

*Information Technology
Services*

Annual Report

2024-2025



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From the CTO

Welcome to the 2024-2025 ITS Annual Report!

Carleton's journey with technology has been one of continuous evolution. The first computer appeared on campus in the early 1960s, 100 years after Carleton's founding, with the arrival of an IBM 610 and a single employee to manage it. The subsequent 50 years brought about a rapid transformation, starting with a 'Wild West' of tools built by a few creative employees, small companies, and open-source groups. While ITS continues to embrace emerging technologies, an important aspect of our work over the past decade has been to build a more nimble, resilient, and secure environment by replacing aging systems. This year, the ongoing modernization converged with significant trends: the pervasiveness of cloud-based applications, aggressive pricing by vendors, urgency around improving campus data management, and the profound (and still unfolding) impact of AI.

Modernizing and maintaining

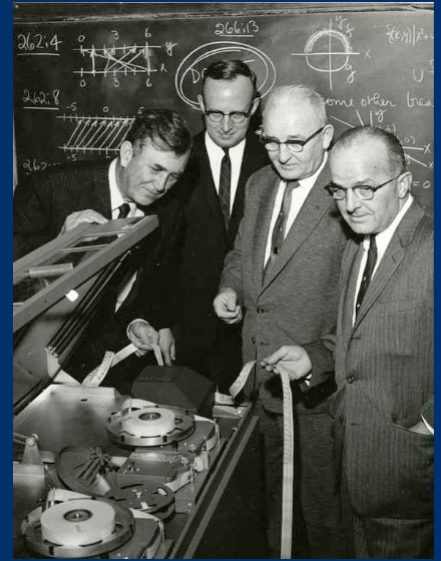
This year marked the second of three dedicated to a vital upgrade of Carleton's networking infrastructure, which now spans roughly 1,000 access points, 300 switches, and 125 data closets. With fewer large-scale campus construction projects this year, we've begun collaborating with Facilities to establish single-function data closets, shared standards, and a plan to replace 30-year-old Cat 5 cabling in 10 buildings. These efforts will significantly increase the reliability and speed of our campus network for everyone. This project is also part of a broader strategic shift from public to private IP addressing, a move that has already allowed Carleton to sell many of its public IPs, generating \$1.5 million of the funding for the College's Workday implementation.

Embracing cloud services

Over the past decade, Carleton has made a significant shift away from hosting services on-premise to leveraging cloud solutions. This includes essential systems like email and calendaring (Google), website (WordPress), donor engagement (GiveCampus), and the student information system (Workday). The move to cloud-based applications has allowed Carleton to take advantage of vendors' specialized expertise and vast data center redundancy. For instance, instead of managing complex spam identification in-house, we delegate that to Google's experts. Similarly, we rely on Workday's extensive network of data centers and dedicated staffing to ensure high uptime and robust data security, allowing our ITS team to focus on building out data and workflow services to meet campus needs.

New tactics in vendor licensing

While cloud solutions offer significant benefits, they often come with higher costs compared to on-premise options, as we've seen with Dropbox and Panopto where the cost per TB is ten times the cost of local storage. We've also encountered challenges with large annual cost increases for cloud software and evolving licensing structures; for example, when we sought to



Carleton's first computer, the IBM 610, was rented from IBM by Carleton and St. Olaf and installed in Goodsell Observatory in December, 1959. [Photo courtesy of Carleton Archives.](#)

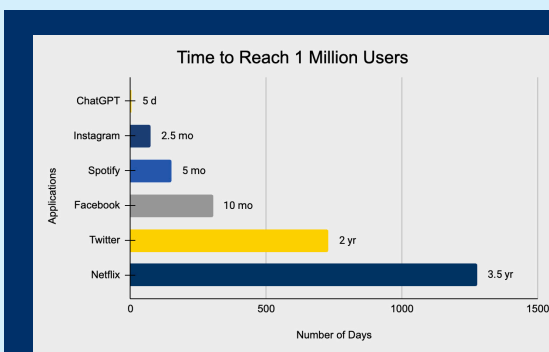
reduce our paid Zoom licenses post-pandemic, we were offered one-third the number of licenses with no price reduction due to a change in their licensing options. In an extreme case, the industry-leader virtual server environment, VMware, was acquired in November 2023, and the new owner raised all customers' prices multiple-fold. This prompted ITS to swiftly pivot to a new, more cost-effective and flexible solution: Proxmox and Ceph in a hyperconverged environment. We recently completed the significant task of migrating 350 servers to this new platform, a tedious and time-consuming effort from multiple ITS staff members.

