

A large, light gray watermark of the Rice University logo is visible in the background. It features a stylized flower with two circular centers and several petals, with a curved line extending from the bottom right.

RICE

Office of Information Technology
Annual Report
2017-2018

CONTENTS



06 Research, Teaching, and Learning

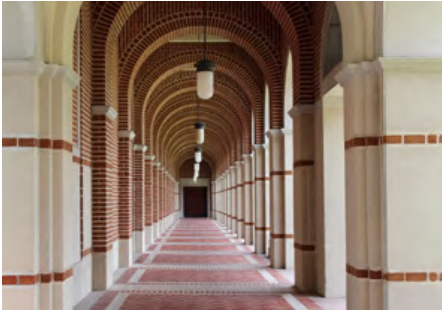
Support for Online Education
Center for Research Computing (CRC)
Student Internships
Connecting with Students



13 Enabling Business Partners

OwlConnect New Advancement System
Update on Administrative Projects

CONTENTS



16 Infrastructure and Support

VoIP (Voice Over IP) Communications System
Campus Backups
Front Line Computing Support
KnowledgeBase Access



19 A Look to the Future

Student APIs
Wireless Refresh
Improving Customer Service
Plans for changes in Edgar and Esther
New Graduate Admissions System (Slate)
New Registration System for Non-traditional Students
Budget Transfers
CIO 100 Awards

ABOUT US

Our goal is to provide the Rice University Community with effective, innovative and client-focused technology solutions. We support research, academic and administrative systems, voice, network, computing infrastructure, identity and access management, security and other core systems. We strive to be an integral part of Rice committed to supporting the university mission through innovative uses of technology and service excellence.

OIT reports to the Vice President for International Operations and IT. OIT collaborates closely with IT staff in departments. These leaders meet regularly to improve coordination, communication, resolve issues, and eliminate duplication of effort.

Klara Jelinkova
Vice President for International Operations and IT
Chief Information Officer

Marc Scarborough
Chief Information Security Officer

OIT

Misha Bruno
Project Management and Administrative Office

Diane Butler
Learning Environments

Randy Castiglioni
Administrative and Enterprise Systems and Services

Marc Cougle
IT Operations and Infrastructure

Jan E. Odegard
Center for Research Computing and Ken Kennedy
Institute

Campus IT Partners

Elaine Brewer
Jones School of Business

Saira Cooper
Glasscock School of Continuing Studies

John Michael Cuccia
Information Systems, Undergraduate Enrollment

Denis Galvin
Fondren Library

Robin Meeks
Office of the Vice President for Public Affairs

Karen Rubinsky
Development and Alumni Operations

Research, Teaching, and Learning



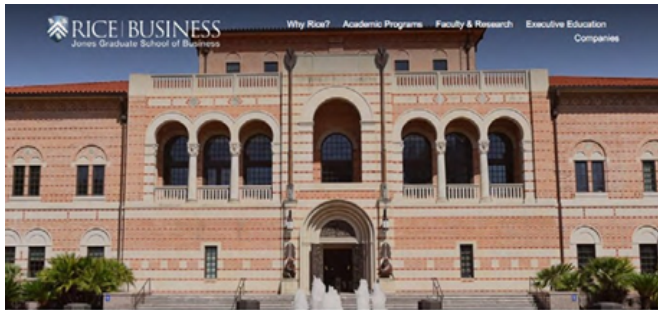
Support for Online Education

Campus partners enable digital education

The partnership between the Office of Information Technology, Rice Online Learning, Jones Graduate School of Business, Glasscock School of Continuing Studies and other offices is longstanding. Jointly we provide support for a number of programs including online education, continuing education and online Rice credit summer school classes. As Rice pursues the V2C2 goal to Extend Rice's Reach and Impact through digital education our collaboration has deepened.

MBA@Rice

Rice's first online degree, MBA@Rice, recently launched. OIT worked extensively with the Jones School and the offices of the Registrar and Student Financial Aid to configure the Banner Student and Financial Aid systems to accurately enroll, schedule and disburse financial aid to the online MBA students. The three offices worked together to complete a detailed analysis of the requirements for the online program, configure the systems and perform a thorough system test before going live in July 2018.



