1999 UCSB IT Update for UCCSC

University of California Computing Services Conference, UCSB, July 27, 1999

Report Highlights

- Campus-Wide IT
- Academic & Research Computing
- Instructional Computing
- Administrative Computing
- Communication Services

Campus-Wide IT

1. Information Technology Board
2. Information Technology Planning Group

Academic and Research Computing

1. Beowulf Systems
   Steve Miley, BREN School

   Five different units (The BREN School, Chemistry, Computer Science, ITP, and MRL) are in the process of building "Beowulf Systems" or Linux clusters. The various configurations range from a 4 node cluster using the Macintosh platform to a 42 node cluster consisting of 36 dual-processor nodes and 6 quad-Xeons.

2. National Center for Ecological Analysis and Synthesis (NCEAS)
   Matt Jones, Mark Schildhauer, NCEAS

   At the National Center for Ecological Analysis and Synthesis (NCEAS), a small team of researchers and technologists have been working on projects to improve the process of synthesis for scientific data. These research projects will address the pressing issue of enabling researchers to locate, access, and integrate information from distributed and heterogeneous data sources (in this case, scientists, researchers and managers needing access to environmental and ecological information) using next generation Web browsers and cross-platform tools that we are developing.

   The methods that we have employed mainly involve the development of software that uses STRUCTURED METADATA ("data describing data") to document the structure and content of scientific databases. This metadata can then be used to integrate heterogeneous databases for use in synthetic analyses, and in producing
new products for dissemination through the web or other mechanisms. Our approach is to leverage the growing prevalence of XML (eXtended Markup Language, a W3C recommendation) as a lingua-franca for developing structured metadata. The Resource Description Framework (RDF, parts of which are either proposed or accepted W3C recommendations) enables us to experiment with developing a domain-specific 'schema' to not only describe the structure of the underlying data, but also express their semantics in a machine-parseable format. This research draws from computer science, digital library initiatives, and other scientific disciplines in trying to solve its problems.

Our most recent successes include two new National Science Foundation awards to increase the scope of the research. In the first award, $3 million from the Knowledge and Distributed Intelligence program, we will be working with our partners at the University of New Mexico and the San Diego Supercomputer Center to apply these structured metadata concepts to the construction of a nationally distributed, integrated data network of ecological and environmental data. In the second award, $850K from the Database Activities Program, we will be applying similar structured metadata concepts to the development of a marine intertidal database that covers environmental information spanning 61 sites throughout southern and central California.

Our early work on this topic is briefly described on the NCEAS website.

On the day-to-day side of our scientific research support for ecological scientists, we continue to find that our two 4-processor symmetric-multi-processing UNIX boxes are still providing exceptional functionality for scientific and quantitative analyses, belying the decade-long, annual prognostications among industry pundits that "UNIX is dead."

NCEAS Home Page

3. Center For Research in Electronic Art Technology (CREATE)
Stephen Pope, CREATE

We've given 6 concerts now with the 20-channel digitally controlled Creatophone sound projection system, ranging from student works to world premieres by internationally known guest composers. We're in the process of making a permanent installation of parts of the system in Lotte Lehmann concert hall, and are planning a symposium on spatial sound performance for early 2000.

In the Paleo multimedia database project, we've implemented a portable and scalable music and sound database that supports a wide range of data types, analysis using statistical methods, DSP routines, AI rules, and dynamic constraints, and multiple query domains.
We have updated our network to GigaBitEthernet just in time to start the ID3 project that will focus on high-speed low-latency distributed multimedia data processing and large-scale virtual reality telepresence applications. We are in the process of hiring 7 new research associates and GSRs for ID3.

We have participated (with the Dept. of Geography) in the Haptic SoundScapes project, developing real-time sound synthesis for incorporation into Web pages.

Our researchers have built a software prototype of a novel granular synthesizer that we call the Creatovox.

Lastly, we have rebuilt our main recording studio complex with a new state-of-the-art 24-bit ProTools digital mixing and spatialization system.

**CREATE Home Page**

4. **Alexandria Digital Library**
   Jason Simpson, Alexandria Digital Library

   The Alexandria Project is a consortium of researchers, developers, and educators, spanning the academic, public, and private sectors, exploring a variety of problems related to a distributed digital library for geographically-referenced information.

   Distributed means the library's components may be spread across the Internet, as well as coexisting on a single desktop. Geographically-referenced means that all the objects in the library will be associated with one or more regions ("footprints") on the surface of the Earth.

   The centerpiece of the Alexandria Project is the Alexandria Digital Library (ADL), an online information system inspired by the Map and Imagery Laboratory (MIL) in the Davidson Library at the University of California, Santa Barbara. The ADL currently provides access over the World Wide Web to a subset of the MIL's holdings, as well as other geographic datasets.

