



News Release

Defense Advanced Research Projects Agency

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IMMEDIATE RELEASE

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DARPA Developing ExtremeScale Supercomputer System

Advanced computing is the backbone of the Department of Defense and of critical strategic importance to our nation's defense. All DoD sensors, platforms and missions depend heavily on computer systems. To meet the escalating demands for greater processing performance, it is imperative that future computer system designs be developed to support new generations of advanced DoD systems and enable new computing application code. Targeting this crucial need, the Defense Advanced Research Projects Agency (DARPA) has initiated the Ubiquitous High Performance Computing (UHPC) program to create an innovative, revolutionary new generation of computing systems that overcomes the limitations of current evolutionary approach.

Computing performance increases have been driven by Moore's Law (doubling the transistors that can be placed on an integrated circuit every two years). The ability to achieve projected performance gains is limited by significant power consumption, architectural and programming complexity issues. To exploit available technological advances fully, highly programmable high performance computers must be developed that require dramatically less energy per computation. The goal of DARPA's UHPC program is to re-invent computing. It plans to develop radically new computer architectures and programming models that are 100 to 1,000 times more energy efficient, with higher performance, and that are easier to program than current systems.

The UHPC program directly addresses major priorities expressed by the President's "Strategy for American Innovation". These priorities include "exascale" supercomputing Century "Grand Challenge", energy-efficient computing and worker productivity. The resulting UHPC capabilities will provide at least 50-times greater energy, computing and productivity efficiency, which will slash the time needed to design and develop complex computing applications.

President Obama's "Strategy for American Innovation" notes DARPA's successes and innovations that have driven America's technology advances. DARPA historically has pursued innovative computing development and enabled significant advances. UHPC will pursue non-traditional, innovative developments in an open collaborative research environment. This approach and the resulting technical advances are critical to re-inventing computing.

Prototype UHPC systems are expected to be complete by 2018. The four performers selected to develop UHPC prototype systems are Intel Corporation, Hillsboro, Ore., NVIDIA Corporation, Santa Clara, Calif., Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory, Boston and Sandia National Laboratory, Albuquerque, N.M. Georgia Institute of Technology, Atlanta, was selected to lead an Applications, Benchmarks and Metrics team for evaluating the UHPC systems under development.

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