

# 2017-18 Annual Report

## Information Technology Services



Carleton

# KEY INITIATIVES



## **Preparing Students:**

Helping to equip students with the skills and experiences they need in order to be successful throughout their academic careers and into their lives after Carleton. See pages 9 and 11.



## **Enhancing Teaching & Learning:**

Providing consultation as well as technological infrastructure and tools to support faculty, students, and staff to advance scholarship and provide an exceptional liberal arts education. See pages 7 and 11.



## **Financial Efficiency:**

Being good stewards of the College's resources, seeking to balance costs and efficiencies with individual needs. See pages 9 and 13.



## **Embracing Collaboration:**

Seeking out areas of collaboration within the department, across campus, and with other institutions in order to enhance services and maintain costs. See pages 5, 11 and 13.



## **People Effectiveness:**

Increasing the capacity of every member of the Carleton community to function efficiently and effectively through technological tools and infrastructure. See pages 5, 7 and 13.



## **Process Effectiveness:**

Facilitating campus workflows, technology automation and procedures to support smooth and effective processes. See pages 5, 7 and 9.



**Janet Scannell**  
Chief Technology Officer

The past academic year was a big one for our physical campus. The Carleton community watched the Weitz addition and the science complex renovation with fascination. Just as these construction projects let us see inside buildings in ways we don't usually, so is this Annual Report an opportunity to view the workings of technology at Carleton in a deeper way. In this, our third annual report, we will wrap up our first three-year strategic plan and share some priorities that will guide us over the coming years.

Ironically, two of ITS's biggest initiatives of the past four years weren't even part of our strategic plan: namely, the move from Zimbra to Gmail and the move from Reason to WordPress. That is the nature of technology—the options change quickly and expectations about how well-served we are change even more quickly.

In April 2014, ITS launched a strategic plan with 6 planks, four of which were drawn from the 2012 Carleton Strategic Plan. Here are some key accomplishments:

- 1. Preparing Students:** partnered with the Career Center to create the innovative Career Tracks website and Activity Wheel to support the progression of student career planning
- 2. Enhancing Teaching & Learning:** partnered with the LTC to launch CUBE (the Carleton Undergraduate Bridge Experience) which has helped nearly 75 incoming students gain greater quantitative skills
- 3. Financial Efficiency:** used an NSF grant to increase bandwidth from 1 to 10 Gbps, adding consortial failover to reduce the risk of Internet downtime
- 4. Embracing Collaboration:** used Mellon grant support to explore a dedicated shared Security Officer position with St. Olaf
- 5. People Effectiveness:** partnered with Computer Science faculty to prioritize modifications to The Hub to improve ease of use
- 6. Process Effectiveness:** moved to cloud-based file storage which allows for more efficient document sharing with on and off campus collaborators.

Our role is to be effective partners with faculty, staff and students, as well as with hundreds of vendors and higher education institutions. For these relationships to thrive, we focus on good communication and openness. I hope this Annual Report provides a window into the workings of ITS—what we do and why we do it.

*Janet Scannell*

# EMPOWERING PARTNERSHIP

Technology plays a key role in the process of bringing together the diverse collection of activities that make Carleton what it is. We work daily with the suppliers of many software applications, making sure that essential systems are stable, secure, and properly implemented. Additionally, we engage with our vendors to ensure that the trajectory of the software matches Carleton's anticipated priorities and needs.

Often the software we use is largely created by our vendors and ITS has limited ability to modify it. Sometimes we can influence the vendors by participating in focus groups and other discussions, where higher ed institutions come together with software developers to determine future direction. The Hub, for example, will be undergoing significant changes in upcoming years as key features move to a different underlying technology. This year we have focused intensely on our collaboration with Ellucian, the vendor that produces the software that powers The Hub, in an effort to align their priorities with the needs of liberal arts colleges. Participants in this process at Carleton include not only technical staff, but people around campus who are responsible for functions that the technology supports. For example, registrars Emy Farley and Maria Reverman have joined Sara Oster, Neal Weeg, and Jeremy Kramer in monthly product testing sessions and phone calls to encourage the development of features that support unique aspects of the liberal arts enrollment process.

In other cases, Carleton has more leeway to customize vendor-provided software. Earlier this year, Director of Campus Services Judson Ulvestad had a vision that technology might facilitate improvements to the student vehicle registration process. He partnered with Russ Bauer, Matt Wallace, and staff from the Dean of Students office, Business Office, Campus Services, Auxiliary Services, and Security Services. This group transformed an isolated, archaic paper process into an OnBase workflow that automates parking spot assignments based on availability, simplifies billing, delegates tasks across departments and provides better service to our students.