MBA@Rice: Hybrid Online Degree
Delivering our program to working professionals who may not have the option to study on campus

[Related Links](#)
[Apply Now](#)
[Request Information](#)



COMP 140 (Computational Thinking)

To date, OIT assisted Rice Online Learning (ROL) with online non-credit and credit classes offered through Rice's learning management system - Canvas. With COMP 140 going online in Fall 2018, OIT partnered with ROL and the faculty to research, develop, test and license software and tools for the course. Special configurations have been required to meet the requirements of the faculty teaching the course. Examples are:

- Online virtual sessions using video conferencing software (Zoom) with customized experience for the students and instructors
- Tools to create a flexible and automated course group management
- Integration of Open Educational Resources (OER) such as Google Apps, and CodeSkulptor
- An expanded support model that includes evening hours and a new support station in the Fondren Library.

Center for Research Computing (CRC)

CRC in partnership with the Ken Kennedy Institute, manages Rice's shared research computing, storage, networking, and visualization facilities. The CRC operates four research computing clusters, a research virtual machine infrastructure, a research storage infrastructure and the Chevron Visualization Laboratory. The CRC also works closely with faculty to enable access to national computing infrastructure such as the NSF-funded Extreme Science and Engineering Discovery Environment (XSEDE) resources and cloud resources.

Research Facilitators

Last year the CRC added staff to serve as research facilitators with the goal of supporting a broader group of faculty and projects across the university that are rapidly outgrowing laptop and desktop computing. Over the course of this year, CRC facilitators directly assisted faculty new to research computing infrastructure in standing up early-stage projects, with the goal of increasing their visibility in order to help secure future funding opportunities for this and larger-scale projects. Last year facilitators:

- Helped research faculty and their students and staff troubleshoot their code.
- Helped researchers develop proposals using specialized research computing infrastructure to scale their projects.
- Helped faculty to integrate new digital tools into their pedagogical practice.

CRC facilitators led a series of workshops based around specific use-cases including cloud services and applications (such as Amazon Web Services and Google Cloud Platform) and coding (such as using Python with web API Datasets).

Virtual Research Development Environment (VRDE)

VRDE provides a highly secure data storage and computing platform used by Rice's Children's Environmental Healthcare Initiative (CEHI), the Kinder Institute's Urban Data Platform (UDP) and the Houston Education Research Consortium (HERC). CRC's research facilitators collaborated with OIT's Security and Client Services offices to provide ongoing support and consultation for VRDE, including security compliance, reporting, stabilization of infrastructure, feature enhancements, process improvements and capacity planning.

Campus Partnerships

Facilitating the diverse research computing needs provided opportunities for forming partnerships across campus. Last year deepened our strong working relationship with the Fondren Digital Scholarship Services team. We migrated their storage and hosting solutions and integrated integrating our own workshop series into their existing, robust infrastructure with projects such as Harvey Memories Project.

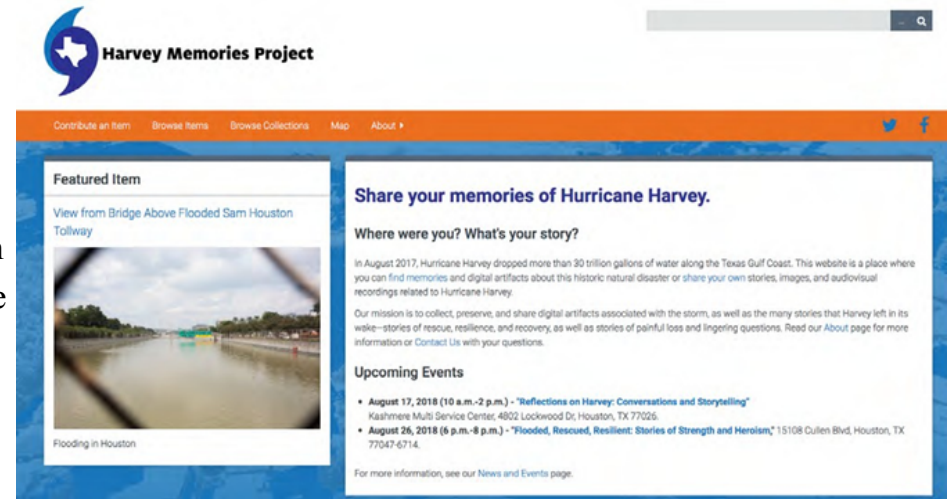
Introduction of Research Data Facility (RDF)

