

# 10<sup>18</sup> INTERNATIONAL EXASCALE SOFTWARE PROJECT

Several recent high profile studies from the computational science community make it clear that the radical new design properties of future extreme-scale platforms — massive concurrency, processor heterogeneity, constrained power budgets, complex memory architectures, unprecedented data I/O requirements — will require equally radical innovations in the software infrastructure the scientists and engineers will need to make them useful for extreme-scale research. But the challenge of creating an entirely new software stack for high performance computing is quite daunting. Because it was clear to many community leaders that this challenge would demand an unprecedented level of coordination and cooperation within the worldwide open source software R&D community, the International Exascale Software Project (IESP) was created in 2009 to organize the collective effort necessary to meet it. Accordingly, the IESP's guiding purpose is to empower ultrahigh resolution and data intensive science and engineering research through the year 2020 by developing a plan for 1) a common, high quality computational environment for peta/exascale systems and for 2) catalyzing, coordinating, and sustaining the effort of the international open source software community to create that environment as quickly as possible.

During its first year and a half of work, the IESP organized five workshops at different locations around the globe: Sante Fe, NM (USA); Paris, France; Tsukuba, Japan; Oxford, UK; and Maui, HI (USA). The agendas for each workshop were structured to provide progressively greater definition for the components of the IESP plan, with each successive meeting building on the results of the previous meeting. The goal of the first year's workshops was to conduct an application needs assessment and then develop a coordinated roadmap to guide open source HPC development with better coordination and fewer missing components. An updated version of the IESP Roadmap was published electronically for SC '10. The work of the IESP is also credited with helping to stimulate major new government initiatives in the US, the EU and Japan focused on (and working together toward) a new HPC software infrastructure for extreme-scale science. More information about the IESP, including the latest version of the Roadmap, meeting notes, white papers, and presentations, can be found by visiting the project website.

## SPONSORS



 **IESP ROADMAP**  
AND MORE INFORMATION  
AVAILABLE AT  
[www.exascale.org](http://www.exascale.org)