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I.B.M. Near Supercomputer Contract

By [JOHN MARKOFF](#)

SAN FRANCISCO, Aug. 5 — The [National Science Foundation](#) is planning to award [I.B.M.](#) a contract to build the world's fastest supercomputer at the National Center for Supercomputing Applications at the [University of Illinois](#) at [Urbana](#)-Champaign, according to documents that were accidentally placed on a federal government Web site for a short time last week.

The decision to build the machine, which will cost \$200 million to build and may cost more than \$400 million during its five-year lifetime, is already proving to be controversial.

The award has been eagerly pursued by a number of supercomputer centers and state governments. Word of the decision to award the contract to I.B.M. to build a production version of a computer that is now intended for the Pentagon's Defense Advanced Research Projects Agency has created widespread concern in the past week among some computer scientists involved in designing and building the nation's high-performance computers.

The new computer is to be the first supercomputer capable of one thousand trillion mathematical operations a second — a computing benchmark known as a petaflop. Placing it in Illinois, however, has led to expressions of concern in California and Pennsylvania, where computing laboratories also bid on the contract.

The machine will become a magnet for the world's most advanced and challenging scientific research projects. Unlike many academic research supercomputers in the United States that serve a large community of users, the supercomputer will concentrate on a handful of Grand Challenge science projects, like simulating the impact of global warming.

"This will be a rather special machine," said Jack Dongarra, a computer scientist at the [University of Tennessee](#), who is one of the researchers who has helped rank the world's fastest supercomputers. "It's like the Hubble telescope."

The decision must be ratified by the National Science Board, which is scheduled to meet to discuss the decision Monday. Calls during the weekend to officials at the National Science Foundation, a federal government agency, were not returned.

Several government supercomputing scientists said they were concerned that the decision might raise questions about impartiality and political influence. "The process needs to be above all suspicion," said Horst D. Simon, associate laboratory director for computing sciences at the Lawrence Berkeley National Laboratory in Berkeley, Calif. "It's in the interest of the national community that there is not even a cloud of suspicion, and there already is one."

It will also represent an extraordinary shift in the balance of computing power between military and scientific computing centers in the United States. For most of the last two decades, the fastest computers in the United States have been located at either the national laboratories at Los Alamos, N.M., or Livermore, Calif. They are largely used for computing tasks related to the design and preservation of nuclear weapons and other classified applications.

There were also concerns expressed by researchers about a second award discussed in the documents. The N.S.F. would install a Cray supercomputer at the Oak Ridge National Laboratory at the University of Tennessee. Several researchers said they were concerned that although the award was to the university, its operation would be carried out by an Energy Department laboratory.

A researcher for the Pittsburgh Supercomputer Center who identified himself as "grouchyoldcoot" in a Web blog posting, last week wrote: "Having the N.S.F. buy a machine and hand it to the D.O.E. is, well, very unexpected — the D.O.E. has plenty of machines of its own, and the N.S.F. wants to get its work done, not the D.O.E.'s." The posting was removed on Thursday, but not before it was circulated among supercomputer researchers.

The world's most expensive supercomputer to date was the Japanese Earth Simulator, a specialized supercomputer, capable of more than 35 trillion mathematical operations a second, or teraflops. It was built for \$350 million to \$400 million in 2002 and may have cost \$500 million to \$1 billion to operate.

The Earth Simulator was ranked as the world's fastest computer until 2004, when BlueGene/L built by I.B.M. and installed at [Lawrence Livermore National Laboratory](#) regained the title for the United States. The Japanese are designing a machine that they think will reach a new computing threshold of 10 petaflops in 2011.

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