

Accomplishments Report

2016-17

**Student Information
Systems & Technology**
UC SANTA BARBARA

SIS&T 2017 Organization Chart



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SIS&T Executive Summary

Student Information Systems & Technology (SIS&T) provides information systems, communication solutions, and services to the division of Student Affairs that include Enrollment Management Services, Student Academic Programs and Wellness Services, Student Life, and Student Academic Support Services, as well as the Graduate Division and academic departments that support undergraduate and graduate education. Services provided include information systems planning, architecture, project management, application and database development, implementation of vendor solutions, business intelligence and data analysis services, marketing and communication, and the production operations of mission-critical information systems and applications. SIS&T provides ongoing support for business productivity tools, conference room maintenance, customer and technical support, network, security, and Student Affairs server and storage infrastructure.



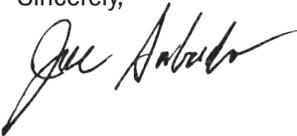
JOE SABADO,
Executive Director for
Student Information
Systems & Technology

SIS&T's success is built upon an enduring commitment to serve. In 2016-17, the department began a deep exploration of its strengths and values, which helped inform a new path forward. Exercises with internal staff included a StrengthsQuest analysis (to identify individual team members' skills), as well as a SWOT analysis (to assess the department's strengths, weaknesses, opportunities, and threats). SIS&T also conducted Appreciative Inquiry interviews with external partners and customers to confirm its internal findings and to learn about the upcoming needs of those it serves. A small

team of SIS&T staff further analyzed these data and began drafting a new strategic plan that will position the department for success beyond 2020.

The focus of this year's accomplishments report is on SIS&T's Guiding Principles: People, Process, and Philosophy. These principles reflect the culture of our organization, and supported by updated Vision and Mission statements, these principles will long guide SIS&T in providing effective, reliable, and resilient service in an ever-changing technological landscape. Learn more about our developing strategic plan and our units' many accomplishments in the following pages, and share your feedback with me at joesabado@ucsb.edu.

Sincerely,



Although comprised of many units, the SIS&T department functions as "One SIS&T," with a focus on the whole.

Snapshot: Strategic Plan | 2017-20

SIS&T is the second-largest IT organization on campus and the steward of much campus data. In 2016, SIS&T leadership directed a small and diverse group of staff to develop a strategic plan that would guide the department's direction through 2020. This team was charged with anticipating the evolving needs of a dynamic campus community, acknowledging the realities of constrained resources, reflecting the thoughtful input of its colleagues, and laying out a path for continued success. The Vision, Mission, Principles, and Themes that direct SIS&T's Goals, Objectives, and Initiatives are outlined below.

VISION

We transform the student experience and empower students' personal and academic success through information and communication technology.

MISSION

We provide Student Affairs and the broader UC Santa Barbara community with business-driven, secure, innovative, and technology-enabled solutions and services. We are solution-oriented professionals, lifelong learners, and collaborators who provide excellent customer service to help our partners achieve their goals and to promote the University mission.

PRINCIPLES

People

We seek diverse and inclusive perspectives. We perform as a team. We are committed to helping others.

Process

We pursue value and effectiveness in our work. We are disciplined in measuring and reporting our progress. We are flexible and adaptable.

Philosophy

We are an innovative, learning organization. We are committed to excellence. We do not define individual worth by organizational hierarchy.

THEMES

A Focus on Community

We are an engaged, talented, and inclusive organization that cultivates a student-centered service model; promotes effective communication and management practices; models personal and professional growth; and fosters a sustainable, forward-thinking culture.

Innovative Information & Communication Technology

We anticipate and adapt to the changing needs of our campus by leveraging modern and innovative services, solutions, and integrated systems that are reliable, available, serviceable, and secure (RASS). We endeavor to establish our University at the forefront of the technology curve.

Sustainable Planning & Collaboration

We partner with stakeholders to improve the IT ecosystem; streamline resource utilization; provide access to and promote the responsible use of data; and implement an appropriate funding model for SIS&T.

Student Information Systems & Software Development Overview

The Student Information Systems and Software Development Services (ISSD) unit is comprised of six teams that support the division of Student Affairs and the UCSB

campus at large: Admissions Information Systems (ADIS); Financial Aid Information Systems (FAIS); Graduate Division Information Systems (GDIS); Registrar Information Systems (RGIS); Student Health Services and Counseling &

Psychological Services Information Systems (SHS/CAPS IS); and Student Services Information Systems (SSIS).

