

Revitalize - Retain - Recruit -

Repeat, Riches,

The LANL Information Science and Technology Institute

A Family of Institutes

Addressing the Information Science Need.

- **Collaborative work on LANL relevant subjects (lab staff, faculty, student, other collaborators)**
 - Revitalize LANL staff
 - Student pipeline on relevant projects
 - Can lead to joint funding opportunities to become somewhat self sustaining which enables the entire program to grow
 - Faculty gets introduced to relevant problems
 - Infusion of new ideas, new energy
 - And of course good research, pubs, etc.
- **Education**
 - Retain/Retrain LANL staff
 - Professional Development (full courses, short courses)
 - Advanced Degree Programs
 - HEC relevance in curriculum
- **Staff Outreach Opportunities**
 - Lecturing/Teaching (seminars, lectures, full courses)
 - Mentoring of students
 - Infusion of knowledge and ideas through outreach

Funding Model

- **Funding**
 - **Administrative costs** (these are not trivial given the colossal bureaucracies involved, DOE, Lab, University)
 - Director
 - Administrative
 - **Some equipment, video conferencing, distance learning, research equipment** (sometimes this can be decommissioned lab equipment)
 - **Educational costs**
 - Professor incentives
 - TA
 - **Collaborative projects**
 - **Fellowships**
 - Student education and winter subsistence
 - **Internships**
 - Student summers are LANL internships working on joint project, cost covered by LANL collaborator/program to ensure LANL collaborator buy in
 - **Professor summer weeks pay**
 - Incentive
 - cover travel to LANL, etc.
 - **Joint external funding prep time**

Credit



- **Governance**

- LANL and University directors regular planning/management of
 - Administrivia (contracts, etc.)
 - Distance learning
 - Collaborative projects
 - Outreach
- Collaborative projects solicited in open call to faculty in CS/CE
 - Awards based on
 - Promising LANL relevant research
 - Potential for collaboration with LANL (have collaborator)
 - Potential for future external funding
 - Past and/or future participation in the educational program

Credit



Current Family Members

- The Institute for Scalable Scientific Data Management with the University of California Santa Cruz

- Focus: Data Management

- Not limited to Data Management
- Any topic within CS/CE is fair game



- The Institute for Reliable High Performance Information Technology

- Focus: Reliability

- Failure at scale
- Software Engineering

CarnegieMellon

 Software Engineering Institute



- Who is next?

Other Non CS/CE Institutes

- Engineering Institute – UCSD
- Materials Design Institute – UC Davis
- Institute for Multiscale Materials Studies – UCSB
- Institute for Advanced Studies (open topics) with our Research Universities in New Mexico
 - UNM
 - NM Tech
 - NMSU

Example Cross Institute Collaboration

ISTI/IAS Cluster and Network Management Summer School

- A unique professional development program co-sponsored by the New Mexico Consortium's Institute for Advanced Studies and LANL's Information, Science, and Technology Institute.
- Purpose: to identify a select group of highly capable, upper-division (Junior and Senior) undergraduate students and to provide those students with an outstanding, in-depth, and highly-practical summer internship opportunity.
- Increase interest at the entry level in the highly competitive fields of computer system management, computer cluster management, and computer network management.
- Provide exposure to and develop practical, leading-edge technical skills
- Develop hands-on, practical technical skills
- Develop a local (i.e., in-state) and well-qualified candidate pool of entry-level system, cluster, and network management professionals to support and facilitate Los Alamos National Laboratory's and state-wide initiatives and work in high performance computing, science, and simulation.

- **Practical skill development** in setting up, configuring, administering, testing, monitoring, and scheduling computer systems, supercomputer clusters, and computer networks via interaction in a hands-on computer system laboratory/ machine room fully populated with unassembled computer nodes, networking equipment, and assorted equipment, cables, and supplies.
- **Teaming and communication skill development.** Students will be assigned to small (3 or 4 person) teams to complete a series of technical tasks and projects over the course of the summer. In addition, students will be required to give oral presentations throughout the summer detailing their approaches and successes and demonstrating their work. Finally, students will be required to participate in a student poster session and presentation on their chosen Team Project.
- **Technical breadth development** via exposure to a variety of key topics, technologies, and problems of interest through participation in tutorials, seminars, and facility tours prepared by the faculty coordinators and LANL mentors, computer professionals, and scientists.

ISSDM Fall 2006 Computer Science Seminar Series

October 16: Devising Fault Tolerant I/O Models for Next Generation Super Computers

October 23: Scalable Server I/O Networking Architectures for Very Large-Scale Linux Clusters - Pascal I/O vs. Federated I/O

October 30: Dynamically Probing the Linux Kernel

Upcoming: Heterogeneous Computing: Cell, Roadrunner and Beyond, Failure Analysis, and Archival Storage at LANL: Past, Present and Future

LANL File Systems and I/O Lecture

Thank You

<http://institutes.lanl.gov/>



**The
LANL
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