

NSF SAVI Award to NCSA:

GECAT - Global Initiative to Enhance @scale and distributed Computing and Analysis Technologies to address grand challenge problems around the world

Danny Powell

JLESC Workshop
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NCSA



National Center for Supercomputing Applications
University of Illinois at Urbana-Champaign

Basic Information

- PI - Bill Kramer
 - Add-on to the Blue Waters award
- Co-PI - John Towns
- Senior Personnel
 - Jong Lee, Shaowen Wang, Bill Gropp, Scott Poole, Danny Powell, Frank Capello, Jay Roloff
 - Texas A&M subcontract (IVRO)
- \$2 Million over 5 years (\$400k/yr)
- Focus
 - Supporting international projects that add value to the mission of the Blue Waters project and/or the XSEDE project
 - Creating and testing tools and processes supporting international virtual research organizations/projects (IVRO)
 - Experiences for students, post docs, young faculty

Basic Information

- Incorporates existing activities
 - Joint Laboratory for Extreme scale Computing - JLESC (w/ NCSA, INRIA, ANL, Barcelona, Juelich, Riken)
 - Software challenges for using petascale/exascale computing resources
 - CHANGES Workshops (w/ NCSA, CNIC (CAS), Juelich)
 - Annual workshops (now bi-annual) on focused topic areas
 - HPC, Data, Visualization and Visual Analytics
 - Define joint projects of common interest
 - KISTI / NCSA Laboratory
 - New – based on existing 10+ year relationship
 - Tools and frameworks in support of education and research
 - Some tools integrated into XSEDE and KISTI educational framework (previously EDISON)

Basic Information

- Previous results
 - Joint projects
 - Fault tolerance (event analysis tool – HELO)
 - Numerical methods, numerical libraries, resource management, programming models
 - Natural hazard assessment tool enhancements (Ergo)
 - Data and viz tools for digital cultural heritage researchers
 - Geospatial tools for Chinese CDC
 - Educational IT frameworks (CFD for EDISON)
 - HPC job submission tools
 - Others ...
 - Faculty, postdoc, student exchanges (short term and long term)
 - Workshops, Training, ...
 - Publications
 - Previous interactions, programmatic changes over time – will serve as a source of background information for IVRO work by Poole and Ahmed

Processes - Management

- Project Management Team: PI / Co PI / Senior Personnel
- External/Scientific Advisory Board
 - TBD – similar to JLESC Board – perhaps incorporating functions
- Technical / Scientific Projects
 - Selected/reviewed by Steering Committee (PM Team + Intl leads)
 - Each institution/country pays for its own participation
 - US participants primarily UIUC, but can include other US institutions
 - Seed funding – goal to mature and secure peer-reviewed funding
- IVRO – International Virtual Research Organizations
 - Map collaborations and social network processes
 - Analyze cyberenvironments and collaborative tools deployed
 - Insights into factors that encourage success
 - Lesson's learned document

Potential Project Areas (links supporting BW and/or XSEDE)

- Performance issues wrt scaling
- System resilience/ fault tolerance
- Storage, management, and transfer of big data
- Production of high end visualization
- Awareness of interconnect network topology
- Efficient, asynchronous I/O
- Metadata
- Training and support
- Distributed data management capabilities
- Security and authentication
- Advanced workflow systems supporting distributed resources
- Data sharing policies and legal issues (enabling collaborations in a constrained data-sharing environment)

Potential for Expanding Participation

- Use this award showing NSF commitment - to foster discussions between you and your funding agencies
 - Let us know how we can help
- Growth of existing partnerships/labs?
 - JLESC – just added BSC – final stages of the process to add JSC and Riken
 - probably need to spend time adjusting to this growth before considering adding others
 - Haven't discussed yet with CHANGES or KISTI
- Start New Collaborative Effort
 - Determine interest
 - Determine focus area (data, viz, ...)
 - Determine commitment to participate (visits, project personnel time, funds for meetings/workshops, ...)
 - Work with our IVRO group to help set up organizational structure

Questions?