ISSD had another successful year of supporting campus by espousing the SIS&T guiding principles of People, Process, and Philosophy.

PEOPLE

Each ISSD unit works very closely with its associated business unit(s), maintaining strong relationships, coming to understand their business very well. Furthermore, each unit works with others in ISSD to implement crosscutting solutions. A good example of this is when multiple ISSD units had to manage Gaucho Health Insurance (GHI) grant changes, aimed at raising coverage rates for UCSB student participants. The changes required the SHS/CAPS IS unit to work with the FAIS and RGIS units to implement the new rates, and while it is too early in the insurance waiver process to speak definitively, UCSB is on track to cover more students with the GHI grant than in previous years.

PROCESS

This year saw the adoption of agile project- and task management-methodologies across nearly every unit of ISSD (currently five of the six units are using some form of Scrum, compared to three units a year ago), as well as the adoption of supporting tools (e.g., JIRA, Confluence). Leaders from the ADIS, GDIS, and RGIS units attended an Agile Scrum Master training in the fall and brought their knowledge back to ISSD. An increase in the use of agile methodologies has enhanced our ability to forecast, track, and report on work and resource utilization across ISSD. This means we are better able to deliver solutions to our business counterparts, who in turn are better able to provide critical student services.

PHILOSOPHY

We continue to invest in ISSD members' professional



Members of multiple ISSD units participate together in the 2017 Innovathon challenge.

development because we believe that improving an individual's abilities will pay dividends in services to campus. This year, ISSD members collectively spent 154 hours learning new tools, technologies, and approaches via Pluralsight, an online training platform. Additionally, members sought out other opportunities, such as participation in the UCSB Human Resources Supervisory Certificate program and the IT Foundations training.

ISSD members also completed or moved forward on other projects, such as converting the Arts & Lectures ticketing system to Tesitura's TNEW upgraded platform; developing and releasing several new websites that leverage the Sitefinity content management system; making extraordinarily large and complex updates to the SAT data fields portion of the Admissions process; completing the development of several Student Financial System (SFS) modules and making great progress on its Institutional Awards module and functionality; implementing the Campus Logic product for the Office of Financial Aid & Scholarships that greatly increases the office's ability to serve students and minimize paper waste; completing the UC Online Education Cross Campus Enrollment functionality that allows students from any UC campus to take online courses from other UC campuses; completing Waitlist Switching that allows students to better manage their course schedules; implementing Marching Order to improve the student experience relating to the commencement process; upgrading the decision release process with the largest application pool in UCSB history; and updating the immunization confirmation process for incoming students.

The great work of ISSD is made possible by the herculean efforts of not only the ISSD folks, but of each and every unit and team member in SIS&T. All are critically important to the stability, support, and progress of all Student Affairs systems and technologies.

Strategic Architecture & Platform Integration Services Overview

The **Strategic Architecture & Platform Integration Services (SAPIS)** team is a small, but critical team in the Student Information Systems & Technology department.

JAMES KINNEAVY,

Director for Strategic Architecture & Platform Integration Services

SAPIS provides architectural, automation, and security services that support an array of projects and systems managed by SIS&T on behalf of the division of Student Affairs and UCSB campus.

As part of architectural services, SAPIS is responsible for:

- 1) Architectural development and oversight of an information systems platform to host SIST-managed applications
- 2) Development of common application architectures and components
- 3) Integration of platforms and systems through technologies, such as web APIs
- 4) Architectural leadership and consulting services to the development and Systems units

Additionally, SAPIS is responsible for optimizing the deployment of custom-developed software solutions, from development to production support (DevOps). Finally, SAPIS members perform strategic enterprise and technology planning support promoting divisional and campus objectives.

PEOPLE

In 2016-17, as part of a broader campus effort, the SAPIS team helped lead in the evaluation and selection of technology that will enable SIS&T to provide student systems data to the broader campus in real-time. Once fully implemented, this effort will reduce the number and extent of security risks associated with departments extracting and storing data in their own systems, safe-guarding key business operations. The SAPIS unit also completely upgraded its entire identity and access management infrastructure to next generation technologies. This implementation is expected to improve our ability to secure applications and data for our business partners and also standardize our application security infrastructure, reducing risk, cost, and staffing overhead.