Whether we're partnering with people on campus or with outside vendors, our goal is to work toward the best possible options for the Carleton community.

**ADDITIONAL ACCOMPLISHMENTS IN THIS AREA:**

- Engaged a consulting firm (CampusWorks) to review the suitability and nimbleness of our current enterprise systems (such as The Hub). The firm met with 93 faculty and staff to draft recommendations which are under review by the Technology Planning & Prioritizing Committee (TP&PC).
- Convened a group of faculty to talk about shared research computing resources. As a result, NSF grant funds were spent on a shared, central server that can be simultaneously used by several faculty for data processing, rather than less-powerful individual computers.
- Collaborated with St. Olaf information technology staff to choose a new help desk system to track support efforts, especially those tasks and assets shared between the schools. The new system will help us respond quickly and consistently to requests for help, and should go live in January.

**KEY INITIATIVES:**



People Effectiveness



Embracing Collaboration



Process Effectiveness



**60** Focus group sessions to guide future development of Colleague

Number of departments involved in the focus group sessions **6**

**5066**

Carls who used Eduroam across

**21** countries, Jan-Jun 2018

the**HUB**

**96** Feature options in The Hub

# WHO KNEW?

As the steel skeleton of the new science complex unfolds, it acts as an ongoing reminder of the complexity of taking a building from concept to completion. If steel is the skeleton, then IT can be considered the central nervous system for the structure. Like plumbing for restrooms and electricity for lighting and power, internet connectivity, proximity sensors on doors, environmental controls, and other technological integrations are vital components of a new building. The process to integrate them effectively into the new science complex requires active and continuous collaboration between ITS, the contractors, and campus partners.

In conjunction with the contracting teams, Kevin Chapman reviewed technology floor plans for placement of printers, public labs, and new wayfinding equipment. Michael Decker hit the ground running in his new Classroom Support position, reviewing projectors, screens, speakers, and whether the classroom control panels would also control lighting and blinds. Chris Dlugosz and Bryan Reed ensured there would be adequate network infrastructure within the building and successful connections to Olin and Hulings. All this and more is managed through a complex series of over 800 blueprints, accounting for every switch, plug, and port. The plans are updated in real-time through collaborative software that works a lot like Google Drive.

Adding to the technical complexity is the challenge of keeping research animals safe and secure throughout the project. “Many issues come up with an animal facility because we are not allowed by federal law to expose animals to extreme temperatures or extreme stressors,” explained Julie Neiworth, Laurence McKinley Gould Professor of the Natural Sciences and Psychology, who collaborated closely with ITS. The new animal colony will have greatly improved camera and monitoring equipment, but mounting and cable routing proved challenging because drilling holes could allow entry of bacteria, mold, or other contaminants. Julie’s knowledge of those constraints led to an efficient cabling solution that kept the animals safe, and her team was able to train the monkeys to move into transportable cages so they could be kept in safe environments while the installations occurred.

The detail involved in construction planning continually provides new surprises and opportunities for meaningful collaboration across departments.

**ADDITIONAL ACCOMPLISHMENTS IN THIS AREA:**

- Increased the number of people informed of ITS issues through voluntary enrollment in the campus alert system called CarlAlert. This service lets us quickly notify faculty, staff, and students when there is an outage that affects them.
- Restructured classroom technology support to improve the faculty experience. In Spring Term, PEPS staff started checking classrooms more often, communicating room status more clearly, and simplifying the technology setups.
- Continued work with Carleton faculty to produce instructional videos. Videos hosted by ITS received more than 37 hours of viewing, at about 2 minutes per viewer. Each video takes anywhere from one to ten hours to create.

**KEY INITIATIVES:**



Teaching and Learning



People Effectiveness



Process Effectiveness

# 1000

# of data ports in the new science complex, including

# 2

on the roof



# 197

Colleague/Hub patches applied per year



# 1939

Google Groups at Carleton

# 12,203

Total number of Helpdesk tickets serviced in FY 2018

# SECURING OUR PRIVACY

2017–18 was the year of the Equifax data breach. It was the year Facebook’s Mark Zuckerberg ended up in congressional hearings triggered by lax information handling. It was the year of Spectre & Meltdown—flaws in the hardware that underlies most computing devices. Additionally, 2018 brought the revelation that Iranian hackers had compromised over 3,700 US faculty accounts and exfiltrated over 31.5 terabytes of research, library, and personal data.