   [Alexandria Digital Library Home Page](#)

**Instructional Computing**

1. **Instructional Development**
   Art Battson, Instructional Development

   The most significant project we are involved in at the moment is equipping 20 classrooms with computer lecterns. The efficient scheduling of equipped classrooms will permit up to 3 times as many users per day as is currently possible using portable equipment. Details may be found on the Instructional
Resources website. There may be other items of interest under the news section of our website, including video streaming services, the Faculty New Media Development Center, and the new Student Multimedia Production Center prototype. We would be happy to arrange small group tours of our facilities if there is any interest at this late date.

2. Undergraduate & Graduate Student Email & Web Service
Matthew Dunham, Instructional Computing

U-Mail is now the "official" student e-mail/web provider on campus. At this point we have roughly 16000 active accounts out of 23,600 in our authorization database (registered grads and ugrads).

We've recently rolled out a choose-your-own-login service so that in addition to the auto-generated user id we issue, every student can open their account using a user id of their own choosing. In the next week or so we'll be introduce a subsidiary component that allows those with existing u-logins or other (ugly) auto-generated logins can make a one-time change to their user id so that everyone who wants one can have a vanity login.

Possibly of note is our IMAP based webmail system, which we'll be introducing this fall. Because it uses IMAP underneath it's completely compatible with PINE, Simeon, Netscape and the other mail clients we support.

Coming this fall we'll also be introducing a file-storage service – kind of an internet hard drive, if you will – by which students can save and retrieve files to their U-Mail home directory using our MyAccount web interface, the Mac chooser, or Windows networking. Ideally students working in campus computing facilities will use this service as an alternative to storing their papers and such on a floppy disk.

Also, we're in the early stages of setting up course-based mailing lists such that we'll have an e-mail based discussion group list for every class offered each quarter. Subscription to the lists will be automatic as students add and drop classes. Ought to be cool if we can get it all coordinated with the registrar.

3. Instructional Computing
Bill Koseluk, Instructional Computing

This year I.C. and its sister departments hosted the International New Media Centers Conference, a consortia of leading institutions in the development of Multimedia. I.C. continues to foster its mission of providing computer support to hundreds of classes campus-wide each academic quarter. As well, I.C. provides key assistance to many campus departments in the area of computer laboratory management support.
4. **Laboratory for Computational Chemistry and Biochemistry**  
Paul Weakliem, Chemistry

Chemistry got a grant from the NSF and built a teaching classroom with 21 SGI O2 workstations. There is one which is hooked up to a projection system at the front of the room for the instructor, and the students sit at their stations and can work along with the instructor. They also have 3D glasses which are useful for looking at complex biological molecules.

We built it during winter quarter and it's been used in computational chemistry and biochemistry classes so far. I believe it may be one of the biggest labs of this type in any Chem. dept.

5. **ClassWeb System**  
Elise Meyer, Physics

The ClassWeb system is being used in all the Lower Division Physics Courses and some Math Courses too. Over 2,000 students take web based quizzes each week before they attend class. These quizzes ensure that the students are familiar with the material before they hear the lecture, and the system also produces statistics that allow the Lecturers to adapt their lecture to focus on the topics that the students have trouble with and to lightly cover the areas that they understand.

6. **Off-Campus Studies**  
Howard Adamson

Off-Campus Studies is preparing to video stream our CS and ECE classes next quarter along with selected campus conferences and colloquia. We presently have demo clips from one of our televised CS classes last spring and almost all of the International Women's conference held last May on campus. Our server is a dual processor machine running NT and RealNetworks G2. We will be building a Windows Media test in August and experimenting with text enhancements. We also plan a live streaming experiment before the start of the quarter.

7. **Videoweb**  
Prof. Duane Sears, Department of Molecular, Cellular and Developmental Biology

**Goals for Using Computer-Assisted Discovery Tools for Teaching Biology**

- Exploring the 3D structures of complex biological molecules by "hands-on" manipulation of computer-generated images of real structures.
- Analyzing empirical data using interactive graphs that hone students' quantitative skills while guiding them in the direction of inferences about function.
• Linking mathematical principles to real-life processes that are best understood in mathematical terms.
• Reinforcing comprehension through interactive, self-assessment quizzes.

Vehicles for Delivering Course Instruction with Computers

• Fully-developed web sites for Biochemistry and Immunology courses
• Streaming videos of all lectures
• Lecture aids (mainly PowerPoint slides) made available on the course webs

Goals of Biochemistry and Immunology Videowebs

• Web access to all videotaped lectures
• Access from either campus or home computer
• Relatively low resource requirements
• Random access to specific topics critical
• Client autonegotiation (currently using SureStream technology of RealPlayer G2).