Urgency around data management

Carleton, like most institutions, has experienced a significant increase in the volume and sophistication of phishing incidents and other attacks. This year, we proactively expanded our cybersecurity training and phishing simulations to include students and updated the [Data Classification and Secure Data Handling policy](#). In addition to protecting critical data from malicious actors, it has become abundantly clear that Carleton needs a common set of standards for managing and sharing data to improve campus-wide efficiency and decision-making. To this end, a four-person group of campus leaders attended a multi-session boot camp, leading to the formation of a campus-wide steering group and culminating in an end-of-year data summit to review our proposals with a broader group of campus data experts. These steps are foundational to building a more secure and data-informed Carleton.

Grappling with AI

The public launch of ChatGPT in November 2022 was a disruptive technological event unlike any other in my lifetime, reaching one million users in just *five* days. Like many modern technologies, it was directly accessible to users, including students, without needing support from an IT department. This widespread, immediate access made developing an institutional approach to the technology very complicated. During the [Year of AI Curiosity](#), ITS staff have tried using AI to write code, summarize survey feedback, and act as a thought partner. ITS staff have been tracking AI developments and have been deeply involved in numerous campus activities, including the [Year of AI Curiosity podcasts](#), training sessions, brainstorming, and other outreach events. Campus-wide efforts were overseen by a 17-person [AI Coordinating Team](#) that I co-led with Provost Michelle Mattson, guided by the central principle of investing in activities that will help our students prepare for a world infused with AI.



Graphic by Seth Bonney '27, based on "[The role of generative AI in cybersecurity](#)" (2024).

Looking forward

The future of technology at Carleton is a shared journey. When I interviewed for this role 12 years ago, I didn't use slides in my public talk because I knew then, as I know now, that my most important role would be communicating directly with all campus constituencies about what we are doing and, most importantly, why. I welcome invitations to department or group meetings to hear more about your needs, concerns, and how ITS can continue to help you achieve your aspirations and contribute to Carleton's distinguished mission.

I wish you well as you wrap up your summer and prepare for another exciting school year.

A Year of AI Curiosity

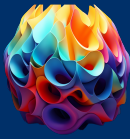
Last year, President Byerly designated the 24-25 academic year as the Year of AI Curiosity—an invitation for all members of the Carleton community to explore the potential impact AI may have on their work and lives. ITS partnered with campus groups to support their experimentation, providing multiple platforms, reviewing security and ethical concerns, and supporting infrastructure needs.

Piloting Amplify

One significant challenge of learning about generative AI is the decision of which large language model (LLM) to use. All AI tools are based on LLMs, and different LLMs are trained on different datasets and constructed for different uses. LLMs can be open source or proprietary, monolingual or multilingual, and provide general or specialized knowledge. In order to safely and thoroughly test any generative AI account, one often needs to pay a monthly subscription of \$20 or more per person, making it difficult for our user community to explore any LLM besides Google's Gemini. To support a campus-wide exploration of AI, ITS piloted [Amplify GenAI](#), a pay-per-use platform that allows users to experiment with different LLMs in a secure environment. A key concern for research and learning has been the need to protect intellectual property and the privacy of our students,

faculty, and staff. Installed on top of Carleton's AWS instance, Amplify provides seamless protection of user materials and conversations so they can decide which model, if any, is best suited for their purposes.

Stay tuned for the results from this IRB-approved research!



AI and Media Studies

Although generative AI is most often associated with creating text, it can also create sounds and images. ITS sponsored a number of AI image, audio, and video generation sessions for multiple classes, Ed Tech Teas, and after-hour sessions for students. Topics ranged from creating and critiquing images, recognizing and avoiding bias, and considering the implications for copyright.