In response to these and other threats, Carleton has taken major steps forward on the privacy and data security fronts, broadening two-factor authentication to the entire campus (see detail at right), implementing regular security updates of our desktop computers, and introducing DMARC, an increasingly popular, and effective, method of blocking forged emails from trusted Carleton email addresses.

The basic act of ensuring that our software is current turns out to be one of the most vital steps any organization can take towards protecting its data. Many of the recent security incidents in the news, such as the ransomware attack that crippled Atlanta, could have been prevented by simply keeping software up-to-date. To that end, ITS started pushing more frequent security updates and developed a remediation plan for computers that fail to update. This plan was guided and informed by conversations with the campus-wide Security Advisory Group who weighed in at several key points, helping balance security against user inconvenience.

Blocking forged emails with DMARC required input and collaboration from multiple people across many departments. Jaye Lawrence in College Communications worked with Richard Goerwitz and our mass-email vendor, Emma, to set up DMARC. Emma (also the name of the product) handles the majority of mass emails we send out. When properly configured to work with DMARC, Emma-originated email can be verified as legitimate by email providers like Google, Hotmail, and Yahoo, and conversely, fakes can be more easily detected and rejected. Bringing Emma and other partners into line with DMARC yielded a 90% reduction in spoofed Carleton email.

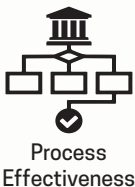
Looking back on all the privacy and security-related challenges we’ve faced this last year, it’s easy to be daunted. There’s good news, though. The entire community is responding well and collaborating with us to implement needed changes.



**ADDITIONAL ACCOMPLISHMENTS IN THIS AREA:**

- Enrolled over 2000 students, staff, and faculty in Duo two-factor authentication, tracking student enrollment with a thermometer seen in the background image. Students signed up through dinner workshops and collaboration with RAs. Many other small group adoption opportunities were offered, including a session with First Year Faculty organized through the LTC.
- Committed to an ongoing shared Information Security Officer with St. Olaf, leveraging the three-year Mellon-funded experiment which proved the value of a permanent IT security position.
- Formed a campus-wide task force to address the General Data Protection Regulation (GDPR) regulations governing the collection, processing, use and storage of any individual's personal data originating in the European Union (EU). Task force members updated the College's privacy policy and gathered ~400 pieces of information during the initial scoping.

**KEY INITIATIVES:**



**48,277**

Failed attempts in April and May to hack the VP and Chief of Staff's account

**13,059**

Distinct connections to the Carleton VPN from

**229** individual users

**8529**

Files and folders in Google Drive shared from Carleton faculty, staff or students to someone outside of Carleton



# ENHANCING TEACHING AND LEARNING

A common final project in a history course is a substantive, well-researched paper. History professor Thabiti Willis, who teaches a course on West Africa during the era of the slave trade, wanted to do something different. Working with Academic Technologist Celeste Sharpe and Reference & Instruction Librarian Sarah Calhoun, Thabiti settled on the idea of having teams of students create linked physical and digital exhibits.

Presented in a Weitz Center white space, the physical exhibits allowed the students the creativity to show their work together in a common space. The digital exhibits extended the concrete space and allowed students to more fully articulate their research and the intellectual choices behind the creation of their physical exhibit. These digital exhibits provided the teams with a site to weave together theory, primary sources, and historiography in an online presentation. The paired exhibit assignments made possible the exploration of topics and themes in West African history in unique and engaging ways.

One of the main goals was to assist teams of students in producing the exhibits. Celeste and Sarah worked with Thabiti to identify and teach the skills that students would need to make successful projects: find, organize, and cite sources; create and remix materials to make an intellectual interpretation or argument; and conceptualize and build out their digital exhibits in a tool called Omeka. They brought in Academic Technologist Doug Foxgrover to demonstrate ways of using visual materials and teach basic skills in image creation and editing. Additional support for 3D printing, copyright issues, and media questions came from Academic Technologist Andrew Wilson and librarians Iris Jastram and Matt Bailey.

On working with Celeste and Sarah, Thabiti said, "Both helped me brainstorm ideas, plan, and stage the project. I can't say enough about the essential work that the library and academic technology staff played on the success of this project."

