passing tickets directly to CSS IT."

Phil Mahoney,
Director Haas Technology Services

IT Portfolio Management: A New Project Management Policy

S2 W1 W2 C1

We have undertaken an ongoing and evolving set of activities that aim to strengthen project and portfolio management practices to improve the delivery of IT projects and to enable the IT governance model to more strategically manage the IT Services Portfolio.

Goals:

- Update the campus PM methodology in partnership with the Operational Excellence Program Office, Student Affairs IT Project Management Office, Educational Technology Services and Campus Budget Office project managers.
- Manage IT projects more rigorously as a portfolio.
- Develop a campus IT Project Management Policy to help ensure that campus IT projects meet their objectives by establishing a common and consistent set of project management (PM) best practices to reduce project risks and increase project successes.

As the culmination of a year-long effort, in December of 2015, the IT Project Management Policy was approved by the IT Executive Committee and was recently announced to campus. A number of resources to help prepare for the policy, which takes effect in January 2017, have been developed, including training, PM tools and more. Visit technology.berkeley.edu/pm-policy to review the policy and learn more about campus PM resources.

A New Service Catalog In The Works

S2 W2 C1 C2 C7

In an effort to improve transparency and discoverability of campus IT services, we are developing a single, centrally maintained IT service catalog. The catalog will provide consistent information for all in-scope services, including service definitions, SLAs, information about how to procure services, and more.

Working with CSS IT to Take Service to the Next Level

S2 W1 C6

IST is partnering with CSS IT to gain more clarity on roles and responsibilities regarding the delivery of IT services to our campus customers in an effort to continuously improve service. Under the leadership of Larry Conrad and Peggy Huston, a project has been initiated to move us to greater computer standardization across campus and working on other ways we can offer more efficient and cost effective solutions to our customers.

STC Gives Students a Voice in Campus Technology

D1 S1 W2 C5 C7

The Student Technology Council (STC) was created in 2009 with the intention of giving students a voice regarding campus technology. Since its formation, the SCT has met with numerous organizations and informing students of new technology initiatives and projects.

The SCT is an 11-member student-led organization that acts as an advisory body to the OCIO. The SCT strive to identify and address student technology needs on campus and also promote student technology by hosting events such as hackathons and web app competitions. The council is comprised of representatives from the ASUC, GA and the CSF as well as two staff members from Student Affairs IT.

PROJECTS:

SIS Replacement Project Involvement
- STC member on the Leadership Group.
- Marketed Decision Director to student body.
- Drafted use cases for vendor demos.

App Adoption
- Working with Code4Cal and Web App Competition participants to discuss potential collaboration with the University.
- Launched Mobile App Distribution (MAD) in partnership with campus Information Services and Technology (IST). MAD is a venue for student developers to release and promote their UC Berkeley centric mobile applications on the Apple App Store and Google Play Store under UC Berkeley's official accounts.

Student Technology Fee
- $51/semester fee for software packages and technology initiatives
- Fee passed during 2014 ASUC elections!

ACCOMPLISHMENTS:

Productivity Suite - improved student communications regarding availabilty of software and answering questions about software downloads.

Adobe Design Competition - tshirt competition using Adobe tools.

Code4Cal Hackathon - annnual hackathon for students to develop applications that benefit the campus.

Web App Competition - students are able to submit fully developed applications; winners include CalChat, Berkeleytime and Mainstackr.

bConnected - assisted in migration from CalMail to bMail and contributed to website FAQs.

Students at UC Berkeley's annual Cal Hacks intercollegiate hackathon

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