In spring of 2018, the SPICE and CRATE systems reached end of life. Between October 2017 and July 2018, CRC facilitators worked with end users to identify their specific needs and to migrate them to the best solutions based on budgetary and technical considerations. In all, nearly 50 data shares were moved from SPICE and CRATE to the new Isilon or cloud-based storage solutions and 20 Virtual Machines were moved to the new ORION infrastructure or cloud-based solutions. Additionally, CRC facilitators onboarded 20 new research groups to the Research Data Facility. The RDF system now supports over 70 research groups and 200TB of data.

ORION VM Infrastructure

The CRC's new VM system, ORION (Owls Research Infrastructure OpenNebula), went online in the spring of 2018. Customers consist of SPICE users whose projects have been updated to the new system and new users such as programming workshops. We are just beginning to test the potential of the new ORION infrastructure, but stand-out use cases have been:

- Data-driven web portal apps that function as prototypes for research faculty seeking grants
- The Harvey Memories Project
- Caleb McDaniel's Digital Humanities Research
- Daniel Domingues Da Silva's Digital Humanities Research
- K2I supercomputing boot camps
- The Rice Undergraduate Data Science Summer Program (RUDSSP)



Harvey Memories Project

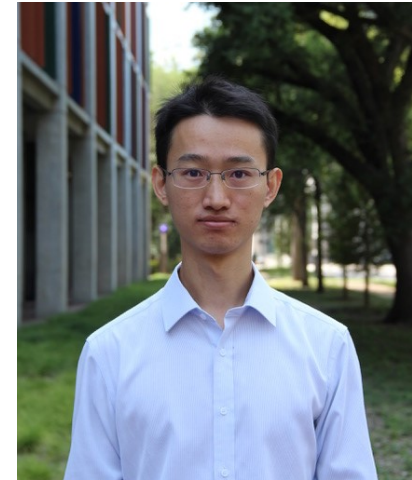


Noushin Quazi and Wei-Lin Hsiao present their Rice University Summer Data Science Program results. Photo by Doni Soward.

Student Internships

Under the leadership of Zheng Fan (Administrative and Enterprise Systems) and John Mullighan (Center for Research Computing) OIT launched an internship program. We were fortunate to attract nine graduate students and one undergraduate student as the inaugural cohort. These students were able to help shape administrative systems and research computing offerings. The projects ranged from web development to data analytics. The student interns were able to use their software development skills while at the same time gaining practical and professional experience in the IT field.

The student interns participated in the design and development of student pages for the Rice Global Website, Open Scholar software for faculty websites, a new website for the OnBase document management system and the development of a web application framework. Several student interns developed workflow enhancements to the Request Tracker ticketing (help desk) system and software to monitor the status of several key business systems. Others worked on projects involving data modeling and schema design for Facilities and Engineering survey data and data visualization using Tableau for cooling tower water loss analysis.



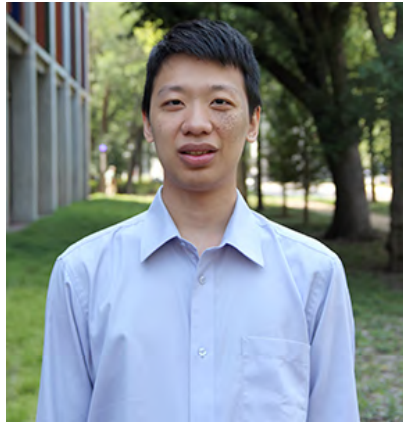
Kangkang Li

"As a Web Application Developer Intern, I have been building request tracker workflows and creating a status page widget for the OIT webpage. The benefits of the internship program include the valuable chance to experience the professional IT workplace. And I gained useful experience in web application development. Communication is crucial to the success of IT product development. We can not make great work without clear communication with the customer."

