

**Annual Report of
Committee on Academic Computing and Information Systems for
The Academic Year 2007-2008**

THIS REPORT CONTAINS NO ITEMS REQUIRING SENATE ACTION.

Members of C-ACIS included:

Serge Plotkin, Committee Chair, Computer Science
Elizabeth Bernhardt, German Studies
Roger Blandford, Physics/SLAC
John Brauman, Chemistry
Marcus Cole, Law
William Dally, Computer Science
Jerry Harris, Geophysics
Mark Musen, Medicine
Dan Schwartz, Education
Mike Tomz, Political Science
Douglas Brutlag, co-opted – Chair, C-LIB, Biochemistry
Laura Carstensen, CoC member, Psychology

Ex Officio:

Randy Livingston, Vice President, Business Affairs
Bill Clebsch, Executive Director, Information Technology Services
Ganesh Karkala, Executive Director, Administrative Systems
Michael Keller, University Librarian and Director of Academic Information Resources

Students:

Betsy Congdon, undergraduate student
Aleksandra Korolova, graduate student
Jessica Richman, graduate student

Guests:

Lois Brooks, SUL/AIR
Bruce Vincent, IT Services
Minh Nguyen, Administrative Systems
Tina Darmohray, Information Security Office

Staff:

Phil Reese, IT Services

Invited guests from the Stanford Schools:

Randy Yee, Graduate School of Business
Mike Noe, Law School
Matt Riley, Humanities and Sciences
Paul Kim, School of Education
Phil Farrell, School of Earth Sciences
Todd Ferris, School of Medicine
School of Engineering, represented by two SoE committee members

The Committee met eight times during the year on October 10, November 14, December 12, February 13, March 12, April 9, May 14 and June 11.

I. The Annual Report of C-ACIS for the Academic year 2006-2007 listed a number of topic suggestions for the 2007-2008 year:

- A. Implement the plan for C-ACIS's role in the IT Strategic plan initially focused on understanding the individual School plans.
- B. Continue to discuss and track Research Computing needs from campus.
- C. Review Coursework's transition to Sakai and support that might be needed.
- D. Review Administrative Systems current state and strategic direction around several large upgrades looming in the future.
- E. Review the Data Center strategies current state in relation to any outcomes from the Research Computing needs.

II. Focus of the Committee this year:

Through the effort of last year's committee, the number of faculty members on the C-ACIS committee expanded to a total of 10. In addition, IT representatives from each of the School's were invited to attend the meetings. These additional people, from a broad cross section of campus, allowed the group to study the current state of IT today with a focus on identifying common issues and problems.

The committee primarily looked at point A from the Suggested Topics list during this year. Other Annual Report topic areas (B through E) were raised and discussed in the context of the presentations.

The presentation topics and discussion ranged from IT Services' central IT presentation to various Schools across the University. The following School and organizational IT Strategic plans were presented: IT Services, Administrative Systems, the Systems Governance Group (SGG) developed strategic plan, SUL/AIR's plan, Earth Sciences, Law, Education, School of Medicine, Graduate School of Business, Humanities and Sciences and SLAC.

Below are links to all of the presentations. The length of each presentation was approximately 30minutes. Slide decks of the presentations are currently stored on the Stanford web. By default, the access is limited to C-ACIS committee members. If a Senate member would like to review any or all of the presentations, please contact Phil Reese (preese@stanford.edu), C-ACIS staff person, and he will enable your SUNet ID for access.

IT Services:

<http://www.stanford.edu/~preese/cacis/ITS-Strat-Plan-10-2007.pdf>

Administrative Systems:

<http://www.stanford.edu/~preese/cacis/ASStrategicPlan-CACIS.pdf>

SGG Plan:

<http://www.stanford.edu/~preese/cacis/HBeech-11-14-07.pdf>

SUL/AIR:

<http://www.stanford.edu/~preese/cacis/SUL-AIR-11-14-07.pdf>

Earth Sciences:

<http://www.stanford.edu/~preese/cacis/EarthSci-Strat-C-ACIS.pdf>

Law School:

<http://www.stanford.edu/~preese/cacis/Law-Strat-C-ACIS.pdf>

School of Education:

<http://www.stanford.edu/~preese/cacis/SUSE-Information Technology1.pdf>

School of Medicine:

<http://www.stanford.edu/~preese/cacis/SOM-IRT-CACIS.pdf>

Graduate School of Business:

<http://www.stanford.edu/~preese/cacis/GSB-C-ACIS Presentation V2.pdf>

School of Humanities and Sciences:

<http://www.stanford.edu/~preese/cacis/HS-C-ACIS-Prese.pdf>
Stanford Linear Accelerator Center and KIPAC
<http://www.stanford.edu/~preese/cacis/RB-080514-c-acis.pdf>

These presentations were intended to educate the committee about the diversity of IT needs and strategies across campus. With the broad School attendance, it also provided a forum for School-to-School interactions and idea sharing.