PROCESS

A great part of the SAPIS team's mission is to improve the

effectiveness and efficiency of our internal development and Systems units' processes. A great example of this was the implementation of the Octopus Deployment system (OctoDeploy). OctoDeploy improved upon continuing efforts to transform application deployments to a fully automated state. OctoDeploy not only coordinates the building and deployment of applications in each of our environments (development, test, and production), but it also greatly improves our ability to schedule deployments, automate support ticket management, and provide better visibility of process details to systems engineers to aid them in assessing and resolving deployment issues. The overall effect of this initiative has significantly improved the speed and quality of application deployments, which better serves SIS&T's business partners and customers, and reduced the administrative burden on the development support team.

PHILOSOPHY

SAPIS is deeply committed to enabling SIS&T's success in supporting the University mission by providing automation, standardization, security, integration, and forward-planning solutions. The unit strives to make developers more effective by providing architectural platform, components, and tools that enable them to focus on developing software that solves business problems – not technical plumbing. SAPIS supports the systems engineering and development support units by reducing the workload and administrative overhead of managing application deployments. We seek to improve the security of applications and data through common identity, authentication, and authorization services. SAPIS enables broader access of data to the campus through modern integration solutions and continuously looks forward at emergent technologies and trends that could sustain SIS&T's ability to respond to new challenges. Lastly, we work to ensure the alignment of technology solutions to business needs and imperatives.

While the SAPIS team primarily focuses on supporting SIS&T, its members are essential partners in virtually every business automation and software project initiated. The services we provide are required for any successful system implementation. We are proud to be part of a larger team of committed technologists and business experts who serve the mission of enabling student academic success.

Data Services & Business Systems Support Overview

The **Data Services and Business Systems Support (DSBSS)** unit is comprised of two teams that work in synergy with the rest of SIS&T to provide services to a

DIANA ANTOVA,
Director for Data
Services & Business
Systems Support

wide range of Student Affairs and UCSB departments. The **Data Services (DS)** team provides database design and development, vendor application integration, and business intelligence

solutions in support of new projects and existing implementations. The **Business Systems Support (BSS)** team works with Student Affairs departments to provide project management, selection, and implementation of vendor systems, and business process analysis and improvements.

PEOPLE

The BSS team provides support to a variety of Student Affairs departments, including the Office of International Students & Scholars (OISS), Recreation, Career Services, Women's Center, and Arts & Lectures (A&L). They work very closely with business users to identify areas of improvement, to analyze vendor solutions and capabilities, and to streamline business processes. In 2016-17, the BSS team contributed to significant accomplishments in each of these areas. For OISS, the team implemented an International Scholar Dossier and Student Portal, which replaced a 14-year-old homegrown system and improved how international scholars are invited to campus and how their documentation is processed, which now is paperless. For Career Services, BSS launched a new management system called Handshake, which replaced Symplicity GauchoLink and which enhances how students and alumni connect with employers. For A&L, the team worked with the SSIS unit to replace part of a homegrown website with a vendor solution provided by Tessitura, called TNew. The site now certifies payment card industry compliant, plus the old coding was difficult to maintain.

In 2016-17, the DS team worked on several Business Intelligence reporting projects, such as a curriculum and wait-list self-service reporting solution, as well as reporting infrastructures for the Graduate Division, the Disabled Students Program, and several other Student Affairs departments. For these efforts, the team focused on putting data in the hands of the end-users and

enabling them to make decisions in students' best interest.

PROCESS

The DS team created and continue to follow standardized and measurable processes for accomplishing its work, while also making sure these processes are flexible to accommodate new technologies and vendor requirements. In 2016-17, this approach allowed DS to provide automated student data integration solutions for several vendor implementation projects for departments across campus, such as the AdAstra scheduling system for the Office of the Registrar, the ProSAM project for Financial Aid, the Alma system for the Library, Handshake for Career Services, an MTD bus pass data feed, the Symplicity Care project for Graduate Division, and the International Scholar Dossier and Student Portal systems for OISS. In 2017-18, the team plans to refine its processes by adopting productivity tools, such as JIRA and Confluence, which should further enhance its ability to measure and report progress.

