Agency NITRD Budgets by Program Component Area

FY 2008 Budget Estimates
and
FY 2009 Budget Requests

(Dollars in Millions)

Agency		High End Computing Infrastructure & Applications (HEC I&A)	High End Computing Research & Development (HEC R&D)	Cyber Security & Information Assurance (CSIA)	Human-Computer Interaction & Information Management (HCI &IM)	Large Scale Networking (LSN)	High Confidence Software & Systems (HCSS)	Social, Economic, & Workforce Implications of IT (SEW)	Software Design & Productivity (SDP)	Total [1]
NSF	2008 Estimate	257.4	78.6	68.1	234.8	82.6	56.6	98.6	54.8	931.5
	2009 Request	**298.4**	**91.5**	**87.6**	**266.5**	**95.8**	**67.6**	**112.0**	**70.8**	**1,090.3**
DARPA			92.0	124.4	205.3	109.0				530.7
			142.6	**106.8**	**184.9**	**135.9**				**570.2**
OSD and DoD Service research orgs. [2]		247.6	18.1	38.6	109.6	136.1	25.6		6.7	582.3
		249.6	**15.6**	**40.7**	**92.9**	**114.1**	**26.9**		**7.8**	**547.5**
NIH		159.4	76.4	1.1	182.7	68.1	7.7	10.8	4.6	510.7
		159.4	**76.3**	**1.1**	**181.7**	**68.0**	**7.7**	**10.8**	**4.6**	**509.6**
DOE/SC/NE/FE [3]		282.0	73.1			47.6		5.0		407.6
		334.6	**73.1**			**52.2**		**5.0**		**465.0**
NSA			93.5	15.5		2.9	25.2			137.1
			72.6	**17.8**		**1.8**	**27.2**			**119.3**
NASA		59.4		0.3	6.5	1.3	4.8			72.3
		60.1		**0.2**	**5.5**	**0.7**	**4.3**			**70.7**
NIST		10.7	2.4	20.8	11.8	5.8	4.9		5.6	62.0
		10.7	**2.4**	**25.8**	**11.8**	**5.8**	**4.9**		**5.6**	**67.0**
AHRQ					39.8	5.0				44.8
					39.8	**5.0**				**44.8**
DOE/NNSA		8.4	14.3			1.3		4.3		28.3
		8.2	**15.7**			**0.9**		**4.7**		**29.5**
NOAA		15.9	1.9		0.5	2.9			1.6	22.8
		18.0	**1.9**		**0.5**	**2.9**				**23.3**
EPA		3.3			3.0					6.3
		3.3			**3.0**					**6.3**
NARA					4.5					4.5
					4.5					**4.5**
TOTAL (2008 Estimate) [1]		1,044.1	450.4	268.7	798.5	462.4	124.8	118.7	73.3	3,341
TOTAL (2009 Request) [1]		**1,142.4**	**491.8**	**279.8**	**791.2**	**483.0**	**138.5**	**132.6**	**88.7**	**3,548**

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[1] Totals may not sum correctly due to rounding.

[2] The budget for OSD and the DoD service research organizations includes funding for the High Performance Computing Modernization Program and the Missile Defense Agency.

[3] The DOE/SC/NE/FE budget includes funding for DOE's Office of Science (SC) and, for the first time this year, funding for the Office of Nuclear Energy (NE) and the Office of Fossil Energy (FE).

NITRD Program Budget Analysis

Fiscal Year Overview for 2008-2009

Differences between the President's Budget request for a given year and estimated spending for that year reflect revisions to program budgets due to evolving priorities, as well as Congressional actions and appropriations. Consequently, some of the 2008 estimates cited in this report may change pending discussions between the Administration and Congress. Other factors affecting 2008 NITRD budget estimates and 2009 budget requests are the addition of DOE's Office of Nuclear Energy and Office of Fossil Energy to DOE reporting, along with the Office of Science. Further, agencies have continued to work collectively on improving the PCA definitions, as reflected by changes in the definitions outlined in OMB Circular A-11, and individually on improving the classification of investments within the PCAs, resulting in changes in NITRD Program budgets.

2008 Summary

The estimated 2008 NITRD budget of $3.341 billion is $0.280 billion, approximately 9 percent, more than the $3.061 billion 2008 President's budget request. The overall change is due to both decreases and increases in individual agency NITRD budgets, which are described below.

