

## **COMMITTEE ON COMPUTING AND TELECOMMUNICATIONS**

### **Annual Report 2013-14**

To: Academic Senate, Santa Cruz Division

The Committee on Computing and Telecommunications (CCT) considered a number of important campus technology issues throughout 2013-14. CCT heard regular updates on the progress on the Telecommunications Infrastructure Upgrade (TIU), monitored the changing landscape of UCSC's learning management system (LMS) eCommons, consulted with faculty who have online courses, consulted on unavailable Google Apps, WiFi in classrooms, Canvas learning management system, Crowdgrader, Data Center and storage of data. CCT was a co-sponsor of an event on digital data management and curation with the UCSC Library and the Committee on the Library and Scholarly Communication (COLASC). This event featured a presentation from the University of California Curation Center (UC3) on the various data management tools available to UC faculty.

#### **UCSC's Learning Management System (LMS), eCommons**

One major issue for the past two years has been UCSC's learning management system (LMS), which is currently eCommons. Chair Renau explained that in 2012-13 two major universities developing Sakai eCommons 3.0 backed out of the project, leaving the potential for the system to become unsupported in the next few years. This is not an urgent issue for CCT, but the committee agreed it would begin to look for alternatives to eCommons and keep up with the status of Sakai. eCommons will serve as the LMS for the 2014-15 school year, but it is essential that campus start researching alternatives early. CCT consulted with Learning Technologies Director Jim Phillips about a possible campus pilot of a new LMS, CANVAS, developed by Instructure. Instructure is an educational technology company based in Salt Lake City, Utah. UC Berkeley currently uses CANVAS (in place of eCommons (Sakai), and it appears to offer much more functionality. The committee requested ITS to host a pilot in 2014 – 15. VCIT Doyle approved the pilot which will be launched on a very small scale this summer, with a larger group of faculty piloting in the fall and winter, depending on the outcome of the summer trial. (The committee, after consultation with Math Lecturer Frank Bäuerle, decided on CANVAS, and will run a pilot in fall and winter quarter with faculty volunteers.) The class offerings will be for small enrollment courses (<20 students) during fall quarter and larger courses in winter quarter after initial kinks have been worked out by faculty, ITS staff and Faculty Instructional Technology Center (FITC) staff.

#### **Ecommons Survey Results**

Unfortunately, CCT did not have time to thoroughly review the results of the eCommons survey that FITC sponsored during spring quarter and will not be reviewed until next year. Faculty serving on the pilot will have a chance to give feedback on which system they prefer after testing in the CANVAS LMS site. COT and CCT will consult next year on the progress of the pilot and the next steps for the campus with regard to the LMS.

### **Online Education: Consultations**

Another major issue carried over from 2012-13 is online education. During fall quarter, CCT agreed that this is an area with many facets and it would be best for the committee to approach it purely from a technical perspective. Other Senate committees' purviews lend themselves to consideration of pedagogy and faculty rights. CCT's purview, on the other hand, lends itself to consideration of the hardware and software needs for successful online courses. The committee agreed to consult with UCSC faculty and staff who have already mounted online courses and discuss the current technical tools and needs on campus. In the absence of an office for online education, CCT may be able to advertise the resources available to UCSC faculty. Members reviewed various software packages available for creating an online course. Each system comes with high costs and various pitfalls, such as compatibility issues with certain operating systems. The committee determined that the goal for the year should be the establishment of a consistent set of software across campus, rather than dealing with the propagation of multiple systems and methods. CCT also discussed the value in gathering campus experts in certain instructional technology areas to produce simple "how-to" videos to share with the entire faculty. Members invited faculty who are currently teaching an online course to consult on their experiences, concerns and outcomes that could be improved upon. For instance, a UCSC course that was previously recorded was offered on Coursera and was very popular with over 18,000 participants. While the professor would like to offer the course again, the quality of the videos needs updating, but resources were not available to do so. This course could be a mixed course with a Coursera offering in conjunction with a traditional, on-campus offering for UCSC students. CCT members looked at the course, redesigned, it could be a legacy course for UCSC and good for publicity. Faculty members had help with filming their introductions for each class offering. The other two consultations were with faculty who created online courses for Innovative Learning Technology Initiative (ILTI) sponsored by UCOP. One instructor needed help with the technical aspects of his lectures, and wanted to re-record the audio portion of the course videos, and it was suggested he had the option of learning the software, but opted instead to offer the course through the CANVAS infrastructure provided by ILTI. After discussion, the committee agreed that while these issues are all important to individual members as faculty, they lie outside the purview of CCT. CCT's proper role in the discussion of online education at UCSC is to ensure that the proper technological capabilities are offered to interested faculty. As a result of the online course consultations, members discussed creating an inventory of the online education tools currently being used by UCSC faculty. Such an inventory would aid in identifying experts on campus and soliciting their help in creating tutorials to help all UCSC faculty as they explore new teaching methods. Members will recommend following through on the web page "tool box" next fall in consultation with VCIT Doyle.

