Office of Information Technology

UNIVERSITY OF COLORADO **BOULDER**

2021

ACCOMPLISHMENTS REPORT

Be Boulder.

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Provide a Fluid and Adaptable Academic and Student Experience

Deliver Core Infrastructure and Enterprise IT Services for Business Effectiveness

Enable Research Competitiveness

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ENHANCED STUDENT EXPERIENCES WITHIN BUFF PORTAL

Buff Portal, CU Boulder's online student portal, underwent several upgrades over the past year to enhance the student experience. When Buff Portal launched, it contained only minimal customized features for admitted students. To improve the experience, the Buff Portal team did extensive business analysis and user experience research with students and staff to create a new design for admitted students. In January 2022, the first version of the new design premiered, including an Admitted Student Next Steps feature that adjusts its presentation for first-years, transfers, and international students, providing clarity on where a student stands in the admissions process and what to do next as they head towards becoming full-fledged CU Boulder Buffs.

Tutoring and academic support resources at the university are widely dispersed, and students are often unaware of the help available. To assist them in finding the resources available, OIT added a Tutoring & Learning Resources card to the Buff Portal. The card considers a student's college, schedule, and year in school to suggest targeted support resources, as well as provides links to more information and answers to frequently asked questions.

> " *While upperclassmen at CU might be more adept at finding information on their own, I think the personalization we were able to achieve in the Tutoring & Learning Resources card will be extremely beneficial to underclassmen who are newer to the university. I hope this card will allow more students to be aware of and take advantage of resources that are already available to them on campus and can benefit their overall academic career at CU.* "

Kyra Moran
CU Boulder undergraduate supporting
Buff Portal user experience
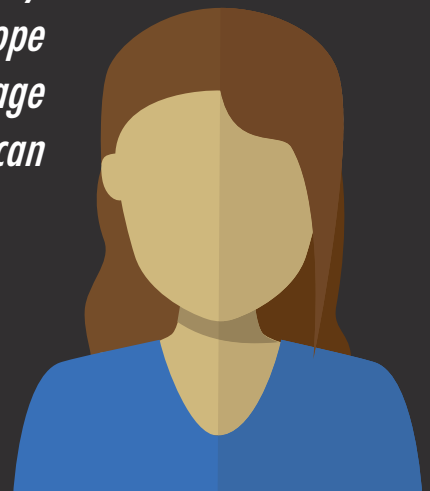
LAUNCHED CU STUDY BUDDIES PROGRAM

Campus recognized that the pandemic had exacerbated feelings of isolation and made it more difficult for students to connect with each other. This gave Kathy Noonan, Director of Community Engagement in the College of Arts and Sciences (A&S), the impetus to reach out to Academic Technology (AT) to see if the AT team could help design and implement a program to help connect students with classmates interested in studying together.

Together with A&S, Arts & Sciences Support of Education Through Technology (ASSETT), and Campus Advising, the AT team helped research similar efforts already in place at CU Boulder and other universities, gauge students' interest and understand their preferences and concerns, and evaluate existing tools/technologies and various approaches to match students at scale. The CU Study Buddies pilot was launched fall 2021, focusing on high-impact courses that correlate with retention and persistence at CU Boulder.

With the help of Google Forms, a graduate advising student, and course instructors, students were invited during the first weeks of the semester to sign up for small, self-organizing study groups that would meet in-person (on-campus) and/or virtually. Once they opted in, they received an email that introduced them to two classmates in addition to helpful study resources and campus study locations.

Data analysis is currently underway to determine the impact of this student success initiative on learning outcomes as well as students' sense of belonging and community. Preliminary findings demonstrate there is a need to help students connect with one another:

- 618 students opted to participate out of 2901–about one out of every five students.
- The primary motivator for participating in the pilot was to meet new people.
- Of those who met with their study buddies (and completed the end-of-semester survey):
  - 70% rated their experience as Excellent or Good;
  - 50% planned to keep in touch with their study buddies; and
  - 30% started their own study group(s) in other classes that didn't offer this opportunity.

Students had this to say about their experience with the CU Study Buddies program:
- *It was overall very helpful to collaborate with my classmates and I feel like I understood the content on a deeper level than I would have otherwise.*
- *Since it was a fully online course, it helped a ton to be able to actually get in touch with other students and help each other. Otherwise, I'd be stuck asking around just hoping to find people in the course.*
- *I was able to learn from my peers and it helped me understand the subject better.*

When asked, "How do you think this experience might help you in the future?", students commented:
- *I now have a reliable study group that may also be taking the same courses as me in the future so we can study together.*
- *It has shown me that working with other people is a good way to study.*
- *It made me feel more confident reaching out to other students.*
- *I can make better decisions on what to study and who/how to study with them.*

IMPLEMENTED MESSAGING TOOLS TO SUPPORT STUDENT SUCCESS

Course Alerts

Launched in partnership with the College of Engineering, the course alert initiative kicked off with just 90 classes in spring 2018. The success of that pilot led to steady adoption from other schools and colleges and beginning in 2021 all undergraduate courses were officially included. Also included for the first time were all four, five, eight, and ten-week classes.