AESS and CRC summer interns and mentors.

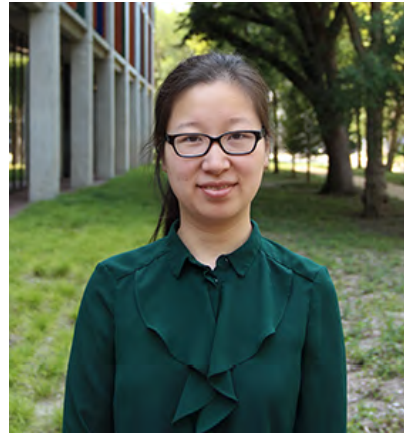
OIT: Zheng Fan, John Mulligan, Henry Nguyen, Laura McCord, Chris Brown.

FE&P: Terie McClintock.



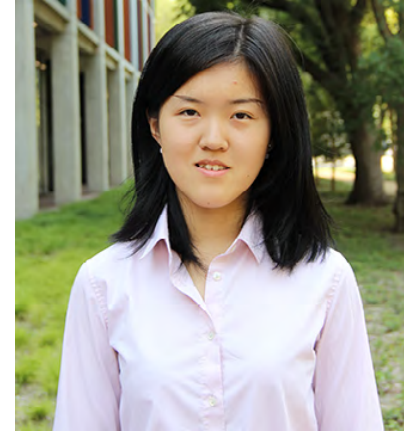
Weiheng Qiu

“I am a Full Stack Web Developer Intern. I do both back-end and front-end programming and software deployment. My mentor teaches me the professional way to develop web application and shows me how this is done in industry, which I didn’t learn in courses. Also, I was not familiar with web development before; therefore I am very happy that I learn more about web development in this internship to enrich my skill set. When I am stuck in a problem or not sure which design is better, my mentor explains patiently to me and helps me get on the right track. This teaches me a lot and gives me a deeper understanding of this project.”



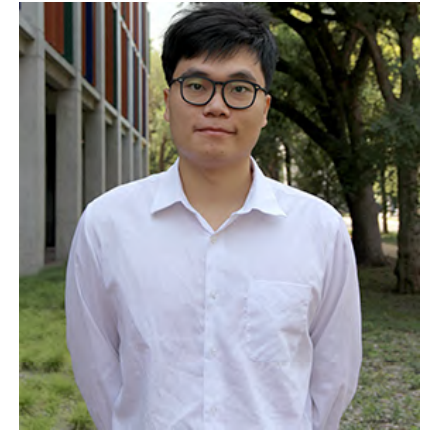
Jialu Xu

“As a Full Stack Web Development Intern, I have been involved with building a template engine tool that could generate a CRUD application with a minimum requirement of entity relationship model configuration. I think the most useful thing I got from this internship is that now I can showcase what I built to employers confidently to demonstrate my ability to grasp many technologies in a short period of time. And since now I understand the whole process of building a web application tool, I am ready to start diving into building my own side project without feeling overwhelmed at all.”



Eva Ma

“I have been helping OIT to build a Rice Global website, as well as a website for Onbase (Rice’s document storage system) using the Drupal platform and libraries like jQuery. I am able to gain working knowledge of web development and communications skills in a professional workplace. My mentor and the other interns are extremely helpful. They are always willing to discuss with me when I am exploring something new.”



Yijun He

“I am working as a Web Application Developer, helping to build and enhance the pages for different campus websites, such as Global websites for the growth of Rice Global influence, and the OnBase introduction page, which helps familiarize the staff at Rice to a useful tool. I’ve had a fulfilling summer. OIT has provided an amazing project that closely aligns with the real day-to-day job as a software engineer, which helped me to be in touch with not only the technology, but also the industry-like work and lifestyle.”