### **Senate Summit on Online Education and Pedagogy**

During winter quarter representatives from the CCT, Committees on Educational Policy (CEP), Faculty Welfare (CFW), Teaching (COT), and Graduate Council (GC) participated in a summit to discuss online education. The goal of the summit was to develop a list of Senate priorities and next steps around the topic of online education and education technology. The committee strictly adhered to its purview and considered only the technological needs for delivery of online education. The majority of the concerns raised at the summit were in the areas of faculty welfare and pedagogy. One particular concern of CCT is the preservation and management of course

materials and videos produced for online instruction. CCT was not able to complete this task this year but will consult with departments next year to see what established policies for perpetual backup are in place before deciding on creating a campus policy for departments to adopt.

### **Data Storage and Data Center**

The committee considered the issue of data storage on campus, which currently is very expensive for some faculty to use. When the campus acquired the facility at 2300 Delaware Avenue, there were estimates done for the creation of a data center there. The estimated cost of \$9 million to \$10 million caused the project to be abandoned. CCT consulted with relevant IT staff about the history of and any future plans for increased data storage on campus.

The committee met with Director Smith about the abandoned data center project at 2300 Delaware Avenue and about UCSC's data storage environment in general. Director Smith explained that UCSC has small data centers on campus, such as those in the Communications Building and in the Baskin School of Engineering. The trouble with the data centers other than the Communications Building Center is the lack of emergency power backup. CCT is concerned that campus is running out of storage space and many major granting agencies require data storage that will soon exceed UCSC's current limits. If faculty researchers could store their data elsewhere or use cloud storage, then the university could save money. Members discussed the resources needed to host an in-house data center and the possible advantages of a balanced blend of on- and off-campus data storage, noting that there was no obvious added value to computing and storing large data sets on campus. Before members are ready to submit the cost-matching request, more information on the annual costs to the University and who pays these costs needs to be researched by the committee and a response for information on data storage was not received by the end of spring quarter. Members were not able to discuss or make an informed decision on recommending a cost sharing plan for data storage with off-campus vendors. The committee began plans to ask UCSC IT to conduct an analysis of existing storage space, existing storage costs, and potential outside options. Ultimately, CCT would like to propose that UCSC provide cost matching or other support for faculty who store their data off campus. The committee discussed drafting a proposal that UCSC match costs with faculty for off-campus cloud data storage to compensate for the hidden power cost that the University pays for faculty researchers. This could reduce rack space requirements for UC-owned data centers and eliminate the need for extensive retrofitting of buildings at on- and off-campus sites to meet the growing demand for rack space, given that most buildings on campus would require renovations, electrical wiring upgrades, and air cooling systems. The committee will leave this decision to follow up with future committees.

The Committee co-sponsored with the UCSC Library and the Committee on the Library and Scholarly Communication (COLASC) a presentation from the University of California Curation Center (UC3) on data preservation. For more information on the DMP Tool see this website: <http://library.ucsc.edu/news/new-data-management-plan-tool-released>.

### **Campus Infrastructure**

The committee considered various aspects of campus computing infrastructure that may require attention this year. VCIT Doyle updated the committee on the Telecommunications

Infrastructure Upgrade Project. The project will be conducted in four phases, and Phase A is underway around campus. Throughout the winter and spring quarters, the network around campus will be enhanced, as each building will be addressed individually. Kerr Hall is the first building to receive an upgrade. The California Public Utilities Commission approved a proposal by SUNESYS, that UCSC supported, to run fiber optic cable from Santa Cruz to Soledad. ITS applied for a two year grant from the NSF for cyber infrastructure and was awarded \$500,000 to build infrastructure on Science Hill. Another proposal (to NSF) is planned, which would provide an additional \$2 million for IT infrastructure support for research programs on campus. The science and engineering areas of campus would be the benefactors of these grants.