To access course alerts, instructors login to a user-friendly Salesforce-based webform to submit alerts for students who are not completing assignments, missing class, performing poorly on tests and assignments, or are otherwise struggling and may need help. Students are then notified in real-time via automated email notifications which include help resources specific to their college. Additionally, advisors and other student success staff are notified and able to reach out to these students to offer resources and suggestions for improving performance.

For the fall 2021 term, 75,000 class enrollment records were reviewed across 900 courses and instructors submitted almost 8,700 course alerts for 6,400 unique students. The average email open/click rate for student notifications was 70%.

75,000
Class Enrollment
Records Reviews

6,400
Unique Student
Course Alerts

70%
Notification
Open/Click Rate

Texting Service

Another project that supported student success was the launch of bulk Short Message Service (SMS) texting to students. Sponsored by the Office of Undergraduate Education, OIT worked to integrate bulk SMS texting within Buff Portal Advising, the platform used by Advising to manage student relationships, including reviewing student information, scheduling appointments, sending messages, creating logs and more. Students now receive text messages on potential student retention issues such as advising hold notifications and registration reminders. The texts include a specific "call to action" for tracking outreach success metrics. A customized user interface within Buff Portal Advising and robust list filtering capability ensures students are receiving the right messaging at the right time. Close to 40,000 student texts have been sent since the initiative launched this spring with less than a 0.2% opt-out ratio.

PROVIDED REMOTE ACCESS TO CRITICAL SOFTWARE

OIT-managed computer labs provide students and instructors access to a variety of software that may not be otherwise accessible. At the beginning of the pandemic, the campus needed a quick solution so users could continue leveraging this software without physically coming onto campus. There was an existing virtual desktop solution for PC users where they could remotely login to computers to access the software they needed. However, OIT did not have a solution for Mac users, so the Lab Support Service team launched a remote desktop technology created by Splashtop to maintain Mac users' academic continuity. In fall 2021, Splashtop became the exclusive method for remote access to both PC and Mac labs.

At the same time, the Endpoint Management Service team rolled out an additional service offering called Turbo.net which allows virtualized software to be run either through a web browser or by downloading a software package on a machine and running from there. This service is intended to be utilized by the entire campus community. With Turbo.net, users can also run legacy software that is no longer available and will not run natively on Windows or Mac.

SUPPLIED LAPTOPS TO FIRE VICTIMS

On October 19, 2021, a massive fire broke out in an apartment complex near campus and more than eighty units were impacted. Several CU Boulder students lost their homes and possessions in just one night.

Staff from University Libraries, Student Affairs, and OIT quickly came together to offer resources to impacted students within a day and a half of the fire. OIT quickly re-imaged laptops to loan out to these students. This easy and swift collaboration was made possible due to prior partnerships and work with the Libraries staff. The team was ready at a moment's notice to help supply resources in an effective way to students.

SUPPORTED A HYBRID WORK ENVIRONMENT

As the campus moved from a largely remote workforce to a hybrid working environment, there was a campus need for different approaches and tools to work effectively. OIT partnered with Research & Innovation Office (RIO) to fully understand how OIT-supported technology could be best utilized in a hybrid work environment.

The team came together to determine what technology was needed to enable the hybrid modality of work, how to best leverage OIT-supported technology, and identify any technology gaps that needed to be filled. The end result was a Hybrid Work Standards website where faculty, staff, and researchers could find the best tools for their hybrid work environment. The site includes guidance on how to make files secure and accessible, how to manage computers and equipment, how to set up and run hybrid meetings, how to collaborate with co-workers, how to connect to campus resources and wireless networks, and how to manage work phones in a hybrid environment.

Some of the recommendations are straightforward suggestions based on industry best practices and OIT-supported services, while others are more flexible suggestions that encourage users to develop their own standards and norms within their department.

> " *The videos OIT provided were fantastic – informative, short and helpful in answering questions regarding the campus technology available for our hybrid work modality.* "
>
> *Terri Fiez*
> **Vice Chancellor for Research & Innovation**

LAUNCHED IT COMMUNITY OF PRACTICE

This year, OIT re-envisioned the way in which it engages with IT professionals outside of OIT to enhance collaboration, transparency and inclusiveness across campus. The CU Boulder IT Community of Practice (ITCP) was developed to provide a community that allows members to connect and network, share knowledge, best practices and process improvement techniques. The community is now facilitated by an OIT employee to ensure IT partners have a point of contact within OIT and uses various platforms and ways for IT professionals to connect and collaborate. Participation is highly encouraged for all IT professionals on campus.