2009 Summary

The President's 2009 budget request for the NITRD Program is $3.548 billion, an increase of $0.207 billion, approximately 6 percent, over the 2008 estimate. Major contributors to this change are NITRD Program budget increases at NSF, DARPA, DOE, and NIST, consistent with the Administration's American Competitiveness Initiative, partially offset by decreases at DoD (OSD and DoD Service research organizations), NSA, NASA, and NIH.

NITRD Program Budget Analysis by Agency

This section describes changes greater than $10 million either between 2008 requested funding and 2008 estimated spending or between 2008 estimated spending and 2009 requests. Smaller changes are discussed only if they represent shifts in funding focus. Budget numbers in these descriptions are rounded from initial agency numbers with three decimals to the nearest whole number.

NSF

Comparison of 2008 request ($994 million) and 2008 estimate ($931 million): The decrease of $63 million is primarily due to NSF decreases in HEC I&A, LSN, and SEW, partially offset by an increase in HEC R&D. HEC I&A cyberinfrastructure-related investments will be scaled back by $46 million; LSN research on advanced testbeds, architectures, and theoretical foundations of networking will be scaled back by $24 million; and SEW investments in areas of workforce development will be scaled back by $11 million. HEC R&D will be increased by $11 million due to a re-balancing of funding between deployment of cyberinfrastructure and cyberinfrastructure research.

Comparison of 2008 estimate ($931 million) and 2009 request ($1,090 million): The 2009 budget request includes increases in all PCAs. This includes $41 million in HEC I&A for increased activity in modeling and simulation of complex systems, numerical algorithms and software implementations, and grid computing infrastructure; $12 million in HEC R&D to fund a new Science and Engineering beyond Moore's Law activity in computing hardware technologies and related programming models, languages, and tools to inform future computing systems; $20 million for CSIA research on cyber security foundations, network security, and systems software supporting the *Federal Plan for Cyber Security and Information Assurance Research and Development*; $32 million for HCI&IM research on creating new knowledge from digital data, visualization methods, and data confidentiality, privacy, security, provenance, and regulatory issues, as well as new Adaptive Systems Technology multidisciplinary research; $13 million for LSN research on advanced testbeds and architectures; $11 million for HCSS research in areas such as software for complex cyber-physical systems and mobile, portable, and pervasive computing devices; $13 million for SEW research to infuse computational thinking into computing education and science and engineering; and $16 million for SDP research on the scientific and engineering principles for developing software for complex cyber-based systems.

DARPA

Comparison of 2008 request ($412 million) and 2008 estimate ($531 million): The $119 million increase is due to increases of $23 million in HEC R&D to support centers, institutes, and partnerships for math and computer sciences; $27 million in CSIA to include the TrUST research program; and $67 million in LSN for additional programs supporting large-scale data flows for military communications and networking in the air-to-air-to-ground and deeply deployed operational environments.

Comparison of 2008 estimate ($531 million) and 2009 request ($570 million): The increase of $39 million is the result of the addition of $51 million to HEC R&D to meet milestone requirements for the HPCS program and to support the math and computer science institutes and partnerships, and $27 million to LSN to expand the above-mentioned communications efforts, partially offset by decreases of $17 million in CSIA due to transitioning selected information assurance projects and $20 million in HCI&IM due to completion and transition to Service field units of software tools developed in collaborative cognition programs.

OSD and DoD Service Research Organizations

Comparison of 2008 request ($511 million) and 2008 estimate ($582 million): The 2008 estimate for OSD and DoD Service research organizations is $71 million higher than the 2008 request due to Congressional add-ons that affect HEC I&A, HEC R&D, CSIA, and HCI&IM.

Comparison of 2008 estimate ($582 million) and 2009 request ($548 million): The 2009 request for OSD and DoD Service research organizations is $34 million below the 2008 estimate because Congressional add-ons from 2008 are not included in the 2009 request.

NIH

Comparison of 2008 request ($418 million) and 2008 estimate ($511 million): The $93 million increase is due primarily to the addition of reporting by an NIH institute that did not previously track NITRD expenditures, partially offset by a decrease of $12 million in HCI&IM reflecting a reallocation of expenditures across several institutes.

DOE

Comparison of 2008 request ($370 million) and 2008 estimate ($408 million) and comparison of 2008 estimate ($408 million) and 2009 request ($465 million): The increases are largely due to the addition of the Office of Nuclear Energy to the NITRD Program and to increased operational costs at the Leadership Computing Facilities.

NSA

Comparison of 2008 request ($103 million) and 2008 estimate ($137 million): The increase of $34 million is due to late additional funding for developing the El Dorado system, expansion of the Advanced Computing Systems program, and additional funding of $28 million provided by Congress to initiate the Integrated High End Computing (IHEC) Program.

