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# DARPA 'exascale' supercomputer in the works

by [Brooke Crothers](#)

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The Defense Advanced Research Projects Agency will develop an exascale supercomputer, as Moore's Law and conventional computing designs begin hitting a wall, the government agency said Friday.

DARPA's Ubiquitous High Performance Computing (UHPC) program seeks "to create an innovative, revolutionary new generation of computing systems that overcomes the limitations of current evolutionary approach," the agency said in a statement. Companies involved in the project include Intel and Nvidia.



The UHPC program addresses priorities set out by President Obama's "[Strategy for American Innovation](#)" to achieve "exascale" and energy-efficient computing, DARPA said. One exaflop is a thousand times faster than a petaflop, the speed of the fastest supercomputers today.

While citing Moore's Law--which states that the number of transistors placed on an integrated circuit roughly doubles every two years--DARPA said the "ability to achieve projected performance gains is limited by significant power consumption, architectural and programming complexity issues."

To answer this challenge, DARPA's goal is to develop high-performance computers that use a lot less energy per computation. "The goal of DARPA's UHPC program is to

reinvent 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," according to the agency.

The four companies and organizations selected to develop UHPC prototype systems are Intel, Nvidia, Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory, and Sandia National Laboratory. Georgia Institute of Technology was selected to lead an Applications, Benchmarks and Metrics team for evaluating the UHPC systems under development, DARPA said.

Prototype UHPC systems are expected to be complete by 2018.

"UHPC will pursue nontraditional, innovative developments in an open collaborative research environment. This approach and the resulting technical advances are critical to reinventing computing," the agency said.

Nvidia on Monday said it will offer its expertise in graphics processing units. "This recognizes Nvidia's substantial investments in the field of parallel processing and highlights GPU Computing's position as one of the most promising paths to exascale computing," Bill Dally, Nvidia's chief scientist and senior vice president of research, and the team's principal investigator, said in a statement. Nvidia plans to work with Cray, Oak Ridge National Laboratory, and six U.S. universities.



Brooke Crothers has been an editor at large at CNET News, an analyst at IDC Japan, and an editor at The Asian Wall Street Journal Weekly, among other endeavors, including co-manager of an after-school math-and-reading center. He writes for the CNET Blog Network and is not a current employee of CNET. [Disclosure](#).

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**こんだ**

,@dynamicsoar プログラムが容易というより新たなプログラムモデルと書いてありますね。英語の方が詳しくかったです。Standardとなるかは分かりませんが。

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