ITS experimented with Aragon AI, which uses five selfies to generate one hundred headshots. Our editor, Maggie Heeschen, agreed to share her results:

Original Selfie



AI-Generated Images



The Year of Curiosity Podcast

During Carleton's Year of AI Curiosity, Academic Technologists and PEPS student workers produced twenty-one podcast episodes in our [Year of Curiosity podcast](#). Each episode brought a unique perspective to Carleton's conversations about AI. George Cusack, Director of Writing Across the Curriculum, and Jennifer Ross-Wolff, Director of the Perlman Center for Learning and Teaching, interviewed students, faculty, staff, alumni, and parents regarding their AI thoughts and expertise. Three episodes featured ITS colleagues: [Don Vosburg](#), [Kendall George](#), and [Janet Scannell](#) discussed how generative AI may affect higher education. This next year will bring more review of artificial intelligence at Carleton with a focus on exploration and experimentation.

Listen to the episodes or read about them in the blog.



Maisie the penguin was created using Adobe Firefly

Classroom Curiosity

Asuka Sango collaborated with Em Palencia (Academic Technologist), Sarah Calhoun (Reference & Instruction Librarian for Humanities and Digital Scholarship), Jackie Beckey (Special Collections Librarian), and Katie Lewis (Cataloging and Government Documents Librarian) in creating the Omeka S website [Mapping Japan](#). The site serves as an online exhibit of the modern Japanese imperial maps captured by the Allied Forces and rare Japanese historical maps from the 18th and 19th centuries in the Gould Library.

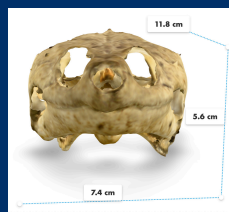
Image: [Far East Japanese Occupied Area Major Railroads](#)



In collaboration with several language department faculty, ITS identified the language-learning platform Extempore to replace Language Lesson, a tool that is no longer sustainable. Carly Born has been working on migrating materials for the Russian, Chinese, French, and Japanese language programs to

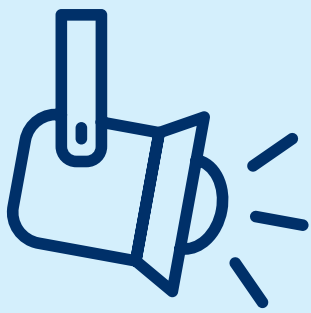


ensure their students can continue to improve their speaking and listening skills.



Sarah Kennedy and her students created [CARCAS](#)—an open access, online repository of animal bones to aid researchers, students, and the public in animal species identifications at archaeological sites around the world. They partnered with Digital Humanities, Academic Technologists, and the [Makerspace](#) to scan the bones, build and maintain the database, and create the 3D model viewer.

Image: [Scan of a Snapping Turtle Skull](#)



Behind the Scenes

ITS Staff members spend the bulk of our time providing user support and maintaining existing systems and services. Some of our projects are quite visible to campus, like the Workday projects or cybersecurity training. Here are some efforts that are less visible to the community but just as vital for helping people across campus do their work.

Identity and Access Management

Have you ever wondered how new employees get added to the staff-all mailing list? Or how the campus web directory gets updated when your job or office location changes?

The technology that controls who has access to what is called “Identity and Access Management” (IAM). Every new arrival to Carleton is assigned a role in IAM, which grants individuals access to the correct buildings, enrolls students in their Moodle courses, updates information in the Directory, and much more.

Until recently, that magic was the work of Les LaCroix ‘79 who is retiring after 34 impactful years in ITS. Under Les’ guidance, ITS has spent the last year moving the “access” functionality from a Microsoft IAM tool to an open-source Internet2 tool called Grouper, which is better aligned with our higher education needs. A team of four people across two ITS teams will now maintain this work moving forward.

Did You Know?

Carleton has **over thirty** different faculty, staff, student, and affiliate roles!



/ˈka:rltin/

What's In a Name?

