
ASCR Exascale Computing Systems (execution time) Productivity Workshop Wrapup Comments

Jeffrey Vetter
Thomas Sterling
Thomas Ndousse-Fetter

Presented to
ASCR Exascale Computing Systems Productivity Workshop
Washington, DC
4 Jun 2014

Strategic Goals

- Prepare the agency for the upcoming External Exascale Program Review to be held in July, which will play a key determining role in establishing the US Exascale Computing Initiative and the respective overall R&D program.
- Inform the office on the potential opportunities and challenges for a specific R&D program on extreme-scale computing productivity beyond this immediate external ECI review.

Earlier Workshop Report (and others)

<http://science.energy.gov/ascr/news-and-resources/program-documents/>

About

Research

Facilities

Science Highlights

Benefits of ASCR

Funding Opportunities

Advanced Scientific
Computing Advisory
Committee (ASCAC)

News & Resources

ASCR Discovery

Monthly News Roundup

News Archives

**ASCR Program
Documents**

ASCR Program
Documents Archive

HPC Workshop Series

ASCR Workshops and
Conferences

ASCR Presentations

100Gbps Science Network

ASCR Program Documents

 Print | Text Size: A A A

Feedback [+]
Share Page ▾

Provided below is a listing of relevant articles, plans and ASCR-sponsored workshop reports.

Select this link to view the [ASCR Program Documents Archive](#)



Abstract Machine Models and Proxy Architectures for Exascale Computing

In this report our goal is to provide the application development community with a set of models that can help software developers prepare for exascale. In addition, use of proxy architectures, through the use of proxy architectures, we can enable a more concrete exploration of how well application codes map onto the future architectures.

Posted May, 2014

[Link to the report..](#)  (2.4MB)



DOE workshop on Software Productivity for eXtreme-scale Science (SWP4XS)

This report presents results from the DOE workshop on Software Productivity for eXtreme-scale Science (SWP4XS) held January 13-14, 2014, in Rockville, MD. The workshop brought together approximately fifty experts in the development of large-scale scientific applications, numerical libraries, and computer science infrastructure to determine how to address the growing crisis in software productivity caused by disruptive changes in extreme-scale computer architectures.

Posted May, 2014

[Link to the report..](#)  (4.5MB)



Applied Mathematics Research for Exascale Computing

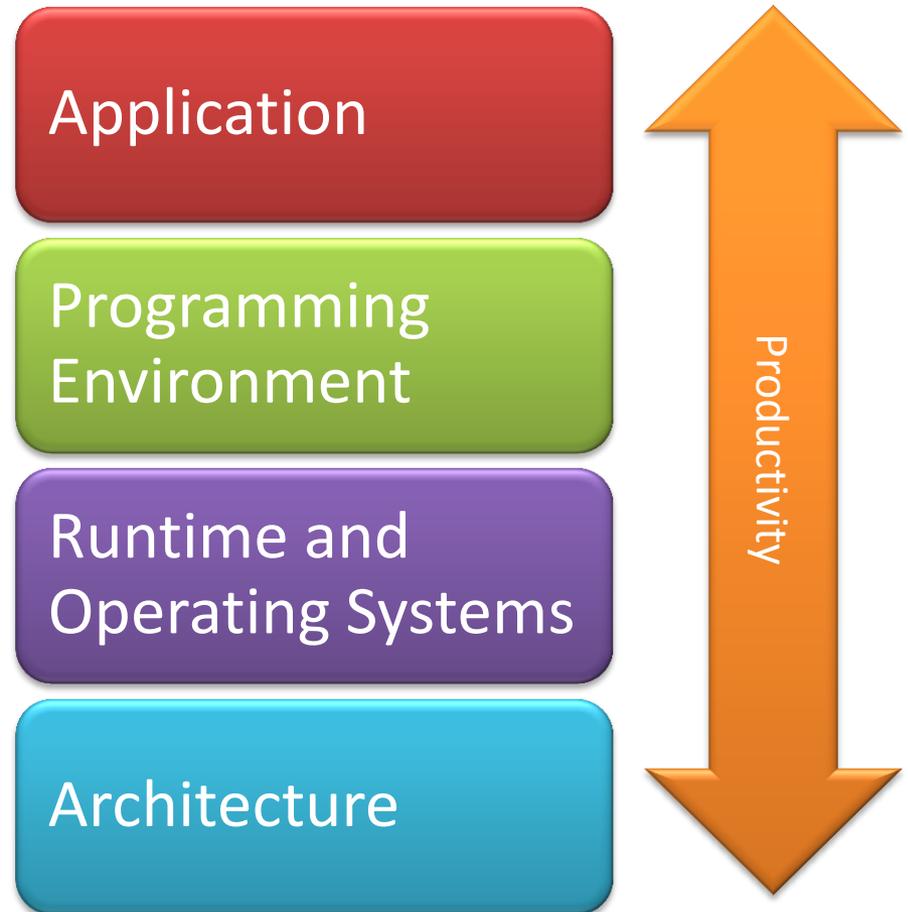
This report details the findings and recommendations of the DOE ASCR Exascale Mathematics Working Group that was chartered to identify mathematics and algorithms research opportunities that will enable scientific applications to harness the potential of exascale computing. The working group organized a

Technical and Tactical Goals

- Continue the definition and exploration of productivity beyond the first ASCR Workshop on Productivity in January.
- Plan to
 1. clarify the implications of Productivity as a quality metric and objective function,
 2. identify R&D activities in hardware and programming systems (e.g., compilers, autotuning, tools) that contribute to productive extreme-scale systems, and, hence, critical to the overall quality of an exascale initiative,
 3. develop a crosscutting productivity program roadmap to address critical gaps in other programs, and
 4. produce a report that will inform presenters and reviewers at the July external ECI review.

Day 1 Breakout Group Charge

- What design choices in your functional area (e.g., RTS, PE, OS, HW) impact productivity?
 - Provide examples
 - Prioritize your factors (top 5)
 - Prioritize your risks looking forward to exascale
- How do the new priorities of Power and Resilience impact Productivity for your functional area?
- How are your design choices balanced against other metrics (e.g., performance, power, resilience, reusability, portability)
- How do other functional areas intersect and impact your functional area in your ability to provide a productive system?



Timeline

- Workshop chairs will compose draft document on Google Doc.
- Feed any additional input to them
- Draft report will be published to all attendees for comment later this month
- Finish report by early July