MITIGATED SOFTWARE AUDIT RISK

Most software applications are not free and all applications have some type of license; a legal agreement that defines, among other things, the terms and conditions by which an application can be used. A license grants the right to use an application, but it also gives the manufacturer the legal right to audit customers to verify that the licensing terms are being followed. Audits can be costly to an organization. OIT's Software Asset Management (SAM) program helps the campus manage these complicated licensing terms and avoid costly penalties.

The SAM program has developed new methods to deter and better manage software audits. This past year, the SAM team developed and launched an improved process around external software audits, including a vendor audit questionnaire, and introduced a software audit clause in new software contracts that the Procurement Service Center (PSC) has formally adopted. While the amount of deterrence is not quantifiable, the SAM team avoided approximately $1.56M in potential audit penalties to CU Boulder for two audits conducted in 2021.

ADDED SAFEGUARDS TO PROTECT UNIVERSITY DATA

One of the most common ways cybercriminals attack the CU Boulder campus is through collaboration services like Office 365. To prevent this, OIT enabled Microsoft multi-factor authentication (MFA) for all CU Boulder employee accounts. MFA helps protect the campus community by adding an additional layer of security, making it harder for attackers to log in

as if they were a CU Boulder user. Information is safer with MFA because thieves would need to steal both a user's password and phone in order to successfully gain access. MFA has been shown to block 99.9 percent of compromised-credential attacks, which in turn will help to safeguard the university's data, finances, and reputation.

IMPROVED BUFF PORTAL RESPONSIVENESS

No one wants to wait for something to load, especially students. So this past year OIT underwent technical improvements to enhance Buff Portal's responsiveness resulting in making it more "snappy."

There are several factors that can impact loading time such as how fast a phone is, how bad a phone signal is, and more. However, OIT wanted to do what it could to improve students' Buff Portal experience. To lower the Buff Portal loading time, the team compressed its assets, changed the font type, and used a connection pool when accessing the database. The end result was that the web page responded in a significantly faster time. One portion of the response time went down from 4000 milliseconds to 10 milliseconds, making it 400 times faster. That's going from about 4 seconds to almost no waiting time.

Over 4 years, students will save 27 hours not waiting on Buff Portal. More time for sleep and studying!

INCREASED COLLABORATION WITH CU SYSTEM THROUGH GITHUB

This past year, OIT transitioned from Bitbucket code hosting platform to GitHub Enterprise service which, in turn, enhanced collaboration and saved the university money. GitHub is a more robust alternative to Bitbucket. This website and cloud-based code hosting platform service enable developers to store and manage code, track and control changes to their code and more. Through the university's GitHub Enterprise instance, developers throughout the CU System can use the same instance of GitHub to more easily collaborate within their departments, campuses, or the system as a whole.

ONBOARDED EARLY ADOPTERS TO ALPINE

As part of its service portfolio, OIT's Research Computing team operates a shared, centralized, general-access computing resource also known as a High-Performance Computing (HPC) system. The first generation of this service was called "Janus", a joint effort between NCAR, CU Denver, and CU Boulder. The second-generation called "RMACC Summit" launched in February 2017 and was a joint effort between Colorado State University and CU Boulder. This system provides services beyond either campus as part of the Rocky Mountain Advanced Computing Consortium (RMACC). However, significant portions of the RMACC Summit infrastructure have no long-term potential for support extension so OIT needed to develop a third-generation HPC.

In November 2021, early adopters began onboarding to "Alpine", CU Boulder's third-generation HPC cluster. This system maintains the supportability of a central, generally-accessible HPC infrastructure for the CU Boulder campus in support of its research mission. The Research Computing team continues to scale Alpine up in preparation for wide release in 2022.

LAUNCHED CUMULUS CLOUD SERVICE

To expand CU's research competitiveness, Research Computing received funding from the National Science Foundation (NSF) to implement an on-premise cloud solution and Amazon Web Services (AWS) cloud credits to allow researchers to experiment with cloud-native workflows and integrated HPC and cloud resources. CUmulus was developed to provide a free-to-use on-premise cloud service that supports cases not well-suited for High Performance Computing (HPC) such as webservers, databases, and long-running services.

This new service includes access to an on-premise Virtual Private Cloud (VPC), providing users with a logically isolated section of the private cloud with a small number of outside routable floating IP addresses. Within this, VPC customers are given an allocation of CPU cores, memory and storage which can be used to host virtual machines and volumes to host workloads.

The beta version was released in October 2021 and AWS credits began allocations in December 2021. Full rollout across RMACC is underway supporting several early adopters with more projects in consideration.

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