

# Computational Science & Engineering Software Sustainability and Productivity Challenges (CSESSP Challenges)

An inter-agency workshop sponsored by the [Networking and Information Technology Research and Development \(NITRD\)](#) / [Software Design and Productivity \(SDP\) Coordinating Group \(CG\)](#).

**October 15th-16th 2015, Washington DC, USA**

<https://www.nitrd.gov/csessp>

## **Call for Participation**

Software has emerged as a critical technology in all sectors including defense, health systems, banking, transportation, energy, science and engineering, and manufacturing. However, software lifecycle cost is increasingly becoming the dominant fraction of the total information technology investment. Additionally, software activities have been a major factor in large-scale project delays, failures, cost overruns, and productivity bottlenecks. There is a general consensus that current approaches produce software that is difficult to maintain, upgrade, and scale, especially in the face of rapidly changing machine architecture and new system requirements.

The CSESSP Challenges workshop will identify the unique issues around software productivity and sustainability faced by the NITRD computational science and engineering (CSE) communities, bringing together experts from academia, industry, government, and national laboratories. The workshop will focus on general issues and challenges of software systems sustainability and productivity with the aim of making software a first-class issue in the specification, design, cost and lifecycles management of science and engineering infrastructures. In this context, the workshop will discuss technical issues that impact software sustainability, such as software requirements engineering, high-productivity software engineering, reproducibility, software maintenance processes, and scalable, reusable, and portable software system architectures, to name a few.

We invite short (1 or 2 page) papers from computational science software developers, software system engineers, computer system engineers and architects, software managers, experts in related scientific software fields and government agency representatives. In the context of improving CSE software sustainability and productivity, these papers should identify and describe challenges, new approaches and strategies, best practices or experiences in related fields, and non-technical issues such as science policies and economic factors. These papers will be used by the program committee to structure the workshop, provide background material, and contribute to selecting attendees.

Areas of interest for the CSESSP Challenges Workshop include but are not limited to the following:

- Characterization of the emerging sustainability and productivity crisis from laptops to extreme-scale systems.
  - Software as a critical national infrastructure and as a virtual facility for computational science and engineering.
- New approaches to scientific software that significantly improve sustainability and productivity, including leveraging software engineering research:
  - Strategies and technologies for minimizing the impacts of rapidly changing architectures and languages on large software systems
  - Facilitating software performance, portability, legacy software factoring, interoperability and reusability.
- Understanding the economics of CSE software and opportunities and new models of partnership between academia, independent software vendors, the manufacturing industry and government:
  - Understanding licensing and governance issues.
  - Opportunities for economic sustainment of software tools.
- Encouraging and developing software ecosystems to support and advance sustained scientific innovation and discovery:
  - Supporting and leveraging changes in computing technologies, science methods and algorithms.
  - Understanding how software tools can contribute to sustainability & productivity.
- Supporting and encouraging CSE user and developer communities; education and building a CSE software workforce.

**Submissions:**

Submissions of up to two pages should be formatted to be easily readable and submitted as a PDF document using EasyChair at <https://easychair.org/conferences/?conf=cseessp2015>.

**Deadline for Submission:**

12 June 2015 (any time of day)

**Travel Support:**

Some limited travel support may be available, please check the workshop web page.

**Important Dates:**

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|-----------------------|----------------------------|
| ● June 12, 2015       | Paper submission deadline  |
| ● July 24 2015        | Workshop attendees invited |
| ● September 11, 2015  | Deadline for acceptances   |
| ● October 15-16, 2015 | CSESSP Challenges Workshop |

**Organizers:**

- Gabrielle Allen, University of Illinois Urbana-Champaign, USA
- Michael Heroux, Sandia National Laboratories

**Steering Committee:**

- Dai Hyun Kim, Office of the Secretary of Defense (OSD)
- Daniel S. Katz, National Science Foundation
- James Kirby, Naval Research Laboratory
- Sol Greenspan, National Science Foundation
- Steven Drager, Air Force Research Laboratory
- T. Ndousse-Fetter, Office of Science, US Department of Energy
- Vivien Bonazzi, NIH/OD/Senior Advisor for Data Science Technologies ADDs Team
- Walid Keyrouz, National Institute of Standards and Technology

**Program Committee:**

- Jeff Carver, U of Alabama
- Tom Clune, NASA
- Merle Giles, U of Illinois
- Lois McInnes, Argonne
- Manish Parashar, Rutgers University
- Doug Post, DOD
- Roldan Pozo, NIST
- Ethan Coon, LANL