Students debuted their physical exhibits in a show titled "Memory and Legacies of Slavery." The picture in the background of this article is from that show. The digital exhibit, "West Africa in the Era of the Slave Trade," is available online at: <http://hist181.omeka.net/>

**ADDITIONAL ACCOMPLISHMENTS IN THIS AREA:**

- Increased the number of faculty and departments experimenting with ePortfolios. These efforts spanned the humanities, sciences and social sciences, engaging students from their A&I seminars to graduation. The use of ePortfolios continued to grow for student workers through co-curricular opportunities sponsored by the Career Center and ITS.
- Established a loaner pool of 5 Chromebooks for in-class use with "Bring Your Own Device" assignments.
- Stewarded the use of supplemental online tutorials. During the past year, eight out of Carleton's top ten users of Lynda.com were students. They watched over 2100 tutorial videos, totalling more than 160 hours, all outside of traditional class time.

**KEY INITIATIVES:**



Preparing Students



Embracing Collaboration



Teaching and Learning

73



Faculty and staff from Carleton and other Liberal Arts colleges who attended Carleton's online learning sessions

Minutes of flight time on the drone for

743

4

faculty and staff projects

202,176

Recordings in Language Lesson used in

11

classes

45,290

LabArchives activities since July, 2017



# A NEW DIRECTION FOR THE WEB

In early 2017 the college announced a major change in our web infrastructure: the transition away from Reason, our home-grown web content management system. Carleton has begun the move to WordPress, one of the most widely-used web publishing tools. The first tangible product of this transition (known as “Web2020”) was the creation of a new Admissions website, which launched in May 2018.

The Admissions website project was an intensely collaborative experience between Web Services, Creative Services, and the Admissions office. Having a highly-engaged client in Senior Associate Dean of Admissions Jaime Anthony was one of the factors that made it a success. In Jaime’s words: “It was a fun and helpful challenge to learn how to best communicate with people who focus on projects that are massively different from my own daily work. In order to be a productive collaborator, I dedicated myself to learning the details of the web team’s work, and I saw the team working hard to learn more about admissions, too. It was really rewarding to see us all committed to making the collaboration successful.”

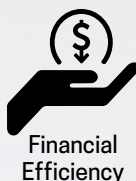
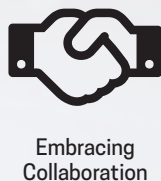
The Web2020 project gives us opportunities to try new ways to work and to integrate new technologies into our web presence. Basing our website in WordPress allows us to hire outside experts in specific areas when needed, as we did with the Admissions site. Additional benefits of this new direction include an increase in efficiency and the use of more open-source tools. Both of these were accomplished by the move to a cloud-based infrastructure and the adoption of a tool called Kubernetes to manage the software platform. For more information on Google Cloud and Kubernetes for Web2020, visit: [go.carleton.edu/kubernetes](http://go.carleton.edu/kubernetes).

Learning from these early experiences, we now move into full-scale migration. The first group of sites to make the transition to WordPress will be major prospective student destinations, including academic department sites. The rest of the college’s websites are expected to move over the next two years.

**ADDITIONAL ACCOMPLISHMENTS IN THIS AREA:**

- Incorporated “Agile” project techniques into our processes, including daily stand-up meetings for major projects like Web2020, Kanban boards to coordinate our work, and “user stories” to clearly define client needs.
- Integrated The Hub, Colleague and the OnBase web client with campus single sign-on, thereby adding significant protection to high risk data. This also enables faculty advisors, budget managers, and others to move quickly between these web systems.
- Finished moving most faculty and staff documents to cloud-based storage. This facilitates easy access to these files from anywhere and easy sharing with anyone, on or off campus.

**KEY INITIATIVES:**



**31**

Terabytes of Carleton files stored in Google Drive

**24.5**

Terabytes of Carleton files stored in Dropbox



**730**

Number of different people who made edits on

**685**

Reason web sites

**20,000**

Unique Carleton web pages in Reason and WordPress

# FOUNDATIONS FOR THE FUTURE

The new science complex is being built to last 50 years or more, and we know that technology will be part of its story. As noted in Carleton's 2012 Strategic Plan, technology will continue to be "ubiquitous, expensive and subject to continual rapid change." It will also be imperfect, exciting, and evolutionary.