PHILOSOPHY

DSBSS holds the highest standards for its work. Where possible, the unit has created standardized processes that give the greatest level of protection and security over sensitive student and employee data. The unit's goal is to automate business processes and data integrations and to streamline work as much as possible given the resources available. In alignment with the overarching campus IT vision, DSBSS' philosophy is to make student and other institutional data securely and easily accessible to campus professionals. In the past year, the unit initiated an effort to implement a campus-wide Web API solution, which will significantly improve the data ecosystem at UCSB.

In 2016-17, the unit also worked to grow employees' technological competencies by providing Excel PivotTable training to 190 divisional staff. In the future, the team plans to expand this effort to external departments. Lastly, the business systems support philosophy of the team has been to look for viable vendor solutions to replace outdated homegrown solutions, where appropriate. The transition to TNew for A&L is one example where the vendor solution removed the need to implement a very costly infrastructure for PCI compliance.

Student Systems IT Infrastructure, Security & User Support Overview

The Student Systems Information Technology Infrastructure, Security & User Support (aka Systems and Help Desk) team balances the requirement of supporting operational

duties with the need to work on projects that will enhance SIS&T's infrastructure and services provided to departmental partners. In 2016-17, the **Systems** unit collaboratively launched or revamped several websites,

ALLEN BIEHLE,

Acting Director for Student Systems IT Infrastructure, Security & User Support

implemented new productivity tools and enhancements, and leveraged tools such as JIRA, Confluence, Slack, and chatbots to improve internal operations. In the past year, Systems supported 271 virtual machine servers (13 of which were newly created), 17 physical servers, two storage area networks, and tape and cloud backup solutions. In 2016-17, the **Help Desk** received nearly 8,000 requests by email, phone, and chat, in support of over 1,003 computers, 118 printers, and 27 check-in stations. Additionally, Help Desk staff provided more than 50 new-user orientation trainings for about 340 new employees, and managed 261 equipment moves and 44 notebook checkouts. Both teams collaborated to enable events such as the Freshmen Summer Start Program, the Summer Transitional Enrichment Program, and summer Orientation and Financial Aid summer sessions.

PEOPLE

Help Desk staff make themselves available to handle project, operational, training, and support needs, but also provide heroic assistance to Student Affairs colleagues on a wide variety of issues. For example, in September 2016, the Help Desk received a standard user call that turned into much more. S. Krystal McCauley, on dispatch, began troubleshooting by remoting into the user's computer where she recognized a serious situation. The staff member's desktop icons had changed images, file names were changing into gibberish, and file extensions were resetting with a ".zepto" extension — all signs of an infection. Krystal instructed the colleague to immediately disconnect the computer's network cable and to wait for further assistance. The user was provided a loaner computer while the Help Desk team investigated the infected machine and determined the cause was due to a ransomware attack, which also affected portions of SIS&T's network drives. A snapshot of the drives was taken earlier that morning, so affected data was able to be restored. This example



Members of the Systems and Help Desk teams catch up at SIS&T's recent staff retreat.

demonstrates the team's quick-thinking, emergency preparedness, professional support, and overall commitment to the people it serves.

PROCESS

The Systems team is tasked with stewardship of SIS&T's IT infrastructure, and maintains plans for emergency situations to ensure continuous functionality and reliability of systems. Such plans are frequently employed, as they were one night in July 2017, in which members of the team were notified by SIS&T Executive Director Joe Sabado and other campus IT leadership that a wildfire was threatening campus electrical infrastructure. An extended power outage could lead to data corruption and damage to IT assets, which meant staff needed to be on hand in case an outage became a reality. Senior network architect Tom Lawton drove more than an hour to return to campus, picking up another staff member (Brad Lent) on his way, and they joined Joseph Chanson who had not left the office yet. This on-site team (and others off-site, discussing via Slack) coordinated countermeasure plans until 9:30 p.m., when they were excused as the threat had not escalated. Luckily, campus never lost power and there was no impact to our partners. The team's discipline in quickly and adaptively enacting emergency processes are nearly unparalleled.

