



Report on the
Risk Management Techniques and
Practice Workshop
for High Performance Computing Centers

Held September 18-19 at the
Hotel Nikko in San Francisco

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Sponsored by the U.S. Department of Energy



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Premise

Every aspect of stewarding HPCCs into the petascale era, from identification of the program drivers to the details of procurement actions and simulation environment component deployments, represents unprecedented challenges and requires effective risk management.

High-performance computing, by its very nature, is an exercise in multi-level risk management

Attendees

- DOE HQ & Labs
 - ANL, LANL, LBNL, LLNL, ORNL, PNNL, & SNL
- DOD
 - HPC Modernization Program and others
- NSF HQ & Sites
 - LSU, NCAR, NCSA, PSC, SDSC, TACC, & UTenn/NICS
- HPC Vendors
 - Cray, HP, IBM, SGI, & SUN

Genesis and Intent of this Workshop

- A continuation of Petascale System Integration Workshop hosted by NERSC last year
- Leverage and extend the risk management experience of the participants
- Assess the effectiveness of techniques with a special emphasis on practice

Track 1 BREAKOUT SESSIONS - Tailoring Risk Management to HPCCs

	Topic
Session 1	Risk ownership and analysis
Session 2	Risk identification and analysis
Session 3	Risk management - Tools, tips and tricks
Session 4	Risk management - Mitigation & contingency planning

Track 2 BREAKOUT SESSIONS - Real Life Risk Experience

	Topic
Session 1	From Vision to Contract
Session 2	Management of System R&D from Contract Award through Build
Session 3	Acceptance Testing and Integration
Session 4	Managing HPC Business Risks

- Finding #1: Standard risk management techniques and tools are in the aggregate applicable to HPCC projects and are commonly employed by the HPCC community
- Finding #2: Standard risk management practices should be tailored for HPC projects

- Finding #3: All HPCC acquisition projects can benefit by using risk management but the specific tools used are less important
- Finding #4: The special relationship between the HPCC and HPC vendors must be reflected in the risk management strategy

- Finding #5: Top Risk Categories (Based on Questionnaire Voting)
 - System Scaling Issues
 - Request for Proposal/Contract and Acceptance Testing
 - Vendor Technical or Business Problems
 - Personnel staffing and interactions
 - Project Schedule
 - Sponsor Commitment
 - Facilities, operations, and finances

- Finding #6: Best Practices (Based on Questionnaire Voting)
 - Develop a Prioritized Risk Register with Special Attention to the Top Risks
 - Establish a Practice of Regular Meetings and Status Updates with the Platform Partner
 - Support Regular, Open Reviews that Engage the Interests and Expertise of a Wide Range of Staff and Stakeholders
 - Document and share the acquisition/build/deployment experience

Workshop Web Page

- Invited Speaker Presentations
- Agency Presentations
- Breakout Session Reports

<https://rmtap.llnl.gov/>

Suggested Follow-on Activities

- Compile a list of HPCC risk categories and share
- Collect best practices for SOWs and share
- Use the collective experience of the community to develop an optimum likelihood-consequence tool
- Sponsor a tutorial at SC09 on risk management.
- Share proven effective risk mitigation strategies

Suggested Topics for the Next Workshop

- Metrics for HPCC sites
- Developing petascale applications
- Scaling petascale systems (OS, File Systems, I/O, etc)
- HPCC Operational Issues
- Requirements (gathering - reflecting them in benchmarks - operational requirements etc)
- Models for system allocation and utilization
- Storage and I/O infrastructure for leading edge systems

Ideas? Email me at quinn1@llnl.gov

Workshop Technical Steering Committee

- Arthur Bland, ORNL
- Vince Dattoria, DOE ASCR
- Bill Kramer, NERSC
- Sander Lee, DOE ASC
- Terri Quinn, LLNL (workshop chair)
- Randal Rheinheimer, LANL
- Mark Seager, LLNL
- Yukiko Sekine, DOE ASCR
- Jeffery Sims, ANL
- Jon Stearly, SNL
- Mary Zosel, LLNL (host organizer)