SCIENCE GRID THIS WEEK

April 28, 2005

Calendar/Meetings

APRIL

25-29, ISGC 2005: The International Symposium on Grid Computing, Taipei, Taiwan

26-29 5th Annual Access Grid Retreat 2005, Millbrae, CA

27-29, GriPhyN All Hands Meeting, Chicago, IL

MAY

1–5, 2005 Spring Internet2 Meeting, Arlington, VA

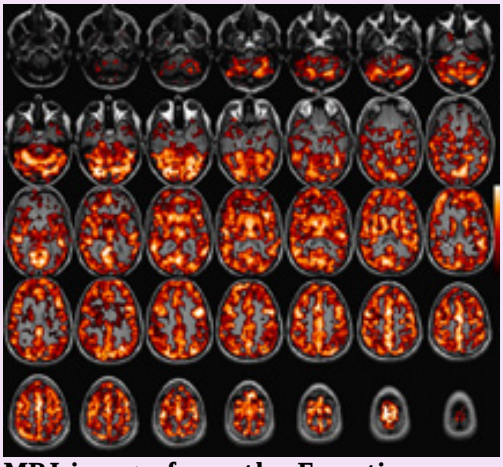
2-6, Grid Asia 2005, Biopolis, Singapore

3, Open Science Grid Consortium Council Meeting, Madison, WI

4-5, US LHC OSG Technology Roadmap Meeting, Madison, WI

5-6, GEON 3rd Annual Meeting, San Diego, CA

Graphic of the Week



MRI image from the Function BIRN Human Phantom Study
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Feature Story

Computational Chemistry Workshop Features Collaborations Large and Small

Sangtae Kim
Credit: Blake Harvey.
(Click on image to view larger version)

Computational chemists may work individually or in small groups, but they need access to the same networks of computing resources developed for large-scale science and engineering projects. Researchers developing the Computational Chemistry Grid are working to provide chemists with such resources using the GridChem application and supercomputing resources from five collaborating institutions.

A GridChem tutorial kicked off the fifth annual Computational Chemistry Workshop, held April 17-19 at the University of Illinois' National Center for Supercomputing Applications in Urbana, Illinois. The workshop featured keynote speakers from the fields of chemistry and computing, including Sangtae Kim from the National Science Foundation, as well as presentations on the CCG and other grid projects from physics, molecular biology, nanotechnology and engineering.

"The CCG and GridChem are leveraging existing pieces of software and technology and using bits of glue to create an environment that will provide a collection of grid-based resources for chemical physics applications," explained the NCSA's John Towns. "We're trying to provide experimental chemists with an easier interface to simulation technology."

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Fermilab's DZero Experiment Crunches Record Data with the Grid

BATAVIA, IL--Hundreds of scientists from the DZero collaboration at the Department of Energy's Fermi National Accelerator Laboratory are using the technology of the future to process particle physics data today. Using grid computing, facilities in six countries around the globe have begun to provide computing power equivalent to 3,000 one-gigahertz Pentium III processors to crunch more experimental data than ever before. In six months, the computers will churn through 250 terabytes of data--enough to fill a stack of CDs as high as France's Eiffel Tower.

"We're using the grid to process three years' worth of data--one billion particle collisions--in six months," said Fermilab guest scientist Daniel Wicke, on leave from the University of Wuppertal, Germany, who heads the reprocessing effort. "DZero has a long history of using computing resources from outside Fermilab, including a project in 2003 to send a much smaller amount of data off-site for reprocessing. We knew that this much bigger effort, remotely processing ten times more collisions than before using five times the number of computers, would be possible."

As new data is recorded with the DZero detector at the Tevatron, the world's highest-energy particle accelerator located in Batavia, IL, it is processed into a form useable by physicists. The cluster of one thousand computer processors

The Biomedical Informatics Research Network (BIRN) is a National Institutes of Health initiative that fosters distributed collaborations in biomedical science using information technology innovations.

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Statistic of the Week

8 MW

Eight megawatts is the estimated amount of power necessary to run all computer processors and disk servers for the Large Hadron Collider experiments in 2008. This is equal to the power drawn by 10,000 toasters. **Credit: Ian Fisk, Fermilab**

Grids in the News

LHC Computing Centres Join Forces for Global Grid Challenge
From the Interactions News Wire, April 25, 2005

Geneva, 25 April 2005 - Today, in a significant milestone for scientific grid computing, eight major computing centres successfully completed a challenge to sustain a continuous data flow of 600 megabytes per second (MB/s) on average for 10 days from CERN(1) in Geneva, Switzerland to seven sites in Europe and the US. The total amount of data transmitted during this challenge-500 terabytes-would take about 250 years to download using a typical 512 kilobit per second household broadband connection.

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Office of Science/ U.S. DOE

DOE Commentary


Robin Staffin

Particle physics discoveries require collecting and processing huge amounts of data, and the scientists involved in particle physics experiments number in the hundreds and come from many continents. To allow such large groups to work effectively together, we are developing new computing technologies to connect worldwide computing power and seamlessly move data over the system.

This new environment calls for new ways of thinking and working collaboratively. Groups funded by the Department of Energy and the National Science Foundation are creating projects like Trillium and the Open Science Grid to share resources and expertise. As science projects in all fields become more complex and research extends to all corners of the globe, worldwide grids supported by high-speed networks will be necessary to ensure that scientists and students everywhere have access to the best tools, data and programs.

We welcome Science Grid This Week as a community-building initiative working to connect and inform U.S. scientists working with and on the grid. We're still in the early stages of grid development, and the result could fundamentally change the way we do science. As it unfolds, we look forward to reading all about it in Science Grid This Week.

Robin Staffin is the U.S. Department of Energy's Associate Director for High Energy Physics in the Office of Science.

dedicated to DZero computing at Fermilab is kept busy processing the newly acquired data.

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NSF Commentary


Joseph Dehmer

What is the grid? Ask a scientist that question today and you might hear about advanced computing and networking research, efforts underway to link scientists to each other and to their data, and the power of grids to revolutionize research. Grids are already being used to connect people and projects, as collaborations pop up worldwide to exploit new technologies.

In addition to advancing scientific knowledge in fields from engineering to medicine, grid computing also exhibits great potential to affect scientific education. Ask an undergraduate student in ten years about the grid, and we hope you'll hear about the cutting-edge physics research that her college is participating in. Or ask a middle-school teacher, and maybe he'll tell you about the genetics project his classroom is collaborating on with students across the globe. We all have an interest in creating a workforce that's trained in computing and collaboration as well as the latest scientific advances. The grid holds great promise for getting us there.

Joseph Dehmer is the Director of the Division of Physics in the Mathematical and Physical Sciences Directorate at the National Science Foundation.