ASRC Exascale Tools Workshop  
Oct 13- Oct 14 Annapolis, MD

Workshop Committee:  
John Mellor-Crummey, Barton Miller, Jeff Hollingsworth, Dan Quinlan, Martin Schulz, Paul Hovland, Jeff Vetter, David Skinner, John Daly

ASCR POC:  
Sonia R. Sachs

Workshop Goals Summary:  
1. Define objective criteria for assessing tools for Exascale application development (debugging, correctness, and performance) along a wide spectrum of challenges, namely power, locality, resilience, etc.)  
2. Identify tools requirements and interfaces for hardware and system stack, particularly compilers and runtime systems and metrics for success. Identify integrated systems solutions rather than ad-hoc tools solutions  
3. Prioritize challenges for Exascale tools, both generally and specifically to each tool category  
4. Prioritize options addressing the identified challenges  
5. Lay out a roadmap, with options, timeline, and rough cost estimates for needed Exascale research in the different tools category  
6. Generate a report that summarizes the workshop discussions and provides recommendations on the programming directions for ASCR

Workshop Agenda:  

October 13:  
• 3:00-3:10 p.m. Welcome and Introduction (Sonia Sachs)  
• 3:10-4:50 p.m. Background and user’s perspective Session  
  o Moderator: Jeffrey Vetter  
  o Summary: Richard Vuduc  
  o Martin Schultz, “Activities in the ASC Working Group Exascale Tools”  
  o John Mellor-Crummey, “Exascale Software Center (RIP) Tools Perspective”  
  o David Skinner, “Application Performance Tools at NERSC”  
  o Scott Parker, “Tools on the Blue Gene P & Q”  
• 4:50–6:30 p.m. Break  
• 6:30–7:30 p.m. Working Dinner + Key note address (Jeff Vetter)  
• 7:30–7:50 p.m. Background and user’s perspective Session  
  o David Montoya, NNSA User’s Perspective  
• 7:50-9:00 p.m. Performance Analysis Tools Working Session  
  o Moderator: Robert Ross  
  o Summary: Curtis Janssen
Panelists: John Mellor-Crummey, Alan Malony, Jeff Hollingsworth, Ramesh Peri, David Skinner, Donald Becker, Todd Gamlin, Phillip Roth

October 14:

- 7:00-8:00 a.m. Breakfast
- 8:00-8:10 a.m. Introduction (Sonia Sachs)
- 8:10-10:30 a.m. Performance Analysis Tools Working Session
  (Continuation)
- 10:30-10:45 a.m. Break
- 10:45-11:00 a.m. Summary of Performance Analysis Tools Working Session
- 11:00-12:00 a.m. Debugging and Correctness Tools Working Session
  - Moderator: Jeff Hollingsworth
  - Summary: Martin Schulz
  - Panelists: John Delsignore, Ramesh Peri, Sen Koushik, Costin Iancu, Stephen Siegel, Dan Quinlan, Donald Becker
- 12:00-1:00 p.m. Working Lunch + keynote speech (Sen Koushik)
- 1:00-2:30 p.m. Debugging and Correctness Tools Working Session
  (Continuation)
- 2:30-3:30 p.m. Cross-Cutting Issues Working Session
  - Moderator: Dan Quinlan
  - Summary: Dave Montoya
  - Panelists: Paul Hovland, Leonid Oliker, Richard Graham, Nathan Tallent, Martin Schulz, James Brandt, Curtis Janssen
- 3:30-3:45 p.m. Break
- 3:45-4:15 p.m. Summary of Debugging and Correctness Tools and Cross-Cutting Issues Working Session
- 4:15-5:30 p.m. Committee Members only: create report outline

Format of the Working Sessions:

The sessions will be organized as panel discussions, with the moderator offering an initial strawman position including:

- a list of challenges,
- a list of approaches,
- a list of compiler, runtime, and hardware support needs, and
- a list of deliverables for the session. A prioritized list of challenges and approaches should be part of the deliverables of each session.

The panels will have 5-6 questions. All panelists answer one question, then the question is open to the audience before moving to the next question. At the end of the session, panelists present their vision.