OOKAMI PROJECT APPLICATION

Date: 6/11/21

Project Title: Production quality Ecosystem for Programming and Executing eXtreme-scale Applications (EPEXA)

Usage:

X Testbed

☐ Production

Principal Investigator: George Bosilca

University/Company/Institute:
Mailing address including country:
Innovative Computing Laboratory
University of Tennessee
Suite 203 Claxton
1122 Volunteer Blvd
Knoxville, TN 37996
USA
P: (865) 974-8295
F: (865) 974-8296

Phone number: (865) 974-6321

Email: bosilca@icl.utk.edu

Names & Email of initial project users:

Poonima Nookala poornimavinaya.nookala@stonybrook.edu
Thomas Herault herault@icl.utk.edu
Joseph Schuchart schuchart@icl.utk.edu
Edward Valeev valeev76@vt.edu
George Bosilca bosilca@icl.utk.edu
Robert Harrison robert.harrison@stonybrook.edu

Usage Description:

EPEXA is an NSF-supported R&D project that will create a production-quality, general-purpose, community-supported, open-source software ecosystem that attacks the twin challenges of programmer productivity and portable performance for advanced scientific applications on modern high-performance computers. Of special interest are irregular and sparse applications that are poorly served by current programming and execution models. The project addresses central challenges from modern computational science:

- Advances in predictive, high-fidelity simulation are characterized by increasingly irregular and dynamic computation (block sparse, low-rank, mixed representations, etc.).

•Ongoing technology trend in heterogeneous architectures with dynamically changing performance, and the need to increase concurrency at all scales.

We intend to port and test EPEXA on Ookami and then to optimize the implementation. Several publications are planned and we hope to use Ookami as the platform on which the test calculations will be performed.

Computational Resources:

Total node hours per year: 15K   (more might be needed for some larger test cases but we can accept low priority for those)

Size (nodes) and duration (hours) for a typical batch job: 8 nodes, 0.1 hours. Some full system tests will also be needed

Disk space (home, project, scratch): 20GB home, 500GB project, 500GB scratch

Personnel Resources (assistance in porting/tuning, or training for your users**):** None

Required software: None

If your research is supported by US federal agencies:

Agency: NSF

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