How will this ongoing transformation affect the science complex and the rest of Carleton? In a broad array of ways that we will all figure out together. We can't predict specific technology innovations in advance, but we can guarantee that the process will involve many experiments. For example, society is on the cusp of a dramatic change due to machine learning, which is currently preventing accidents by applying car brakes—based on the data being gathered by the car itself. It's already time to consider the implications of a campus with self-driving cars.

ITS will continue to prepare for the future while supporting the technologies in use today. We are guided by the shared campus goals of providing an excellent education to our students and helping the next generation to make wise and well-informed decisions about the role of technology in their lives and careers.

## **HERE ARE SOME OF THE PROJECTS UNDERWAY IN 2018-19:**

- Continue the move from Reason to Wordpress
- Implement a modern Help Desk software system in conjunction with St. Olaf
- Analyze the needs and priorities for enterprise software systems, such as The Hub
- Refine the technology plan with the Core Committee for the new Science Center
- Develop practices for sharing the new NSF-funded research computing cluster
- Finalize the Carleton statement in response to GDPR
- Work with the Library and Public Works grant teams to craft next steps in integrating digital literacy

# GETTING SUPPORT

**To check whether an ITS service is down  
(or was within last 24 hrs):**

<https://apps.carleton.edu/campus/its/>

**For help with a work-stopping issue:**

Call: x5999

**For help with an urgent classroom issue:**

Call: x7070

**For help with a non-urgent issue:**

Visit: <http://go.carleton.edu/servicecatalog>

Email: [helpdesk@carleton.edu](mailto:helpdesk@carleton.edu)

Call: x5999

**To sign up for e2Campus technology alerts:**

- <https://apps.carleton.edu/emergency/service/>
- Select “change modification settings”
- Select "groups"
- Click to subscribe to “ITS Emergency Notifications”

**To discuss an idea or get connected to specific expertise:**

Contact any of the ITS managers or

Janet Scannell, CTO, at: [jscannell@carleton.edu](mailto:jscannell@carleton.edu)

**Rob Alaimo**  
Lead Systems Engineer

**Julie Anderson**  
Director of Web Services

**Anirudh Appachar**  
Hardware Asset Manager

**Rebecca Barkmeier**  
Desktop Systems Administrator

**Troy Barkmeier**  
Desktop Systems Administrator

**Russ Bauer**  
Enterprise Application Administrator

**Jeanne Blair**  
Technology Purchasing Coordinator and Office Manager

**Carly Born**  
Academic Technologist

**Tom Brice**  
Senior Web Application Developer

**Matt Burr**  
Events Support Specialist

**Kevin Chapman**  
Technology Support Specialist

**Julie Creamer**  
Director of Enterprise Information Services

**Michael Decker**  
Classroom Support Manager

**Chris Dlugosz**  
Network Architect

**Dave Flynn**  
Director of Systems & Infrastructure

**Doug Foxgrover**  
Academic Technologist for Presentation & Visual Design

**Travis Freudenberg**  
Computing Support Specialist

**Kendall George**  
Information Security Officer

**Richard Goerwitz**  
Database Admin and Integrator/Data Warehouse Architect

**Mavis Gustafson**  
Enterprise Software Business Analyst

**Tammy Hanek**  
Presentation Technology Specialist

**Randy Hoffner**  
Science Support Specialist

**Dann Hurlbert**  
Media and Design Specialist

**David Huyck**  
Senior Web Application Developer

**Jeremy Kramer**  
Applications Support Programmer

**Paula Lackie**  
Academic Technologist for Curricular & Research Data Support

**Les LaCroix**  
Strategic Technologist

**Matt Lauer**  
Web Administrator/Developer

**Sande Nissen**  
Desktop Systems Administrator

**Sara Oster**  
Database Administrator, Project Manager

**Noel Ponder**  
Technology Support Specialist

**Bryan Reed**  
Systems Administrator

**Austin Robinson-Coolidge**  
Director of Technology Support

**Janet Russell**  
Director of Academic Technology

**Janet Scannell**  
Chief Technology Officer

**Celeste Sharpe**  
Academic Technologist for Instructional Technology

**Kendra Strobe**  
Technology Support Specialist

**Bryan Thieling**  
Systems Administrator

**Matt Wallace**  
Enterprise Analyst / Developer

**Neal Weeg**  
Applications Support Programmer

**Andrew Wilson**  
Academic Technologist for Digital Scholarship

**Mary Ann Wroblewski**  
Telecommunications Specialist