



## **NSF Press Release**

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### **NSF Awards Extend Middleware Development Efforts in Testing, Portals and Instrumentation**

ARLINGTON, Va.—The National Science Foundation (NSF) has awarded \$9 million to support 20 projects as part of its ongoing NSF Middleware Initiative (NMI). The projects extend NMI's efforts to develop and distribute production-quality open-source and open-standards middleware and include awards that focus on experimental applications of new middleware capabilities.

Middleware is software that connects two or more otherwise separate applications across the Internet and allows those applications to share computers, data, networks and instruments. NMI participants have so far issued three releases—packages of several dozen integrated components—that are pointing the way toward a persistent national middleware infrastructure for research and enterprise computing.

"The NMI awardees are developing the shared cybertools that will help define the cyberinfrastructure of tomorrow," said Peter Freeman, head of NSF's Computer and Information Sciences and Engineering directorate. "New projects on grid portals and grid middleware for instruments represent exciting new areas for NMI. These awards work within the standards-based Open Grid Services Architecture and will extend the usability and capabilities of the cyberinfrastructure for a broad community of users."

In the experimental category, new NMI awards include efforts to develop collaboration tools, essential software libraries for grid-based parallel computing and tools for grid-based databases. In the system integrator category, awards focus on the deployment and support of robust middleware that help researchers and educators access the cyberinfrastructure.

The largest new NMI award, to the Open Grids Computing Environment (OGCE) consortium, is a collaboration to simplify the development of "grid portals," Web-based user interfaces to applications that may access a broad array of resources and services on the grid. Marlon Pierce of Indiana University leads the effort, with collaborators at the University of Michigan, the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign, the Texas Advanced Computing Center at The University of Texas at Austin and the University of Chicago. Donald McMullen at Indiana University leads another NMI project to develop a standard grid middleware architecture that will improve the accessibility and integration of scientific instruments. The team will evaluate the middleware on three different instrument types: a synchrotron source, embedded network performance monitors and a wireless sensor network. This project is aimed in part at supporting international collaborations to share large scientific instrument resources and leverages two other NSF-funded network and middleware projects—the Pacific Rim Application and Grid Middleware Assembly (PRAGMA) and the TransPAC high-performance international Internet project.

Several of the awards continue and expand NMI's existing activities by the Grid Research Integration Deployment and Support (GRIDS) Center, led by Randal Butler at the National Center for Supercomputing Applications (NCSA) and Carl Kesselman at the University of Southern California's Information Sciences Institute (ISI), and the Enterprise and Desktop Integration Technologies (EDIT) Consortium, led by Ken Klingenstein at Internet2. These NMI teams are developing, deploying and supporting an integrated national middleware infrastructure for science and engineering applications. A new award to Miron Livny at the University of Wisconsin, Madison, expands middleware testing efforts previously supported through earlier GRIDS Center awards.

The EDIT Consortium is led by Internet2, EDUCAUSE and the Southeastern Universities Research Association (SURA). The GRIDS Center is a partnership of the University of Chicago, ISI, NCSA at the University of Illinois at Urbana-Champaign, the San Diego Supercomputer Center (SDSC) at the University of California, San Diego, and the University of Wisconsin, Madison. Ian Foster at the University of Chicago is the overall director of GRIDS. In addition to NSF's support, the GRIDS software developers are funded by the U.S. Department of Energy, the Defense Advanced Research Projects Agency and NASA.

NSF launched NMI in 2001, awarding \$12 million over three years to create and deploy advanced network services that simplify access to diverse Internet information and services. In 2002, NMI supported the creation of the eight-university NMI Integration Testbed, managed by SURA, to provide "real-life" evaluation and feedback on NMI middleware software, specifications and services.

NSF Middleware Initiative: <http://www.nsf-middleware.org/>  
GRIDS Center: <http://www.grid-center.org/>  
EDIT Consortium: <http://www.nmi-edit.org/>

See also:

[Fact Sheet: NSF Middleware Initiative](#)

*The National Science Foundation (NSF) is an independent federal agency that supports fundamental research and education across all fields of science and engineering, with an annual budget of nearly \$5.3 billion. NSF funds reach all 50 states through grants to nearly 2,000 universities and institutions. Each year, NSF receives about 30,000 competitive requests for funding, and makes about 10,000 new funding awards. The NSF also awards over \$200 million in professional and service contracts yearly.*