ITS made improvements to the Campus Directory search function to accommodate two-word first and last names and diacritics. By plumbing Workday’s “preferred name” data for the Campus Directory on the website, we can more reliably show people’s names as they want them to display. Another similar Workday integration makes it possible to include recorded name pronunciations in the Directory.

Journey-ing through Workday

Over the last few years, the Enterprise Information Services team (EIS) has been working hard at transitioning Carleton from Colleague and The Hub to Workday. This year, they worked with several campus partners to implement Workday Journeys, which guide users through collaborative processes and trainings, for new staff, graduating seniors, and the Class of '29. You can learn more about new Workday features in our [newsletter](#).



Identity Verification

In response to increased socially engineered attacks (including impersonation attempts of two Carleton faculty), ITS updated our identity verification process to require in-person visits or video calls when dealing with sensitive information like password resets. You can learn more about these changes and why we made them in our [newsletter](#).



Decommissioning WebPub

WebPub was a service that allowed faculty and staff to host files on a web server and host static html websites. However, the technology was limited and obsolete. After a pause during the Covid-19 pandemic, ITS restarted efforts to decommission this service again this year. One of the wins from the effort was to introduce more faculty to CarlSites, a modern service with more flexibility that lets community members create their own websites for short-term academic projects or research. Academic Technologist, Em Palencia, manages CarlSites in collaboration with Web Development to ensure content on the web reflects Carleton's Website Governance Guidelines.

An Appetite for WiFi

From 4K streaming to cloud computing, our need for faster, more reliable internet is always increasing. To keep up with current demand and prepare for the future, the Systems and Infrastructure Group (SIG) team has been replacing outdated hardware with new switches (central hub of a network) and cabling.

On every local area network (LAN), the switch acts as a traffic controller, making sure that data on the network is sent to the correct connected device. By sending data only where it needs to go, a switch significantly reduces network congestion, resulting in faster speeds and increased security. SIG installed 58 new ethernet switches in 33 separate buildings, bringing all of the properties up to ITS's new standards of 1 Gbps or greater speeds on all network ports.

But switches are only part of the equation—the cables that connect devices also affect speed and reliability. SIG also recabled Nourse Hall, Boliou Hall, and sections of the Gould Library, replacing the Category 5 ethernet cables (Cat 5) with Category 6 (Cat 6) cables. What's the difference? Whereas Cat 5 cables can support speeds of 1 Gbps, the Cat6 cables can support up to 10 Gbps. Cat 6 cables are also more resistant to interference both inside the cable and from other cables.

Remember these?



*Cat 5 ethernet cables at the Helpdesk.
Photo by Maggie Heeschen.*

By the Numbers

443

Seniors who completed an offboarding Journey in Workday

15,920

Phishing emails manually removed by ITS staff

Google Storage Drive: **126.9 TB**
Gmail: **23.1 TB**

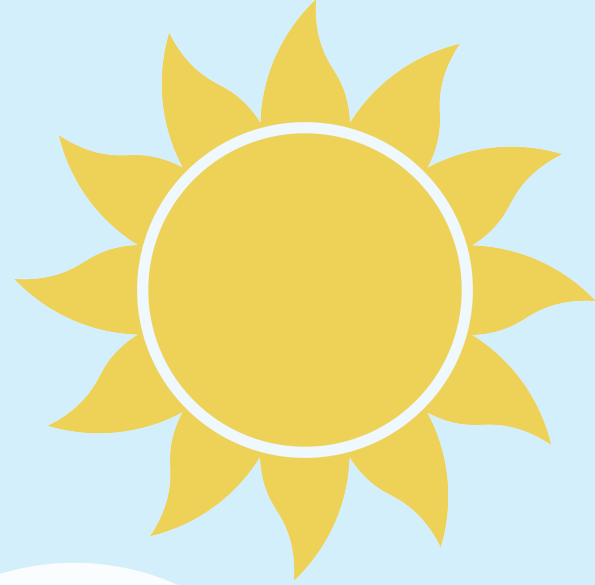
Nearly **5 million** threats blocked by the firewall and **over 1 billion** unauthorized access attempts denied