III. Common themes that emerged

The presentations provided some unique insights into what the Schools' view as critical to their operation. It became quite clear that schools are actually more alike in their administrative and academic needs and issues than different. A number of common goals and themes emerged and will be covered below.

1. Applications and Services

Critical Applications:

Many times an application starts out as a small, special purpose code that is designed to solve a very limited problem. Over time the scope and quality of such an application often grows, together with the importance and the size of its user base. At some point the application becomes "critical", i.e. requires high stability and uptime. The committee suggested that there should be a process to assess when an application transitions to this critical status.

At that point, decisions can be made for how to best support the application given its importance to the campus. Usually this will entail a Provost-level request for funding, which may or may not be granted. If granted the application needs to move to the more robust environment, which might mean it transitions to a different support model, offered by a different campus organization (e.g. IT Services or Administrative Systems). If the requested funding is not provided, then the faculty using the application, need to be notified that they cannot count on the application being available for their needs on a 24x7 basis. They should assess the risk accordingly and decide whether to still use the application.

An example of an application that is candidate to go through the above process is CourseWork. Originally the user base of this application was very limited and users did not expect much in terms of support or uptime. With time, the quality and capabilities of CourseWork increased significantly, resulting in a much larger user base with much higher expectations. Virtually all of the Schools use CourseWork to a greater or lesser extent. When there are issues with CourseWork, large cross sections of the academic campus are impacted.

Functionally Similar Applications

The presentations identified several types of applications that have many independent implementations. Examples include Graduate Student Admissions, Faculty Recruiting, and various school-specific shadow systems for financial reporting.

Each school had a story for how these needs were being addressed with locally developed applications. Some schools, such as Earth Sciences have reached out to other schools and asked to use specific applications that filled similar needs. They were able to invest the needed programming time to update the other schools application to meet their needs.

The committee proposes to create a "clearing house" for such applications so that new ones are written only if the existing ones cannot be updated to provide the

needed functionality. Adhering to a certain set of common APIs might improve the ability of users to extend existing applications.

Leverage Central Services

Several Schools expressed great interest in using more and more of the central services rather than developing and running their own duplicate services. Common needs can be met and operational economies of scale can be achieved through centralized provisioning. Examples of these services are email, networking, backups, web hosting, system administration, Big Fix, software licensing, and HelpSU.

Another common theme was the need for data center space to place physical machines, both for research and academic purposes. Locating servers in spaces that are not designed for this purpose can cause unnecessary air-conditioning and power problems. This is another example where centralization can offer operational economies of scale.

Virtual hosting is an example of an often needed service that currently does not exist. The need arises when there is a time-limited project that requires computing cycles that does not justify the purchase and care of a permanent dedicated server. Use of such virtual hosts reduces the number of physical hosts that are often located "under the desk" in the office space. If IT Services could offer this type of service at or near outside hosting prices, many of the Schools felt they would take advantage of it. An alternative would be to have IT Services work together with an outside provider who offers these services at attractive prices, while helping with domain name and possibly authentication issues.

2. Security issues:

Email and SPAM issue

A new Email system is being deployed in the Fall which is intended to address the performance issues of the current webmail system. The SPAM filtering process, in place, seems to be performing about as good as can be expected, given the ever escalating battle between the SPAMers and the anti-SPAM software vendors. Huge amounts of SPAM are automatically removed from the email stream every day.

Departmental firewall project

This project has rolled out smoothly with very few issues and is currently close to completion. It did require Schools and groups to identify what traffic they wanted to allow into and out of their networks. This effort isn't easy but greatly improves the security of each of the smaller networks, which bolsters the overall security of the network as a whole.

Protection of sensitive/restricted data

The recent theft of a laptop containing restricted data emphasizes the importance of this issue. The committee will discuss it over the course of the next year.

