

The theme for 2005 is “Computational Science at Scale’ with the focus on high-priority science applications performing well and producing results on leadership-class computing resources. Major elements of the conference program are organized around in-depth **panel discussions** of the capabilities for breakthrough science on today’s leadership-class computers, specifically considering IBM BlueGene, SGI-Altix, Cray X1E, and Cray XT3. Lead by expert panels focused on each of these four architectures, we will discuss the effectiveness of the leadership computer architecture and performance of software tools, math libraries, and major scientific applications. Each of these panelists is invited to present a 10-minute presentation (8 minutes for presentation, 2 minutes for questions), communicating their perspective on the utility of a particular leadership-class hardware platform within their area of expertise. For example, the application scientists on the panel should be ready to address issues such as the following.

- What are your reasons for choosing this hardware platform for your application?
- How do your applications scale and why, in both the strong, fixed problem size, and weak sense, as the problem size grows (assuming you know both scaling regimes)?
- How do you choose a hardware allocation (e.g., number of processors) for your jobs? What hardware allocation is typically most productive for you?
- Give an estimate of the size of computer architected in this fashion that you will need to solve a particular application in which you are interested.

The software and tools experts should be prepared to address questions such as...

The hardware architect should be ready to address questions such as ...

To ensure a vigorous, focused, and productive discussion, a panel of recognized leaders in the high-performance computational science community will serve as *inquisitors* of each of the four platform panels. The inquisitors will lead the conference participants at large in understanding how and why particular leadership-class architecture is (or is not) valuable for scientific discovery and engineering innovation. A moderator will chair each session to maintain the schedule and facilitate punctual discussion.