PHILOSOPHY

Examples like those detailed above might go unnoticed by most colleagues, but the Systems and Help Desk units have earned a longstanding reputation for being professionals, performing well under pressure, and for responding flexibly to any given situation. Team members espouse SIS&T's philosophy: commitment to excellence, shared responsibility, and a focus on solutions. It does not take an emergency for these traits to become visible — they are frequently witnessed in everyday situations across the division as well.

Administrative Services Overview

The **Administrative Services** unit manages fiscal operations and human resources for Student Information Systems & Technology, and it also provides full administrative support for the department. In 2016-17, the unit managed an operational budget of \$8.5 million, including a \$4.8 million permanent budget.

TEDI TEHRANI,
Administrative Services
Management Officer

PEOPLE

The Admin unit ensures SIS&T's business continuity by providing operational support to department staff. Unit members work collaboratively with the management team to provide excellent, timely, and effective service. In 2016-17, this was no small feat – the unit operated with an average of 2.25 employees, although it typically operates with three full-time employees, and it was still able to manage fiscal operations effectively with no disruption in service.

PROCESS

The Admin unit continuously reviews and improves administrative procedures, and in 2016-17, the unit enhanced the department's onboarding process. Initially, the onboarding process would take a few weeks to complete – there were many forms for new hires to fill out, online and in-person training to receive, staff members across the organization to meet, and new organizational procedures and job duties to learn. The new and enhanced process is focused on optimizing the onboarding experience and can be completed in less time.

PHILOSOPHY

The Admin unit has long-provided opportunities for staff to participate in cross- and campus-wide trainings. Professional development is not limited to training that is required for one's job, as the unit is aligned with the department's goal to promote career advancement.



Members of the Administrative Unit (top left), rally SIS&T department at a recent retreat where staff participated in fun team-building challenges. The group above successfully completed a problem-solving task using dried spaghetti, tape, and marshmallows. The group at left collaborated on a hypothetical survival challenge. The Admin unit leads retreat planning each year.

Student Affairs IT Standards 2017

SIS&T supports the following IT standards for high interoperability and because each offers high-quality security, functionality and reliability. SIS&T has these standards is because they are tightly integrated and easier to maintain and support.

IT Service Layer	Architectural Component	Divisional Standard	Metrics
Network & Security	Switching and routing	Extreme	<ul style="list-style-type: none"> ■ 65 devices ■ 70 VLANs
	Firewalls	Extreme & Palo Alto	<ul style="list-style-type: none"> ■ 500,000 sessions/sec.
	Identity	<ul style="list-style-type: none"> ■ Microsoft Active Directory Domain Services ■ Microsoft ForeFront Identity Manager (FIM) ■ Microsoft Active Directory Federation Services (ADFS) ■ Microsoft Windows Identity Foundation (WIF) 	<ul style="list-style-type: none"> ■ 4 domains supported ■ ADFS provides single sign-on capabilities for approximately 50,000 users ■ FIM provides identity synchronization for approximately 50,000 identities in 3 environments
	Remote access	Palo Alto, Extreme	
	Spam and virus firewall	Barracuda	
Servers & Hosting	Power supply	APC	
	Server hardware (rack mount and blade servers)	Hewlett Packard Enterprise	<ul style="list-style-type: none"> ■ 5 physical servers ■ 202 virtual servers ■ 66 replicas
	Server operating system	Microsoft Windows	<ul style="list-style-type: none"> ■ 202 servers (in four domains)
	Virtualization infrastructure	VMware	<ul style="list-style-type: none"> ■ 17 hosts
	Web & app hosting	Microsoft IIS 8.5 (Webfarm w/ ARR)	<ul style="list-style-type: none"> ■ 9 production IIS 7 servers ■ 57 production IIS 8 servers ■ 332 web applications/sites
Storage & Data (continues to next page)	Storage Area Network (SAN)	HPE 3PAR HPE MSA 2404	<ul style="list-style-type: none"> ■ 214,400 GiB Raw Capacity ■ 139,812 GiB Allocated ■ 129,220 Gib Presented ■ 102,371 GiB User Files ■ 25,168 GiB Snapshot (daily snapshots) ■ 10,050 GiB Hot-Spare disk ■ 74,581 GiB Free ■ VMFS 41.17 TB Allocated ■ 14TB Free ■ Windows: 38.16 TB
	Backup	<ul style="list-style-type: none"> ■ Veeam ■ Iron Mountain ■ HPE MSL 2024 Tape Library – LTO6 	<ul style="list-style-type: none"> ■ 39,038 GB Disk Capacity ■ 25,600 GB Cloud Capacity ■ 2 Production restore points ■ 2 Weeks of backups stored off site