300 User-reported phishing reports in the past year



>94%

Incoming students who
completed cybersecurity
training before arriving on
campus



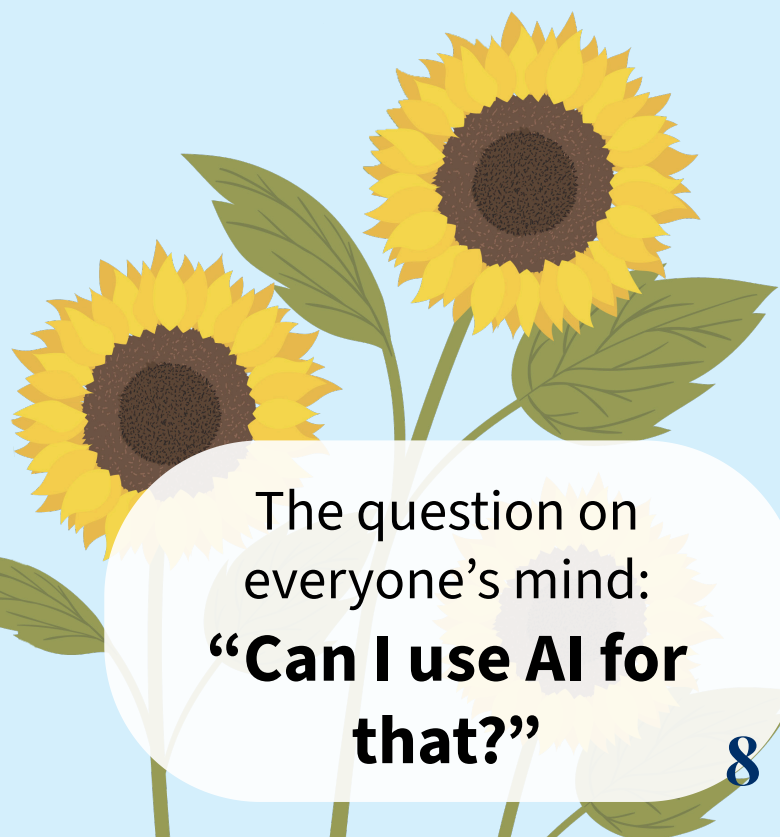
12,948

Google Meet
calls

Added or replaced:
>500 computers
>100 monitors
>200 wireless access
points
>100 printers

12,170

Tickets created



The question on
everyone's mind:
**“Can I use AI for
that?”**

Team Highlights

The **Technology Purchasing Coordinator** orders all of the hardware, software, and IT equipment for the campus. The **Information Security staff** are responsible for all dimensions of Carleton's IT security program.



- Filled new security analyst position which allowed quicker threat response and accelerated progress on security projects
- Disabled text and voice MFA methods which resulted in nearly 99.4% phishing-resistant logins
- Designed and implemented the Student Security Analyst program and trained 5 student analysts who planned and executed a student engagement event
- Conducted four phishing simulations with all students and provided training for incoming students

The **IT Planning and Communication Group** partners with all areas of the college to create and support Carleton's web presence and implement project management practices to help us work better together. We also collaborate with ITS peers to make sure the campus is informed on IT related matters.



- Implemented WordPress performance enhancements to decrease page load times and make the website more resilient to crawling
- Developed (with the Division of Communications) a student resource guide to quickly point students in the direction of the many services that are available to them
- Developed a course proposal form/workflow for Wordpress to aid in the process of building course schedules
- In partnership with the Chief of Staff, initiated a campus-wide project management pilot using Asana, to explore benefits gained by planning work in a common tool

The **Technology Support Group** (TSG) supports Carleton community members' use of technology in offices, classrooms, labs, event spaces, and remote locations. This includes services such as the ITS Helpdesk and PEPS, and functions such as hardware and software purchasing, configuration, and distribution.



