VGrADS Education, Outreach and Training Activities: Unlocking the Doors of Opportunity

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The Challenge for VGrADS EOT

Injecting the topic of grid computing into a variety of technical venues to increase both participation and dissemination

- **Specific goals from the proposal**
  - Significant presence at Grace Hopper & Tapia Celebrations
  - Support for AGEP students to work on VGrADS projects
  - Develop both general education & grid courses
  - Include VGrADS knowledge in ongoing efforts, such as CS-CAMP
- **With funded budget, are accomplishing most of our goals**
  - $55,000 per year in EOT, + indirect funding in research budgets
  - Spending EOT budget to leverage existing, successful efforts
    - Drive grid subjects into those venues
  - Increased emphasis on collaboration & leverage
    - PIs work with other programs & seek institutional dollars

VGrADS EOT Philosophy

- PIs are active in projects that span the educational pipeline
  - Pre-college students (CS-CAMP)
  - Undergraduate students (AGEP)
  - Graduate students (courses, student exchanges)
- PIs are active in professional outreach activities
  - Both typical venues and special projects
- Special attention to the needs of underrepresented groups
  - Minority Students in Majority Institutions
  - Direct attack on student attrition in science and engineering
    - Avoid "loss of the precious few"

Participation in Minority-Focused Conferences

- 2004 Grace Hopper Celebration of Women in Computing, October 6-9, 2004, Chicago, IL
  - Supported travel for 6 students and 5 staff to conference
    - Financial help from CITI, CEEE, & Dean of Engineering
  - Panel on successful strategies for encouraging diversity (Sirois)
  - Student BOF on difficulties with achieving gender equity in CS
- 2005 Richard Tapia Celebration of Diversity in Computing, October 19-22, 2005, Albuquerque, NM
  - Expect to support about 4 staff, 3 student travel
    - We hope to leverage these dollars & increase our presence
  - One or more PIs will give invited plenary talks
  - Sponsor a panel on grid computing chaired by VGrADS PI
    - Staffed with VGrADS personnel, including an AGEP student

Computer Science Computing and Mentoring Partnership (CS-CAMP) Project

NSF-sponsored mentoring and support project to increase interest and retention of females in high-school computer science.

VGrADS leverages CS-CAMP to extend its outreach.
CS-CAMP leverages VGrADS to improve its content.

- Summer 2004 CS-CAMP
  - Awareness Day Participation
    - "Computer Science—What is it?" (Cooper)
    - "Overcoming Obstacles" (Tapia)
    - Congressman Culberson Panel
- Summer 2005 CS-CAMP
  - Grid Computing Session (Kennedy or Koelbel)
  - Career Choices in Computing (Kennedy or Koelbel)
  - Tapia and Cooper will speak, as in previous years

Alliances for Graduate Education and the Professoriate (AGEP)

NSF-sponsored program that provides year-round support, mentoring, and community for students from underrepresented groups at both the undergraduate & graduate levels

- AGEP Summer Program
  - Bring students to campus & pair them with senior researchers
  - Expose them to graduate-style education (& hook them)
  - Emphasis on community building & pyramid-style mentoring
- Recruitment Efforts for 2005
  - Over 100 applicants from CS, EE, and related fields
    - Nationwide recruiting effort
  - Expect three AGEP summer students to work with VGrADS
    - Evaluating scheduling methods
    - Launching Grid applications

VGrADS-related Courses

- Graduate courses
  - UCSB (Rich Wolski)
    - CS 290I: Grid Computing
    - Students build & evaluate grid applications
    - Students use GrADSoft & VGrADS tools
  - UCSD (Andrew Chien)
    - CSE 225: Grids and High Performance Distributed Computing
    - Students learn about technical challenges in building grids, grid software, and grid applications
    - http://www-csag.ucsd.edu/teaching/cse225s05/
- General Education Course (Deferred)
  - Kennedy is developing a course on Information Technology Architectures; it will incorporate grid material

Graduate Students in VGrADS

- **Students are directly involved in the research**
  - Participate in weekly planning calls, develop software, etc.
  - Attend & participate in annual VGrADS Workshop
  - Often give demonstrations at major conferences
- **Student exchanges**
  - Student from one school spends significant time at another
    - Significant interchange of ideas & experiences
    - Started under GrADS
    - Anirban Mandal summer at USC ISI
  - Summer 2005
    - Ryan Zhang (Rice) going to UCSD to collaborate on vgES
    - Dan Nurmi (UCSB) going to Rice to collaborate on delay prediction for scheduling [tentative]

Professional Outreach

- "The usual" presentations at conferences, workshops, etc.
  - PIs give many grid-related keynote talks and invited talks
- Website for disseminating results, internal collaboration
  - http://vgrads.rice.edu/
- SC2004 Conference activities
  - Exhibit floor talks/demos of VGrADS and GrADS activities (Johnsson, Dongarra, Kennedy, Koelbel, Wolski, various students)
  - PIs spoke in several BOF and Panel sessions
- National Committees
  - CSTB Report "The Future of Supercomputing" (Koelbel, Dongarra)
  - PITAC subcommittee on Computational Science (Reed chairs)
  - Reed is CRA's liaison to Coalition to Diversify Computing
  - Many national and international conference program committees

Summary

Goal is to raise awareness of Grid issues, challenges and research by injecting it into high-impact venues

- Strategy is to maximize impact through significant leverage
  - Work with successful, established programs
    - CS-CAMP, AGEP, Hopper & Tapia Conferences, SC
  - Seek institutional support for our programs
  - Integration of EOT & research expands reach of our budget
- Broad commitment from PIs to make progress in education, outreach, and training
  - Funded activities, such as CS-CAMP & AGEP
  - Active participation in community-building,such as Hopper, Tapia, & SC Conferences
  - Act as catalysts for change at individual institutions