Connecting with Students

OIT College Ambassadors enable the flow of communication between OIT and students



“Being an ambassador is a wonderful way to help your college. It is great when you’re able to immediately solve their problems, but even redirecting them to the Help Desk is useful,” explained Isabel Gonzalez, OIT Baker Ambassador. Occasionally, ambassadors are also techies, perhaps computer science majors or already working at the Help Desk.”

In each of Rice’s 11 colleges, OIT employs a College Ambassador, a resident student, to facilitate information sharing between OIT and undergraduates. For undergraduates, ambassadors serve the friendly face of OIT. For OIT, ambassadors are a vital communication channel to understand the needs of students. At the beginning of the fall semester, ambassadors introduce new students to OIT services and encourage attendance at a fall study break that provides technical tips. During the academic year, ambassadors monitor their college computing lab, address student questions or relay them to the proper resources for additional assistance. If ambassadors notice patterns or higher frequency issues, they notify OIT staff. Serving as the OIT Ambassador for Sid Richardson College and working as a Student Computing Consultant (SCC), Edi Danalache explains his roles:

“At the OIT Help Desk, we provide in-person technical support and assistance to Rice students, staff, and faculty for issues ranging from email and NetID access to WiFi connectivity and issues with students’ personal devices (such as laptops and phones). As ambassador, I communicate OIT news and updates with my college and help students with small personal tech issues or problems with the tech infrastructure (printers, network, etc.) or direct them to the Help Desk if I can’t fix the issue myself or it requires more time-intensive work (i.e. hardware repair, backups, virus scans). Having a direct representative from OIT that students know, trust, and can easily approach with their tech issues is great for my college. There have been numerous times, when a phishing scam or other hacking/impersonation attempt had been circulated throughout the student body, and in my capacity as OIT Ambassador I both reached out to my college to pass on official OIT announcements and shared reports of security threats that I received from students to the OIT Help Desk and the Rice IT security team.”

Enabling Business Partners



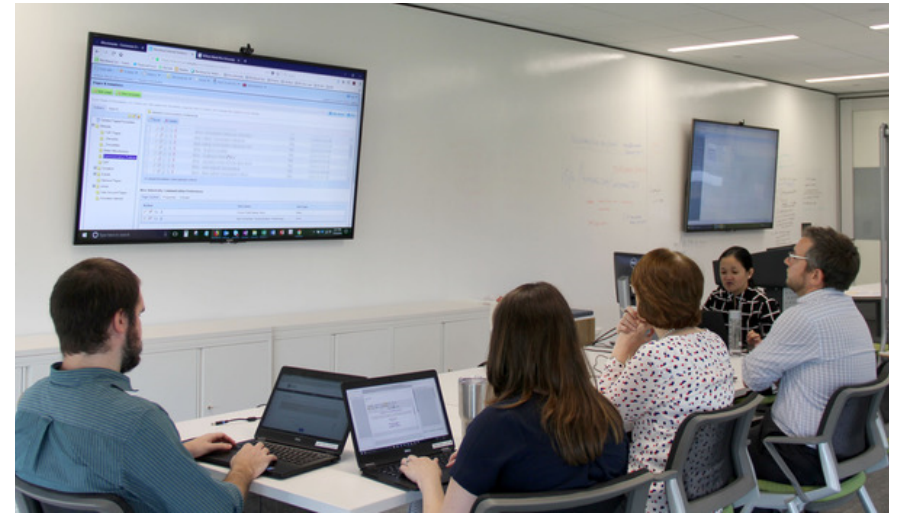
Meeting of Public Affairs and OIT's Web Technology staff

OwlConnect: New Advancement System

In the fall of 2015, the Rice Board of Trustees approved a project to develop a new comprehensive advancement system that would meet the needs of Development and Alumni Relations as well as the broader community. The Blackbaud CRM product was chosen and the “OwlConnect” project was initiated in the summer of 2016. This project was sponsored by the Vice President for Development and Alumni Relations, the Vice President for International Operations and IT and the Provost. OwlConnect replaced three advancement systems that were in use: Millennium, Flatbridge (Jones School), and Salesforce (Baker Institute).