### **Wireless Coverage for Medium and Large Classrooms**

Many classrooms on campus do not have adequate wireless internet access. Historically, there have been faculty objections to WiFi enabled classrooms, as some view this as a distraction for students. CCT agreed that the benefits of wireless access far outweigh the potential costs and in-class distractions. The pedagogical reasons for having access are overwhelming. CCT requested ITS upgrade wireless access in all classrooms, beginning with the large lecture halls by fall 2014. CCT requested information regarding WiFi and determined the large WiFi repeaters cannot cover 300 people simultaneously; one solution was to bring in extra WiFi stations. VCIT Doyle updated members on a new standard, dense antenna with more access points, that was being tested by ITS technicians and should be able to cover the classrooms with 75 seats. The upgrade for access points coverage in classrooms with 75 seats is about \$200,000. ITS staff presented the committee with a cost break down for each of the 22 classrooms. Learning Technologies will be consulted if the WiFi information can be added to the classroom database used for scheduling. The access points “density” should help solve the drop off that can occur during a class when trying to upload a static image. Faculty members with special needs will be handled on a case by case basis.

### **Google Apps**

Committee members are very interested in what is available for faculty to access on campus with regard to online tools. The Committee consulted with ITS staff experts on issues of security, email auto completion, VPN software, email encryption, as they explore new teaching methods in the online world. Members would like ITS to create a page on how to install security for end users, VPN, chat clients, and best practices with regard to security. This page would simply provide links that would take clients to instructions on how to use the tool or how to download it.

### **Email Auto Completion**

CCT received a request for auto completion of the @ucsc.edu email address for UCSC email accounts. ITS has a policy to test before introducing any new tools for security and other issues, so this feature is currently blocked. VCIT Doyle updated members on this feature, at this time it is not possible to update the Google servers in a timely manner when students place a non-disclosure of information request. The current wait time is up to several days, and should be less than 24 hours. To allow this feature for the entire faculty, this issue would have to be resolved first. The University must follow procedures with regard to FERPA regulations.

### **Security and Privacy**

Members held a brief discussion on secure email programs and privacy tools such as Sonic and the TOR system, which are among the most robust and secure systems available.

### **Campus VPN**

Members requested a more user friendly method of installing the campus VPN software. ITS is now ready to roll out a new self-service, user-friendly version and more information can be found here: [<http://its.ucsc.edu/vpn/index.html>]

The key points include common uses of access to campus File Sharing/Shared Drives and certain applications that require a Campus IP address, ease of installation, full-tunnel protection when accessing campus files.

### **Data Security**

CCT requested an update on the campus Data Security process with regard to loss of data or theft of computer equipment. The VCIT staffs a response team who focus on these types of incidents. The membership includes security staff, general council and departmental staff. The group will meet and depending on the issue, decide the next course of action. When there has been theft of equipment or data itself, the group determines whether data may have been exposed or accessed inappropriately, if so, the University notifies any compromised individual. If the breach concerns 500 or more individuals, then the State is also notified.

### **Email Encryption with the Google Team**

ITS Google Team staff consulted on Google Apps and what features are approved for the campus community to use. Before any changes can be adopted, UC policy must be checked as well as systemwide electronic operations policies. Members wanted to know what is available on campus for faculty to access for secure email. Ideally, committee members were looking to hear information on using public and private keys for email encryption software known as PGP. ITS would have to generate a “University key” for faculty and staff and students to use as the public key off on an ITS server; there are currently no resources to do this. But Google is in the test phase of this email option and may be available soon for campus testing. The most robust endpoint encryption of email is S/MIME with endpoint encryption signing; the campus would need to purchase a certificate and this option is currently being researched by ITS. S/MIME is supported on Apple devices but not on Android operating systems, and there are some programs that have this function for desktop mail clients but not for web clients.

### **Consultation on CrowdGrader**

CCT consulted with Computer Science Professor de Alfaro on considering CrowdGrader as a possible tool for homework submission at UCSC. CrowdGrader does not provide hosting of the teaching material, but faculty could use Google Sites for that. CrowdGrader focuses on homework submission and peer review of homework, but has the option for homework to be graded by the instructor only (no peer review). One advantage of CrowdGrader is the lack of resource expense associated with hosting and maintenance of CANVAS. CrowdGrader is effective when teaching large classes without TAs, which are typically difficult to grade. Part of Professor de Alfaro’s research concerns crowd sourcing; with this software, one can get one opinion from many opinions. Professor de Alfaro created the software since eCommons is too

clunky and difficult to use for peer grading. The Vice Chancellor of Research helped to make CrowdGrader a product, with terms of service, including a privacy policy, and is web-hosted in a professional manner. PeerQuiz is being developed by a colleague and may be linked to the system or integrated with CrowdGrader in the near future. The software is hosted by Google Cloud and is about 30 cents per day or 5 cents per hour cost to the instructor. Other institutions are currently using the software, including San Jose State University and John Hopkins.

Recommendations for 2014 -15 CCT:

- CANVAS Pilot hosting
- Web information on online education tools for faculty
- ITS web page development for a faculty tool box on technology
- Data center request report on analysis

Respectfully submitted;

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