

Teaching and Learning with Internet2

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Background

-  Cal Poly
-  Internet2 and Cal Poly

Education-Oriented Activities

-  Videoconferencing, Tele-Collaboration
-  Remote Access to Equipment
-  Data-intensive Applications

Promoting Internet2

-  Internet2 Champions
-  Internet2 Mini-grants; Guests: David Gillette, Enrica Lovaglio
-  Internet2 Course

Experiences

Future Activities

Conclusions

Credits

Overview

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Cal Poly San Luis Obispo

- California State Univ. campus on the Central Coast
 - half-way between San Francisco and Los Angeles
- about 18,000 students
 - 63 undergraduate programs
 - 25 graduate programs (mostly Master's degrees)
- colleges
 - Agriculture
 - Architecture and Environmental Design
 - Business
 - Engineering
 - Liberal Arts
 - Science and Mathematics
 - University Center for Teacher Education

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Internet2 and Education

- videoconferencing and tele-collaboration
 - guest speakers in classes
 - joint classes or projects between different campuses
- remote access
 - special-purpose equipment
 - shake table
 - Cal Poly Avila pier
 - Swanton Pacific ranch <http://www.spranch.org>
 - large data sets
 - GIS
 - real-time computation
 - up-to-date data is critical

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Example: Cal Poly Avila Pier

- formerly used by Unocal as oil terminal, it was donated to Cal Poly in 2002
 - more info at <http://www.marine.calpoly.edu> (partially complete) and <http://polyland.lib.calpoly.edu/topics/florafauna/studentsites/2003a/>
- team-taught marine biology course together with Rutgers University, and a Florida university
 - live field trips with remotely controlled submersibles in three different ecosystems (sandy continental shelf, coral reefs, rock coast)
- joint research involving shared real-time environmental data from a network of sensors combined with satellite images

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Internet2 Champions

- established in March 2002
 - more details at main champion Hugh Smith's page
 - <http://www.csc.calpoly.edu/~husmith/I2/index.htm> and <http://www.i2.calpoly.edu/>
- representatives from each college and ITS
 - dissemination of information within the colleges
 - education of faculty and staff about the capabilities of Internet2
 - identification of people with suitable interests and applications
 - find people who may have a problem that Internet2 can help solve
 - e.g. GIS server, access to Avila pier laboratory
 - interest groups
 - video conferencing, GIS, remote collaboration

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Internet2 Mini-grants

- support from
 - Office of Naval Research, Cal Poly's Office of Research and Graduate Programs, and Cal Poly's ITS dept.
- relatively small grants
 - to help faculty and students get started with Internet2
 - integrate it with existing projects
- first phase in Spring/Summer 2003
 - 7 projects funded
- second phase for the 2003-04 academic year
 - waiting for allocation of funds

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Internet2 Mini-grant Examples

- I2-Based Remote Viewing System
 - Fred DePiero, Electrical Engineering
- Internet2 @ Cal Poly Video Documentary
 - Franz Kurfess, Jordan Small, Aaron Peckham, all Computer Science
- Collaborative Research in Embedded Microprocessor Design Cal Poly - UC Davis
 - Diana Keen
- End-to-End Performance Testing
 - Hugh Smith, Computer Science
- Lumiere Ghosting & CompuPresence Zoetrope Project
 - David Gillette, English; Enrica Lovaglio, Arts & Design
- VLSI Design and Test with Internet2-Based Tools
 - William Ahlgren
- Internet2 Map Server for GIS
 - Walt Bremer, Architecture

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Internet2@Cal Poly Documentary

- one of the Internet2 mini-grants
 - produced by two computer science students, Jordan Small and Aaron Peckham, during the Spring and Summer 2003 terms
 - total length about 23 min from about 11hours footage
 - Canon ZR-30 digital video camera, Apple iMovie and Final Cut Pro 3 software on a dual CPU 1 GHz G4 Apple computer
 - in total about 60 GB project files
 - on the Web in high, medium, low versions at
 - http://mediaserver.calpoly.edu/Engineering/Computer_Science_Department/fkurfess
 - http://mediaserver.calpoly.edu/Engineering/Computer_Science_Department/fkurfess/internet2_high.mov
 - http://mediaserver.calpoly.edu/Engineering/Computer_Science_Department/fkurfess/internet2_mid.mov
 - http://mediaserver.calpoly.edu/Engineering/Computer_Science_Department/fkurfess/internet2_low.mov

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Internet2 Course

- seminar-style course offered in Spring 2003
- guest lectures featuring speakers from
 - Internet2 consortium
 - Ann Doyle, Charles Yun, Doug van Houweling,
 - CENIC
 - Dave Reese
 - Cal Poly
 - Rosemary Bowker, Jerry Hanley, Johanna Madjedi,
- excursion to CENIC meeting in Santa Barbara
- student projects
 - Internet2 @ Cal Poly video documentary, virtual collaboration tools, library services, satellite control, optical transmission technology

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Experiences 1

🏆 Internet2 champions

- 🌐 good for dissemination, coordination purposes
- 🌐 direct personal contact seems to work best
 - 🌐 e.g. presentations at department meetings, brown-bag lunches
- 🌐 individual commitment required
 - 🌐 regular meetings (bi-weekly or monthly)
 - 🌐 contacts with potential users
 - 🌐 finding out more about Internet2
- 🌐 interest groups only work if people have significant related activities

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Experiences 2

🏆 Internet2 mini-grants

- 🌐 excellent incentive for the exploration or integration of Internet2 capabilities
- 🌐 springboard for more substantial projects with major funding agencies
- 🌐 good opportunity to get students involved

🏆 Internet2 class

- 🌐 opportunity for students to interact with community leaders
- 🌐 requires classroom with I2 access, video conferencing facilities
- 🌐 moderate overhead for coordination
- 🌐 backup plans are critical because something will go wrong!
- 🌐 administrative aspects: registration, credits, electives, ...

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Future Work

- second phase of Internet2 mini-grants
 - proposals to other funding agencies in preparation
- Internet2 champions ready to resume proselytizing
 - refreshed after the summer
- Internet2 day under consideration
 - possibly in collaboration with other institutions
- second version of Internet2 course for Spring 2004
 - better marketing to students outside Computer Science, Engineering
 - more careful backup planning

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Conclusions

- teaching-oriented institutions can make good use of Internet2
 - guest lectures, co-teaching, access to special resources
 - better teaching through collaboration with researchers
- a core group of people across the institution is critical
 - disseminate information, scout out opportunities, coordinate activities
- student involvement provides additional benefits
 - students may be more curious about new technology
 - some innovative project proposals were initiated by students
 - utilize academic incentives (courses, credit)

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Credits

A big thank you to

-  the Cal Poly Internet2 champions
-  the Cal Poly ITS people behind the scenes
-  the Cal Poly faculty and students working on mini-grant projects
-  the students and guest speakers from the Internet2 course