IT Service Layer	Architectural Component	Divisional Standard	Metrics
Storage & Data (continued from previous page)	Databases	Microsoft SQL Server	<ul style="list-style-type: none"> ■ 64 production servers, ■ 392 production databases ■ 4,520,628 MB
	Extracting, Transformation & Loading (ETL)	Microsoft SQL Server Integration Services	<ul style="list-style-type: none"> ■ 4 integration servers ■ 1 reporting services (SRS 2014)
	Reporting & BI	Microsoft SharePoint & SQL Server Reporting Services	<ul style="list-style-type: none"> ■ 10 enterprise SharePoint servers ■ 5 farms
	Directory	Microsoft Active Directory & webLDAP	<ul style="list-style-type: none"> ■ 3,189 groups ■ 1,409 users (SA Domain) ■ 165,568 users across domains ■ 121 print queues
Monitoring & Escalation	Database monitoring	Idera SQL Diagnostic Manager	
	Server monitoring	Hewlett Packard Enterprise OneView	
	Operating system monitoring	Microsoft System Center Operations Manager (SCOM)	
	Network monitoring	<ul style="list-style-type: none"> ■ Extreme Atlas Network Mgr. ■ Riverbed ACE Live/Palo Alto 	
Desktops & Customer Support	Desktop operating system	<ul style="list-style-type: none"> ■ Microsoft Windows 7 Enterprise SP1 64-bit ■ Microsoft Windows 10, 64-bit 	<ul style="list-style-type: none"> ■ 985 desktops
	Desktop tools	Microsoft Office 2013 SP1 Professional Plus 64-bit	
	Help Desk	HelpStar Helpdesk System	<ul style="list-style-type: none"> ■ 1,023 computers (includes laptops)
	Desktop hardware	Dell Optiplex Business Line	
Communications & Productivity Tools	Content management	Sitefinity CMS	
	Email & scheduling server	Microsoft Exchange 2013	<ul style="list-style-type: none"> ■ 1,409 user mailboxes ■ 3 Exchange mailbox servers ■ 1 client access server ■ 1 archive server
	Antivirus	Sophos	
	Collaboration & communication	<ul style="list-style-type: none"> ■ Microsoft Lync Server ■ Microsoft SharePoint Server 	
Cloud	Infrastructure-As-A-Service	Microsoft Azure	
	Platform-As-A-Service	<ul style="list-style-type: none"> ■ Microsoft Azure ■ Amazon Web services 	

IT Service Layer	Architectural Component	Divisional Standard	Metrics
Software Engineering & Development	Application integration	<ul style="list-style-type: none"> ■ Microsoft Windows Communication Foundation (WCF) ■ Microsoft ASP.NET Web API ■ Microsoft Message Queue (MSMQ) ■ RabbitMQ Message Queue 	
	Software configuration management	Microsoft Team Foundation Server (TFS)	
	Software build & deployment	<ul style="list-style-type: none"> ■ Microsoft Build/TFS ■ Microsoft PowerShell ■ Octopus Deploy ■ Redgate SQL Developer Tools 	
	Architecture modeling tool	<ul style="list-style-type: none"> ■ Sparx Enterprise Architect ■ Microsoft Visio ■ BizAgi Process Modeler 	
	Software issue management tool	<ul style="list-style-type: none"> ■ Microsoft Team Foundation Server (TFS) ■ Microsoft Team Companion 	
	Development platform	Microsoft .NET Framework & Microsoft Visual Studio .NET	
	Performance analysis & optimization	Microsoft Analysis Tools for Visual Studio .NET	



SIS&T team members take pride in supporting campus partners and customers. Annual retreats give staff time to come together and celebrate as "One SIS&T."





At SIS&T's 2017 retreat, the department celebrated the dedication and commitment of four retirees, who collectively gave nearly 84 years of service to SIS&T. This annual summer retreat also gives staff on campus a chance to reconnect with staff who regularly work remotely.



DIVISION OF
STUDENT AFFAIRS

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