Video Web Summary

• Videoweb is very popular with our students
• Most students use it as a supplement for review in addition to attending live lecture
• Very few use it exclusively
• Demand has increased each quarter for the last two years.

8. Transcriptions
Prof. Alan Liu, English Department

Our main instructional IT initiatives over here include creating database-to-Web resources that allow our students to use a browser to input/edit research materials in an on-the-fly generated class web site; using Exchange Server to allow students to post papers and other files in a class-only environment; and integrating student Web-authoring into class assignments. We are now working on creating a set of online guides for the critical evaluation and citation of online resources, online research, Web authoring in courses, etc.

Administrative Computing

1. Y2K

We have (nearly) wrapped up the remediation work and will be "integration testing" job streams through sets of related applications using a "Time Machine" (Logical Partition with the date set to 1/1/2000) next month. I say "nearly"
because we fired up the files for next winter quarter and discovered applicants were being admitted to winter 1900.

2. **Billing, Accounts Receivable & Cashiering (BARC)**  
   Gail Johnson, IS&C

   Parts of the new object-oriented JAVA framework being used to develop the new BARC system went into production this month when we brought up a new Cashiering system (CashNet).

3. **LDAP Directory Service**

   We now have about 1000 CorporateTime users linked to the directory. Next month we will integrate payroll-personnel records from UCOP that contain UCNetIDs for all faculty and staff and then telephone numbers from the Communications Services directory database.

   Auth and Dir Subcommittee

4. **CorporateTime**

   The Electronic Scheduling Advisory Group submitted their final report which was accepted by the CNC on July 23, 1998, and we had our first production customer on November 23, 1998. We now have over 1,000 CT customers.

5. **Retirement of PROFS service**

   On July 1, 1999 we shut down (completely) our PROFS service. We actually shut down the scheduling portion of PROFS in February, 1999. PROFS was in service for 15 years. The PROFS service was replaced by Simeon for email and CorporateTime for calendaring/scheduling. We now have around 550 Simeon email customers.

   [IS&C Simeon Email Service Description](#)

6. **New Services**

   During the past year we introduced some additional services: FaxSr - a TCP/IP based network fax service ADSM - a TCP/IP based network backup service And we are currently experimenting with "Thin Client Computing" and have begun a pilot project to explore this technology.

7. **UCSB Bookstore**  
   Ken Bowers, Bookstore
The Bookstore at UCSB is experiencing very rapid growth from a new E-Commerce venture started last year. With the ability to accept orders on-line, the bookstore is expecting to double international sales this year. In addition, this year's commencement marked the second time that UCSB offered live commencement attendance over the web. Using two cameras, a switcher, microphone, mini transmitter and an apple G-3 server, the six ceremonies were viewable from all over the world. Over one thousand viewers tuned in to substantial segments of the ceremonies, which delivered both video and sound.

UCSB Bookstore Home Page

8. Housing & Residential Services
   George Gregg, Housing & Residential Services

   The UCSB Housing and Residential Services department has purchased and implemented a package called RMS for residential student management and a package called TMA for maintenance work order management.

Communication Services

1. Retirement of the Broadband Network

   We shut down the broadband network, which started in 1982 and, at its peak, supported all of the campus Ethernet networks, all of the SNA connections (over 1,000), all of the asynchronous device connections (over 1,400), and a couple of television channels.

2. CalREN-2

   We completed our design process, two RFPs, and ordered our backbone equipment in February 1999. Our border router is a Cisco GSR 12008 and our backbone consists of 2 Cabletron SSR-8s. We use Gigabit Ethernet to interconnect the backbone equipment, and to connect the research groups to the backbone equipment. The backbone infrastructure implementation was completed in May. Research Groups are currently hooking up to the network and testing it out.

   CalREN-2 Implementation Group

3. 800 MHz

   We replaced our two-way radio system with an 800 MHz system that is compatible with all other campuses for emergency mutual support activities.

4. Student Residence Wiring Projects
There are currently about 3,400 Ethernet outlets in the six on-campus Residence Halls and two off-campus apartment buildings. This summer we are installing 978 outlets in another campus apartment complex (Santa Ynez), which will leave two apartment complexes without networks. We are about to issue a Request For Proposal for xDSL equipment to be installed in these two remaining apartment complexes, possibly during Winter, 1999.

5. **BORIS**

We have released BORIS, on web-based Billing, Order and Repair Information System to our residential customers and will be releasing it to our business customers (faculty and staff) this summer. BORIS provides access to telephone call billing records (within 5 minutes of completion of the call) and prior billing statements. It will, in the future, support the creation and status review of Work Orders (requests for service) and Trouble Tickets (requests for repairs), including the history of all work for each customer. It will also enable all customers to update their Campus Directory data via the web, instead of sending in hand-written forms.

**BORIS for Faculty and Staff**

Vince Sefcik, Communication Services