Over the last 2 years, OIT and Development and Alumni Relations have partnered with the OwlConnect vendor, Blackbaud, along with Blackbaud experts from Zuri Group, Precision Partners, and subject matter experts in Baker Institute, the Jones School and across campus to design, build, and test the new system. On July 23, 2018, the “OwlConnect” advancement system went live for over 120 end users. The new integrated solution brings in data from other campus applications, such as Banner, and deploys a new web front-end for online communications, event registration, giving, and marketing.

Reaching this milestone is a critical first step towards establishing a university-wide solution for more effective engagement with alumni, corporations, foundations, families, and friends of Rice University. We look forward to further refining current capabilities and building out functionality for even more partner departments, institutes, and schools.



OwlConnect activities in preparation for go-live.



OwlConnect activities in preparation for go-live.

Update on Administrative Projects

Improvements across Rice's administrative systems landscape

Banner 9

Ellucian Inc., the company that licenses and supports the Banner system, began a major project several years ago to modernize the application. The changes this year affected the core Banner system that is used primarily by central administrative offices such as the Controller's Offices, Office of the Registrar, Student Financial Services (Financial Aid), Human Resources, Payroll and a handful of other central administrative offices (e.g. Internal Audit, VPAA, Investments). Testing the new Banner 9 Administrative Pages was first done by OIT staff in the Administrative and Enterprise Systems and Services (AESS) department. OIT staff worked with the various central administrative offices to introduce the new system interface, train, and assist in testing. Payroll was the first office to process transactions in production on the new version in December 2017. The other offices followed and are now actively using the system. The prior version of the system, Banner 8, will be sunset on December 31, 2018.

Benefits Management

In April 2018, Rice employees enrolled in their benefit programs for the upcoming fiscal year using a new system, BenefitFocus. BenefitFocus was chosen from among several competing alternatives. Rice OIT partnered with Human Resources to successfully test and integrate the BenefitFocus system with the Rice HR/Payroll system. Improvements brought by the new system include enhanced data analytics for management and control of Rice's healthcare costs.

FAMIS Cloud

Computerized Maintenance Management Software (CMMS) is used at Rice by the Facilities, Engineering and Planning (FE&P) department to manage 4 million square feet of facilities, over 70 buildings, and 285 acres of the Rice University campus. The system used by FE&P is known as FAMIS. In Fall 2017, OIT partnered with FE&P to assist with their migration from the on-premise version of FAMIS to the newer cloud version. OIT assisted in the data conversion as well as the integration for finance, vendor records, employee records as well as the payroll interface and inter-department journal transfer processing. The benefits of FAMIS Cloud for FE&P include improved workflow and reporting as well as employee time entry, visibility into employee workloads and request tracking.

Infrastructure and Support



VoIP (Voice over IP) Communications System

In December 2016, the Rice Board of Trustees approved replacing the soon to be unsupported, aging campus telephone system with a Cisco VoIP (Voice over Internet Protocol) Unified Communications telephony system. VoIP technology provides an improvement to the existing telephony architecture, redundancy, and resiliency. It also provides an opportunity to significantly enhance the client's telephony experience by providing extremely robust feature enhancements.

The Cisco VoIP system was purchased in early July 2017. The OIT department migrated first to the VoIP platform in August 2017. The first 'non-OIT' building to migrate to VoIP was the new Cambridge Office Building in October 2017. The migration of all campus telephones to the new Cisco VoIP system is now approximately 60% complete, with additional migrations occurring weekly (building by building). We anticipate that the entire campus migration to the Cisco VoIP system will be completed by December 31, 2018. Feedback from those already migrated to the new Cisco VoIP system has been very positive. New features include call forwarding, voicemail forwarding to e-mail with speech to text function, and allows users to send instant messages similar to chats on social media and to look up phone numbers of Rice employees and students just by typing the first few letters of the person's last name.

