

Calendar/Meetings

March

28-30, [Main Street Supercomputing: The Convergence of HPC and Grid Computing](#), Newport, Rhode Island

April

2-6, [High Performance Computing Symposium \(HPC 2006\)](#), Huntsville, Alabama

3-7, [ICDE '06: The 22nd International Conference on Data Engineering](#), Atlanta, Georgia

9-11, [caBIG 2006 Annual Meeting](#), Arlington, Virginia

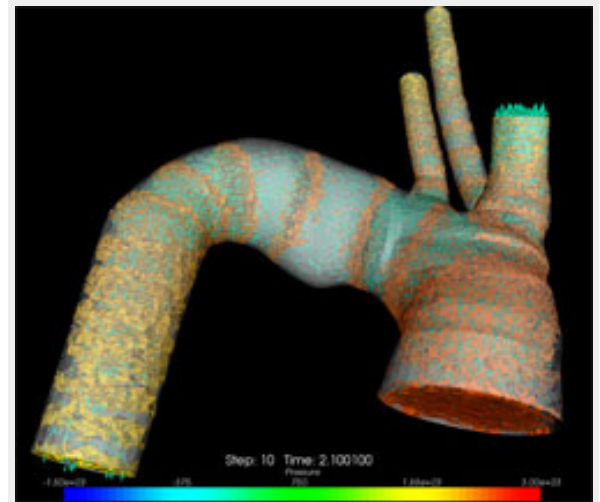
[Full Calendar](#)

Feature Story

Grid Gets the Blood Flowing

A collaboration of mathematicians, middleware developers and visualization scientists has demonstrated the most comprehensive three-dimensional model of human arterial blood flow ever attempted. The simulation of the human arterial tree, the network of arteries throughout the human body, was completed using TeraGrid resources.

"We want to be able to study diseases like atherosclerosis in more detail," said George Karniadakis from Brown University. "What's the effect on the arteries in the brain if there's atherosclerosis, or plaque buildup, in the carotid artery? Individual arteries have been studied by many research groups, but they have to specify artificial conditions at the edges of each artery." With a global blood circulation model such guesses at conditions are not necessary, and scientists can see the effect of a disturbance in blood flow anywhere in the body. Such simulations may impact many areas of medical research.



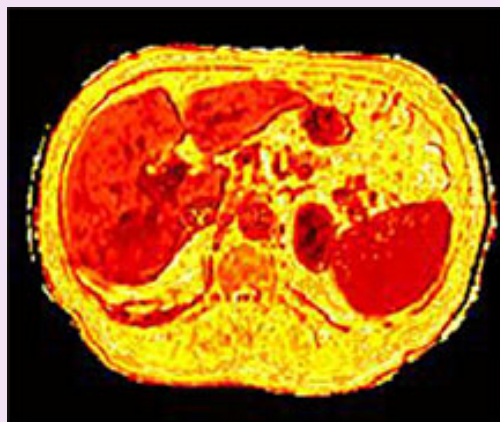
High resolution image of a three-dimensional arterial bifurcation.

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Over the past 10 years, Karniadakis and his research group developed a computer program that simulates the largest 55 arteries and 27 bifurcations, or places where an artery splits into two, in the tree. Until last year, the simulations were run on only one computing resource at a time, modeling at most two or three branching sites at once. But in early 2005, the collaboration proposed harnessing the combined power of the TeraGrid's many computing resources to simulate, and visualize in real time, more than a dozen branching sites.

[Full article](#)

Image of the Week



Parametric image of the abdomen. (Click on image for larger version.)

Image courtesy Ignacio Blanquer, Vicente Hernández, José Carbonell, David Moratal, Montse Robles, Daniel Monleón, Bernardo Celda and Luis Martí-Bonmatí

The assessment of early stages of liver tumors requires a quantitative evaluation of the blood supply to the

liver. Researchers in Spain have developed an application for the EGEE grid infrastructure that speeds the creation of parametric images of the liver from a series of MRI images. The coefficients that create such images are used to develop a model of how drugs are absorbed, distributed and metabolized in the liver.

[Read more...](#)

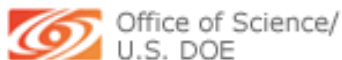
[Link of the Week](#)

Towards 2020 Science

This report, written by a group of scientific and computing experts convened by Microsoft Research Cambridge, sets out the challenges and opportunities arising from the increasing synthesis of computing and the sciences. It defines a new vision and roadmap of the evolution, challenges and potential of computer science and computing in scientific research for the next fifteen years.

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First Issue of *SciDAC Review* Now Available

The Scientific Discovery through Advanced Computing program brings discipline scientists, applied mathematicians and computer



scientists together to maximize the use of the most sophisticated high-performance computers for scientific discovery. SciDAC is a program within the Office of Science of the U. S. Department of Energy.

This new twice-yearly magazine showcases SciDAC projects and shares SciDAC-related news and scientific achievements. The inaugural issue celebrates some of the successes and activities of the program as it completes its first phase and embarks on SciDAC-2.

This issue includes an interview with Raymond Orbach, director of the Department of Energy's Office of Science, and a letter from SciDAC director Michael Strayer. Scientific achievements made possible through advanced computing are highlighted in the areas of particle accelerator design, the physics of exploding stars and particle transport in realistic fusion plasma systems. Computing successes are also featured, including the Terascale Optimal PDE Simulations project that focuses on creative algorithms and software for analysis of natural phenomena, and Oak Ridge National Laboratory's new Leadership Computing Facility.

[Read the *SciDAC Review*](#)

[Grids in the News](#)

Digging deep to unlock the Grid IST Results, March 28, 2006

Unlocking the true power of the Grid for data mining is a long-cherished aim of computer scientists and researchers are making important strides to achieve that goal by developing the necessary tools and techniques.

[Read More...](#)

NCSA receives grant to develop social networking tools for public health

NCSA Press Release, March 23, 2006

The National Science Foundation (NSF) has awarded more than \$300,000 to NCSA researcher Noshir Contractor for a three-year effort to develop social networking tools to enable collaboration among various researchers, physicians, epidemiologists, and public health experts dealing with tobacco-related illnesses.

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Researchers Accelerating Data over Hybrid Networks

GRIDtoday, March 22, 2006

As a number of large-scale, multinational experiments prepare to go online in the next two to three years, a new generation of data retrieval and transmission techniques and tools will be required.

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