Identity Management

In the past, identity management issues have been primarily viewed in the context of the Administrative Systems area. Now it is clear that Schools have a broad need for identity management features and functions. There are many different classes of users (e.g. alumni, students, faculty, visitors, etc) each class requiring different authorization capabilities (e.g. wireless network access). The authorization and authentication should be a campus-wide effort instead of per-school point-wise solution. The issues of authentication and authorization will be reviewed next year.

3. Backup/Archive/Disaster Recovery/Online Storage:

This topic area was only partially explored this year and will require more in-depth review and discussion next year.

Backup of data for recoverability from errors

This represents the most basic of areas, to insure that hardware or human failure doesn't create a significant loss of data/information related to campus work.

Archiving of work, research or business:

With so much information now only available digitally, a process is needed to store and retrieve data, as well as to purge data after periods of time, ranging from a year to 10 years or more. Mike Keller has mounted the Stanford Digital Repository (SDR) project that seeks to permanently store and preserve research efforts of the faculty. <http://library.stanford.edu/depts/dlss/collections/sdr.htm>

Disaster Recovery issues:

This is similar to Archiving but intended to address business and research continuity in the event of a disaster of some type which impacts campus. Typically, this stored data is kept off site in a safe and locked facility.

Online storage for data and files:

Before data can be archived, it needs to be created, reviewed and edited a number of times. Typically, these initial files exist all across campus on individual hard drives of the faculty and staff of campus. This distributed nature causes a number of problems. The University would be well served to have a level of aggregation of these work files to better manage the data, provide central backup and protection, and better tolerate individual system failures or physical loss (such as for laptop systems).

The Andrew File System (AFS) was originally deployed to address this issue. Stability problems prevented its broad acceptance. The committee should review alternative approaches.

4. Desktop support issues:

Desktop computing support is an ongoing problem for the campus at all levels. Desktop support inefficiencies directly result in lower productivity of faculty, staff, and students.

Different Schools address desktop support issues in different ways. A technology solution doesn't always address all the desktop support issues. What is needed is a compromise between localized flexibility and centralized management efficiency. H&S has found a compromise on these issues through the use of IT Services CRC desktop support to effectively manage their desktops. The committee will study the different approaches during the next year.

5. Work anywhere and remote access to campus desktop:

This area is of more and more concern to the campus, as large groups are being moved away from the central campus boundaries and more campus work takes place away from the physical campus boundary.

In Hilary Beech's, Senior Associate Dean of Administration, SOE, presentation on the SGG IT plans, the Work Anywhere initiative was prominently mentioned. She was clear to suggest that this type of initiative makes new demands on technology as well as raises security concerns, but both need to be reviewed and a compromise solution recommended. The following is a link to the Porter Drive website which provides the most up to date details about the Campus's Work Anywhere Initiative. http://porterdrive.stanford.edu/big_picture/survey.html

6. Cross-platform support (Win/Mac/Linux), standardization of web tools/frameworks

In the diverse Stanford campus, there is clearly a mix of desktop platforms, yet many of the required Administrative and other applications only work with a subset of the different Operating Systems or web browsers.

The C-ACIS committee plans to discuss this issue during next year.

7. Data Retention policies and processes

This recurring topic seems to grow in importance, as more and more of the daily work of the institution, both research and academic, is 'born digital'. No school had defined or implemented more than a rudimentary approach to this problem. In the course of discussion, Tina Darmohray reported that the Office of General Counsel is beginning to look into this broad issue and that it will be taken up at as time permits. There has been a suggestion that C-ACIS partner with the OGC as they go through the process. If requested, C-ACIS could work with OGC to address what needs to be achieved in the policy.

The above topics and themes are only the currently identified areas. Next year the committee will review these topics, expand the list if necessary, and rank them by importance. The goal of this exercise is to provide a strategic direction without emphasizing the technical details of the implementation. Lastly, this strategic direction would be reviewed again and put into a longer term vision to develop a coherent plan which bridges from where things are today to where the committee would like the IT direction for campus to be in 5-10 years.

IV. Topic suggestions for the 2008-2009 year include:

- A.** Confirm that the Common Themes suggested in Section III of this year's report are in fact the common ones, expand the list as more are identified, and prioritize the new list.
- B.** Use the Common Theme list to develop the campus IT Strategic plan, with School input and backing.
- C.** Track the progress of the Scientific Research Computing Facility and contribute as appropriate.