Board of Advisors Meeting

February 15, 2012
Welcome

- Introductions
  - Cyber-ShARE Team
  - BOA members
- Today’s Schedule
  - Purpose
  - Response BOA
  - Highlights and Renewal
  - Subprojects
  - Student Presentations
- Tomorrow’s Schedule
  - Breakfast with students
  - Education and Workforce Development
  - Discussion
To review Cyber-ShARE’s past accomplishments and provide feedback on the proposed plans for Cyber-ShARE’s five-year renewal proposal to the NSF CREST program
Centers of Research Excellence in Science & Technology Program (CREST)

- Provide resources to:
  - Enhance research capabilities at MSIs
  - Promote development of new knowledge
  - Enhance research productivity
  - Broaden STEM participation of underrepresented groups

- Must demonstrate that:
  - Have a strong research and education base
  - Articulate a vision for research infrastructure competitiveness
  - Have a plan to achieve and sustain national competitiveness
Evaluate on achievements and future plans

Articulate clear vision to achieve major national recognition for accomplishments

Demonstrate transformation of institutional capacity for engaging US citizens, nationals, and permanent residents
NSF Reverse Site Visit (RSV)
BOA Recommendations
Strategic plan for Cyber-ShARE

- Conceptualization, organization, and operation of the center with a very strong focus on goals, objectives, benchmarks, and milestones
- Strong emphasis on processes and practices
- Strong leadership and research teams with a balanced approach
- Strong evidence of good interaction between teams, especially related to interdisciplinary research efforts
Education and Outreach Activities
- Plan for outreach effectively and consistently carried out
- Achievement of goal to enhance the participation of underserved students in STEM programs
- Concerted effort to create cross-disciplinary, integrated student teams

STEM Workforce Development
- Student internships
- Reasonable success in the placement of graduates
- Cross-disciplinary training workshops
- Recognition of need and contributions to STEM workforce development
Institutional Impact

- Significant impact has been made through the use of CREST funds at the university.
- Potential to serve as a model for the establishment of other cross-disciplinary Centers in a university.

Institutional support of the center

- Expansion of the space allocation
- Hiring and allocation of new research and tenure-track faculty
- Return of a portion of the overhead
**RSV Recommendations-1**

- Determine the area(s) in which the center can make the greatest impact and contributions
  - Mission: To establish and support exemplary cross-disciplinary collaborations that will lead to innovation and graduation of an interdisciplinary CI-savvy generation of STEM professionals
Address local/regional/state and national workforce development needs by aligning with business and industry

- Opportunities for internships and/or consultancy
  - PNNL
  - NEON
  - LTER
  - City of El Paso
Update and refine educational goals; create an education and outreach evaluation plan to assess impact of activities.

- **General strategy:** develop a logic model centered on preparation of students
- **Emphasis:** Course development, education of public sector, and outreach

**Basic research vs. product development**
- Focus is on basic research that may lead to prototype tools
- Consultation with software engineering professionals
Separate project/application activities from the pursuit of research questions leading to thesis topics, and increase emphasis on research methodology.

- Set standards for all Cyber-ShARE Student Scholars
- Create a graduate–student resource page with templates and “How to” documents.
- Conduct more ARG workshops
Center Highlights
Anchor for NSF I3 program

- Goal: To establish a culture where sharing of practices and project results leads to innovation in broadening participation
- Focus: Develop a Cyberinfrastructure and Communication-Based Model for sharing and building communities
- Support:
  - Semantic Web technologies
  - Resource sharing
  - Vision Charettes
  - Provost-ORSP funds for IDR teams
Visualization System
- Outreach involved 120+ middle/high school students
- Courses that used C2Vis Laboratory
  - GIS, Computer Applications in the Geosciences
  - Volcanology
  - Planetary Science
- Research
  - Visualization-based analysis of tomographic model convergence

Collaboration with Rubin Center for Visual Arts
- Fund an artist to use the Viz wall for STEM-related project
- Includes an outreach component and presentation at ISEA
Digitally enabled sensors and networks
- High data output (up to 60 measurements per second) Eddy covariance at the USDA Jornada Basin Long Term Ecological Research Program
- Robotic tram at Barrows, Alaska

MetaShare
- Purpose: to support management of data acquired in a project
- Documents metadata associated with data collection
- Generates an NSF-formatted Data Management Plan
- Supports data discovery through metadata

Virtual Learning Commons
- CI-Team led project using social media and Cyber-ShARE tools to diffuse ideas, knowledge, and innovation
Highlight: Funding Resulting from Cyber-ShARE

- NSF MRI (Romero)
- NSF I3 grant (Gonzales)
- NSF CI-Team (Pennington)
- NASA ROSES A-37 (Pennington)
- NSF GK-12 (Velasco)
- NSF ARMAP (Tweedie)
- NSF AON (Tweedie)
- NSF BAID (Tweedie)
- BOEMRE (Tweedie)
To be discussed tomorrow
Renewal Goals
Goal 1

- Support CI-enabled, interdisciplinary communities that conduct innovative, synergistic STEM research.
  - Adopt exemplary practices that deliberately support interdisciplinary research teams.
  - Promote semantic-enabled tools and practices to support productive interdisciplinary exchange.
  - Support CREST-funded subprojects

Theory to Practice
Broaden training and education of interdisciplinary, CI-knowledgeable citizens, including STEM students who receive advanced degrees and represent the 21st century demographics.
Goal 3

- Extend the network of Cyber-ShARE collaborations to include other major cyberinfrastructure projects, international collaborators, and industry partners.
  - Pursue relationships with national laboratories, in particular PNNL.
  - Connect with industries that align with Cyber-ShARE, in particular Cisco’s Smart Cities initiative, IBM Smarter Planet, and oil companies such as Repsol.
  - Continue to disseminate advances to national and international networks, such as CEON, NEON, and others.