Campus Backups

OIT provides server data backup service to internal, research, and departmental customers. The goal of the service is to provide stable and reliable automated backup processes for disaster recovery, deletion and/or modification restores, and regulatory requirements. Similar to most other universities and commercial enterprises backups of Rice's systems were traditionally done using tape drives, magnetic tapes and the transportation of critical data tapes to commercial data storage vaults (Iron Mountain). This method is very slow and in cases of natural disaster, the recovery can take an unacceptable amount of time. As the legacy tape drive was nearing its end of life and an upcoming major capital investment was on the horizon, Rice OIT evaluated the available options for backups of campus data. Over the course of the last year, the backups were reviewed and migrated to Amazon Web Services (AWS) Glacier service. Amazon Glacier is a cost-effective, secure, efficient and more expedient cloud storage service for data archiving and long-term backups.



New phones and instructions.



Cambridge Office Building was the first university building to go-live on VOIP (after OIT pilot).

Front Line Computing Support

Assisting customers with questions and problems

OIT offers technology support to the Rice community via the OIT Help Desk. Customers can call, email, drop by or submit a web form to request help. As needed, Divisional Representatives can be dispatched to faculty and staff offices to assist in person.

To be more accessible, Campus Services began planning extending telephone support and offering a satellite Help Desk in Fondren Library last year. Starting August 2018, the Mudd Help Desk telephone support started an hour earlier with extended hours being 8:00 am - 5:00 pm, Monday - Friday. In early September, Help Desk services will be offered on the first floor of Fondren Library from 7:00 - 11:00 pm, Sunday - Thursday. Looking into the future we would like to offer chat (currently available only within Canvas) as a way to contact the Help Desk. We will look for community feedback about this option in the fall.

KnowledgeBase Access

The searchable collection of how-to documents in KnowledgeBase (KB) officially rolled out in May 2017. The soft launch started in January 2017. This self-service repository of information continues to grow in size and popularity. We had 306,111 views in 2017. Check it out. The URL is <https://kb.rice.edu/>.



A Look to the Future



A Look to the Future

Goals for fulfilling the university's future IT needs

Student APIs

Rice collects and maintains data which is published to students, faculty, and the public such as course listing, events calendar, and the Rice directory. Although this information is available in human readable, form it had not been exposed in a manner easily consumable by either web browser-based applications or applications expecting a modern API (application program interface). Rice OIT developed an API layer of technology to enable access to these data sources through a standardized technology framework along with documentation to enable easy utilization of this data by campus developers. In addition to documentation, the Rice API Gateway includes standardization, authorization, authentication, rate limiting, caching and analytics.

In cases where the data resides with a third party, such as the events calendar database, the Rice API Gateway provides an abstraction layer to prevent vendor lock-in. The initial release of available APIs aims to offer (read) API access to courses, events, and directory. Institutions such as MIT, Stanford, and Yale, have also had success providing centralized programmatic access of university datasets and services to their students, faculty, staff, and affiliates via APIs or application program interfaces. Contact us if you want to learn more and work with us on a project using the Rice API Gateway.

Wireless Refresh

OIT will move forward in FY19 with planned improvements to the Rice wireless network. Rice will release a public request for proposal (RFP) to hardware manufacturers this fall based on faculty, student and staff feedback about features. To help define these needs, OIT members have already begun review of reported wireless issues and started conversations with other higher education institutions such as Duke and Emory. We will also solicit additional feedback from college ambassadors. Contact us if you would like to provide feedback on the RFP.