Comparison of 2008 estimate ($137 million) and 2009 request ($119 million): The $17 million decrease is due to completion of the development of the El Dorado system plus a decrease in the level of funding needed for the IHEC program in a continuing as opposed to a launch mode.

NASA

Comparison of 2008 request ($87 million) and 2008 estimate ($72 million): The $15 million decrease is due principally to a NASA decision to report only direct costs of projects beginning with the FY 2008 estimates.

NIST

Comparison of 2008 request ($54 million) and 2008 estimate ($62 million) and comparison of 2008 estimate ($62 million) and 2009 request ($67 million): The change from 2008 request to 2008 estimate is due to the inclusion of projects not previously included in the NITRD categorization process, particularly those that use information technology to enable scientific discovery (e.g., modeling and simulation for complex multi-phase fluid flow, magnetic materials, and image analysis). The 2009 CSIA request also includes a cyber security initiative.

NITRD Program Budget Summary by PCA

Using the information presented above, this section provides an analysis of the NITRD Program budget by PCA, summarizing the more substantial differences between 2008 requested funding and 2008 estimated spending and between 2008 estimated spending and 2009 requests. The changes are described above.

HEC I&A

Comparison of 2008 request ($1,023 million) and 2008 estimate ($1,044 million): The $21 million increase is largely due to increases of $14 million at OSD and DoD Service research organizations, $27 million at NIH, $31 million at DOE, and $9 million at NIST, partially offset by decreases of $46 million at NSF and $12 million at NASA.

Comparison of 2008 estimate ($1,044 million) and 2009 request ($1,142 million): The $98 million increase is largely due to increases of $41 million at NSF and $53 million at DOE, and smaller increases at other agencies.

HEC R&D

Comparison of 2008 request ($289 million) and 2008 estimate ($450 million): The $161 million increase is due largely to increases of $12 million at NSF, $23 million at DARPA, $16 million at OSD and DoD Service research organizations, $74 million at NIH, and $34 million at NSA.

Comparison of 2008 estimate ($450 million) and 2009 request ($492 million): The $42 million increase is largely due to increases of $12 million at NSF and $51 million at DARPA, partially offset by a decrease of $21 million at NSA.

CSIA

Comparison of 2008 request ($218 million) and 2008 estimate ($269 million): The $51 million increase is largely due to increases of $27 million at DARPA, $16 million at OSD and DoD Service research organizations, and $10 million at NIST.

Comparison of 2008 estimate ($269 million) and 2009 request ($280 million): The $11 million increase is largely due to increases of $20 million at NSF and $5 million at NIST, partially offset by a decrease of $17 million at DARPA.

HCI&IM

Comparison of 2008 request ($767 million) and 2008 estimate ($798 million): The $31 million increase is largely due to an increase of $31 million at OSD and DoD Service research organizations and smaller increases at NSF and NIST, partially offset by a decrease of $12 million at NIH.

Comparison of 2008 estimate ($798 million) and 2009 request ($791 million): The $7 million decrease is largely due to decreases of $20 million at DARPA and $17 million at OSD and DoD Service research organizations, partially offset by an increase of $32 million at NSF.

LSN

Comparison of 2008 request ($416 million) and 2008 estimate ($462 million): The $46 million increase is largely due to an increase of $67 million at DARPA, partially offset by a decrease of $24 million at NSF.

Comparison of 2008 estimate ($462 million) and 2009 request ($483 million): The $21 million increase is largely due to increases of $13 million at NSF and $27 million at DARPA, partially offset by a decrease of $22 million at OSD and DoD Service research organizations.

HCSS

Comparison of 2008 request ($146 million) and 2008 estimate ($125 million): The $21 million decrease is due to decreases of $6 million at OSD and DoD Service research organizations and $15 million at NIST.

Comparison of 2008 estimate ($125 million) and 2009 request ($139 million): The $14 million increase is largely due to an increase of $11 million at NSF.

SEW

Comparison of 2008 request ($131 million) and 2008 estimate ($119 million): The $12 million decrease is largely due to a decrease of $10 million at NSF.

Comparison of 2008 estimate ($119 million) and 2009 request ($133 million): The $14 million increase is largely due to an increase of $13 million at NSF.

SDP

Comparison of 2008 estimate ($73 million) and 2009 request ($89 million): The increase of $16 million is due to an increase of $16 million at NSF.