2 from Argonne on team that worked on software for computing grids

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Turn on a water spigot, and it’s like tapping a bottomless barrel of water.

Ditto for electricity: Flip the switch, and the supply is endless.

But computing is another matter. Even with the Internet revolution enabling us to connect in new ways, we are still limited to self-contained systems running locally stored software, limited by corporate, institutional and geographic boundaries.

That’s the view of Ian Foster, associate director of mathematics and computer science at Argonne National Laboratory and a computer science professor at the University of Chicago. He and his colleagues formed a different vision for computing. It’s called the grid.

“Grid computing allows people to share computer resources — processing, storage, data and software — across networks,” said Foster, 44. “The Internet made it possible to share simple structured data across a network. The grid is the next stage of evolution. It ties together computers to make it possible to perform quite complex operations.”

The team, which includes Steve Tuecke of Argonne and Carl Kesselman, director of the Center for Grid Technologies at the University of Southern California Information Sciences Institute, developed the Globus Toolkit, which provides infrastructure software for scientists and corporations that seek to form their own secure grids.

To seed the grid concept, the group, which is funded by government agencies, opted to give away the Globus Toolkit software at www.globus.org. The same approach was taken a decade ago when the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign unleashed Mosaic, the graphical browser, for free, sparking the Internet revolution.

Foster said in an article in Scientific American that the grid infrastructure will be “as invisible as the sewage system.” But grid computing is expected to change computing at all levels, from major organizations to home computer users.

Already, major science organizations are using Globus Toolkit on complex, ambitious projects, including earthquake simulations, brain research, climate modeling and high-energy physics.

Foster said a new generation of “armchair astronomers” from the University of Chicago, Fermilab and the University of Wisconsin will be using the grid to harness computer resources from across the country to “perform what are now weeklong scans [of databases] in the time it takes to brew a cup of coffee.”

Major corporations, including IBM, Hewlett-Packard, NEC and Sun Microsystems, are exploring the prospects of grid computing, which also goes by the names of “e-business on demand,” “planetary computing” and “utility computing.” Foster said smaller companies are checking out grid computing as well.
The Globus team started out with a demonstration of the concept of a national grid at an industry conference in 1995 in San Diego.

The U.S. Defense Advanced Research Projects Agency, which also backed the research that led to Mosaic, has supported Globus, along with the Department of Energy, NASA and the National Science Foundation.

Howard Wolinsky