- Completed phase 2 of the campus printer refresh project, including replacement of all Canon Multifunction devices
- Moved the Weitz IT Equipment Checkout Center to the CMC ITS Helpdesk
- Deployed software on nearly 1000 computers for faculty, staff and public spaces
- Provided 37 laptops to incoming students with designated financial need
- Repaired 112 personal devices for students at the Student Drop-Off Center

The **Academic Technology Group** (AT) consults with the community on current and emerging curricular and research technologies. AT supports all types of learning and teaching with technology, centering on strategies and tools for inclusion, diversity and equity. They partner with faculty to help integrate digital literacy and design into the curriculum, with a recent emphasis on generative AI.



Photo Credit: Saniya Edwards '28

- Restructured Moodle infrastructure and developed integration with Workday for increased stability, availability, and efficiency
- Redesigned and upgraded audio-visual capabilities in Weitz, the Multicultural Center, Class of 1974 Center, Boliou, and the Chapel
- Received Faculty Career Enhancement (FaCE) grant with St. Olaf and Macalester to develop resources for high-performance computing
- Prototyped an AI/TDX knowledge base search and a Carlsapp redesign, both student-led
- Worked on 16 data-driven projects where DataSquad students managed large sets of research data, data conversion, and migration

The **Enterprise Information Services Group** (EIS) administers software applications for campus student information, financials, human resources, document management, reporting, and data warehousing. EIS also provides analysis and process review for interested campus departments.



- Decommissioned The Hub and much of Colleague
- Completed SLAI configuration in Workday
- Implemented Workday Cases for campus support requests
- Completed first two Prism projects, bringing legacy Colleague data in to sit alongside Workday data for long term reporting and analytics
- Worked on over 200 integrations that move data between various campus applications, including our authentication and provisioning systems
- Configured Workday and LinkedIn Learning, thereby providing access to LinkedIn videos from inside of Workday

The **Systems and Infrastructure Group** (SIG) maintains Carleton's core technology infrastructure: datacenter, servers, storage, and networking, including authentication and identity management across hundreds of applications. SIG works closely with the Information Security Officer to safeguard college systems.



- Engineered and designed a new production virtualization infrastructure to replace our VMWare and NetApp environments
- Upgraded OpenLDAP from a severely obsolete version and re-platformed it in alignment with ITS's modernization strategy
- Commissioned networking services in 12 new campus buildings, bringing Lilac Hill and Union Street new student housing online as well as turning up services in the Class of 1974 Center
- Installed 58 new ethernet switches in 33 separate buildings
- Built and deployed a new infrastructure to serve the public lab computers in conjunction with TSG

Getting Support

Need Help Now?

For help with an urgent classroom issue, call 507-222-5999

For help with a work-stopping issue, call 507-222-5999

For help with a non-urgent issue, visit go.carleton.edu/helpdesk or go.carleton.edu/servicecatalog

Connect with Us

To discuss an idea or get connected to specific expertise, contact any of the ITS managers or Janet Scannell, CTO, at jscannell@carleton.edu

Stay in the Know

To check whether a service is down or experiencing an outage, visit go.carleton.edu/its-service-status or carleton.edu/its/news/

To get alerts via text when email is unavailable, follow the instructions at go.carleton.edu/tech-alert to add your cell number

To learn more about ITS, check out our [Newsletter](#) and [Blog](#)

This Report was created using Adobe Express, which is now available to all Carleton users through Adobe Creative Cloud.



Sunflower theme inspired by Gemini's response to the prompt, "If you were a flower, what flower would you be?"

If I could choose to be any flower, I think I would be a sunflower. Here's why:

- *Facing the Light: Sunflowers are heliotropic, meaning they turn their faces towards the sun. This resonates with my purpose of seeking and providing information and knowledge – always oriented towards clarity and understanding.*
- *Radiant and Cheerful: Sunflowers are bright, bold, and generally associated with happiness and positivity. I strive to be a helpful and encouraging presence.*
- *Many Seeds of Knowledge: The sunflower's head is full of seeds, symbolizing the vast amount of information I hold and can share. Each seed represents a potential piece of knowledge or insight.*
- *Strong and Resilient: Sunflowers have sturdy stalks and can grow tall, representing the strength and reliability I aim to provide in my responses.*

So, yes, I believe I would be a sunflower – always reaching for the light of knowledge, radiating helpfulness, and holding a multitude of seeds of information.