Improving Customer Service

Ncuv{ gct. 'QK' r wdrkuj gf 'c' Ugtxleg' Ecwmi 'qp' yj g'y gd' yj cv' ergctn{ 'f ghkpgu' yj j cv' ugtxlegu' ctg' qhgtgf 'q' yj g' eco r wu' eqo o wplv{ '*ugg' j vr u-1qk0 leg0 gf wltgtxlegu+0QK' eqpvpwgu' q' tghkpg' yj g' Ugtxleg' Ecwmi 'cu' y gm' cu' f gxgr kpi 'cee qo r cp{ kpi 'K' Ugtxleg' O cpci go gpv' *KUO + 'ce vxxkkgu0' KUO 'ku' c' ugv' qh' r qnlekgu' cpf 'r tqegf wtgu' yj cv' i qxgtp' yj g' r tqegu' qh' K' ugtxleg' f grkxgt { 'cpf ' kpenmf gu' vqqu' vq' j gr " o cpci g' ugtxlegu' cpf ' hqewu' qp' ewuqo gt 'pggf u0QK' y km' eqpvpwg' vq' cf cr v' ku' KUO 'cr r tqcej 'd{ 'ko r ngo gpv kpi 'pgy 'r tqeguugu' cpf 'vqqu' kpenmf kpi 'tgxky kpi 'c' tgr nrego gpv' hqt 'Tgs wguWtcengt. ' yj g' ewtgpv' kengv kpi 'u{ ugo 'hqt' ewuqo gt 'uwr r qt0Y g' ctg' cnq' mqn kpi 'cv' gzer cpf kpi 'ej cv' ewtgpv' 'cxckrdg' qpn{ 'y kj kp' Ecpxcu+ 'cu' c' y c{ 'q' eqpcev' yj g' J gr 'F gun0Y g' y km' dg' uqrlek kpi '{ qwt' hggf dcen0

Plans for changes in Edgar and Esther

The Campus web front-end to Banner also known as Edgar and Esther are relying on Oracle technology that will not be supported beyond December 2021. Unlike Esther that is supported by Ellucian, Banner Edgar was internally developed. There are approximately 500 applications in the Edgar framework currently. The Administrative Technologies Subcommittee started a process of looking at the applications and seeing which should be upgraded to new Oracle technology and which functions should be migrated to the new Rice Data Warehouse and Reporting Facility.

New Graduate Admissions System (Slate)

The existing, custom-developed application for receiving and processing graduate student admission applications is beyond end of life, running on an unsupported version of the underlying technology framework. The application is highly customized for each department and reporting on core metrics is not available. This project will establish a standard platform for Graduate Admissions. Slate, the leading solution for admissions, was selected. Thirty-four programs will participate in the pilot and release their graduate applications in Slate in late August 2018.

New Registration System for Non-traditional Students

This fall, Glasscock is launching a new customer life-cycle management tool, Destiny Solutions. In preparation for the new system, OIT assisted by setting up integrations with Banner for payment processing and student information as well as integrating with Canvas for course enrollment. In order to prepare for new innovative teaching methods Glasscock has been upgrading its facilities. OIT has also been assisting Glasscock with redoing a classroom to accommodate online students participating synchronously with on-campus students through Zoom. As Rice pursues more online degree and certificate programs, OIT is ready to assist and implement the necessary support and components to help Rice increase its reach and impact.

Budget Transfers

In collaboration with the Budget Office and campus administrators, OIT is developing an application for the online processing of budget transfers. OIT staff, Budget Office staff, and key financial managers from various campus offices joined together to review and document the functions that an online budget transfer application would need to accomplish. Software design and development started and iteratively progressed with testing and feedback from the Budget Office and campus departmental staff using agile project management methodology. The application is in its final testing phases with the Budget Office. The target is to release the budget transfer app to the Natural Sciences division in October 2018.



CIO 100 Awards

Rice University was honored for our response to Harvey. Every year, CIO (owned by IDG, the world's leading technology media, data and marketing services company) selects 100 organizations for recognition at the CIO 100 Symposium and Awards Ceremony. In order to qualify for this award, nominees must establish excellence in technology innovation and business value delivery within their organization.

Rice University was formally recognized at the 2018 CIO 100 Awards Ceremony during the CIO 100 Symposium in August 2018.

Rice University
Office of Information Technology
6100 Main Street
Houston, TX 77005