

NITRD Budget Analysis

The President's 2006 Budget continues the Administration's strong support for the NITRD Program. The total request of \$2.15 billion supports cutting-edge research, development, and education by the NITRD agencies, working in close collaboration, in: high-end computing infrastructure, applications, research, and development (HEC I&A and HEC R&D respectively); human-computer interaction and information management (HCI&IM); large-scale networking (LSN); high-confidence software and systems (HCSS); software design and productivity (SDP); and social, economic, and workforce aspects of information technology (SEW).

Analysis of NITRD Investments by Agency

The President's 2006 request for NSF is increased by \$8 million over 2005. Both HEC I&A and HEC R&D are increased, consistent with the recommendations of the HECRTF. HCSS is also increased to support NSF's Cyber Trust Program and other important cyber security research. These increases are balanced by slight decreases in LSN and SEW.

The 2006 request for NIH shows a slight decrease from 2005 due to completion of testbed projects exploring medical applications of advanced networks.

In 2006, DOE/SC will operate the two leadership-class architectures acquired in 2004 and 2005 at ORNL, with a limited number of very large allocations open to the scientific community. Major elements of the DOC/SC SciDAC portfolio will be re-competed in 2006, including competitive establishment of new SciDAC academic centers to focus on computational science areas critical to DOE missions, resulting in an increase in HEC I&A funding. Reduction in HEC R&D funding reflects completion of the initial leadership-class system acquisition. Funding for LSN is reduced as current efforts in Networking Research and Collaboratory Tools and Pilots are consolidated into an integrated Distributed Network Environment focusing on basic research in computer networking and middleware to serve DOE mission needs. Although the total DOE/SC 2006 NITRD request shows a decrease from the 2005 enacted level, it is \$1 million above the President's 2005 request.

The request for DARPA is increased \$28 million above 2005. HEC R&D is increased by \$17 million to support Phase III of the High Productivity Computing Systems program, consistent with the recommendations of the HECRTF. HCI&IM is increased \$13 million for research aimed at improving information access and analysis for warfighters. LSN is increased by \$3 million for research to improve network reliability and resilience for military needs.

The 2006 request for NSA contains two significant budget changes. The reduction of \$17 million in HEC R&D reflects the winding down of developmental support for the Black Widow computer system. The \$5-million increase for HCSS funds the NSA part of an inter-agency effort on secure real-time operating systems and associated middleware.

In 2006, NASA's Vision for Space Exploration and mission needs for Return to Flight will affect its participation in the NITRD Program. NASA will continue operating the 52-teraflop Columbia computer acquired in 2004 and 2005 for science and engineering simulation, including providing access to this world-class resource for the scientific community. Funding for Grand Challenge Applications will be reduced, and HEC technology research will be completed, reducing its HEC I&A participation and ending NASA's HEC R&D participation. NASA will continue interagency coordination activities in architectures, testbeds, and system performance assessment. Funding for research in intelligent systems and grid computing has been redirected to more directly address time-critical agency mission needs related to Return to Flight and the Vision for Space Exploration, reducing NASA participation in HCI&IM and LSN. NASA investments in autonomous systems and robotics are no longer counted as part of SDP, and NASA funding similarly is no longer counted as part of SEW. As a result of these reductions and redirections, NASA overall funding for NITRD activities changes from \$162.9 million in 2005 to \$74.3 million in 2006.

The AHRQ request is \$12 million below 2005 but \$25 million above 2004. Under this request, AHRQ supports the President's goal of driving better information technology into health care by supporting creation of regional health information networks and developing standards for interoperable health information. AHRQ's funding decrease results from transferring to the new Office of the National Coordinator for Health Information Technology (ONCHIT) responsibility for the maturing regional collaborations that assist health care providers in the deployment of standards-based interoperable Electronic Health Records systems.

Although NIST, NOAA, and EPA have modest funding levels relative to other NITRD agencies, they leverage their investment through collaboration with the other NITRD agencies. Reflecting the benefits of these collaborations, NIST, NOAA, and EPA all show funding increases in HEC I&A to support scientific applications for the agencies' mission needs. Similarly, these agencies are increasing their efforts in HCI&IM, reflecting their collaborations in information management research for their mission needs.

OSD has been restored to the NITRD crosscut. The OSD request is constant from 2005 to 2006, focusing on HCSS and SDP.

The DOE/NNSA request is slightly below 2005. The primary change is a shift from HEC R&D toward HEC I&A, reflecting NNSA priorities to better support the computational needs of its scientists and engineers.

Analysis by Program Component Area (PCA)

HEC I&A is almost constant from 2005 to 2006, with reductions in NASA offset by increases in all of the other participating agencies.

HEC R&D is decreased by \$38 million from 2005 to 2006. This results from decreases in specific DOE/SC and NSA projects described above, though these decreases are partly offset by an increase in the DARPA HPCS program. Long-range HEC technology research will continue at approximately the same level in 2006 as in 2005. Collaboration among agencies to carry out the HECRTF recommendations will continue in both HEC I&A and HEC R&D.

HCI&IM funding is down \$18 million from 2005 to 2006. The decrease at NASA is partly balanced by increases in DARPA and other agencies. The AHRQ decrease from 2005 actually sustains a substantial increase over 2004.

LSN funding decreases \$29 million from 2005 to 2006. While LSN funding increases at DARPA and DOE/NNSA, LSN funding decreases at NSF (completion of projects), NIH (completion of testbeds for network applications), DOE/SC (consolidation of middleware activities), NASA (redirection for new missions), and AHRQ (reduction of regional networking).

HCSS funding increases by \$9 million from 2005 to 2006, reflecting multiagency focus on cybersecurity and on more secure, reliable, and resilient systems. Notable are NSF's lead in basic cybersecurity research and the multiagency effort on a real-time research operating system.

SDP funding decreases \$15 million from 2005 to 2006, almost entirely due to NASA's shifts to address its time-critical mission needs. The participating agencies will benefit from the increased involvement of OSD, which has set a high priority on improvement of software quality.

SEW funding decreases \$13 million from 2005 to 2006 because of reductions and redirections, primarily at NASA and NSF.