



Federal Networking and Information Technology R&D

**HCI&IM-Sponsored
National Workshop on Information Integration
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Philadelphia, PA

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Networking and Information Technology
Research and Development (NCO/NITRD)**

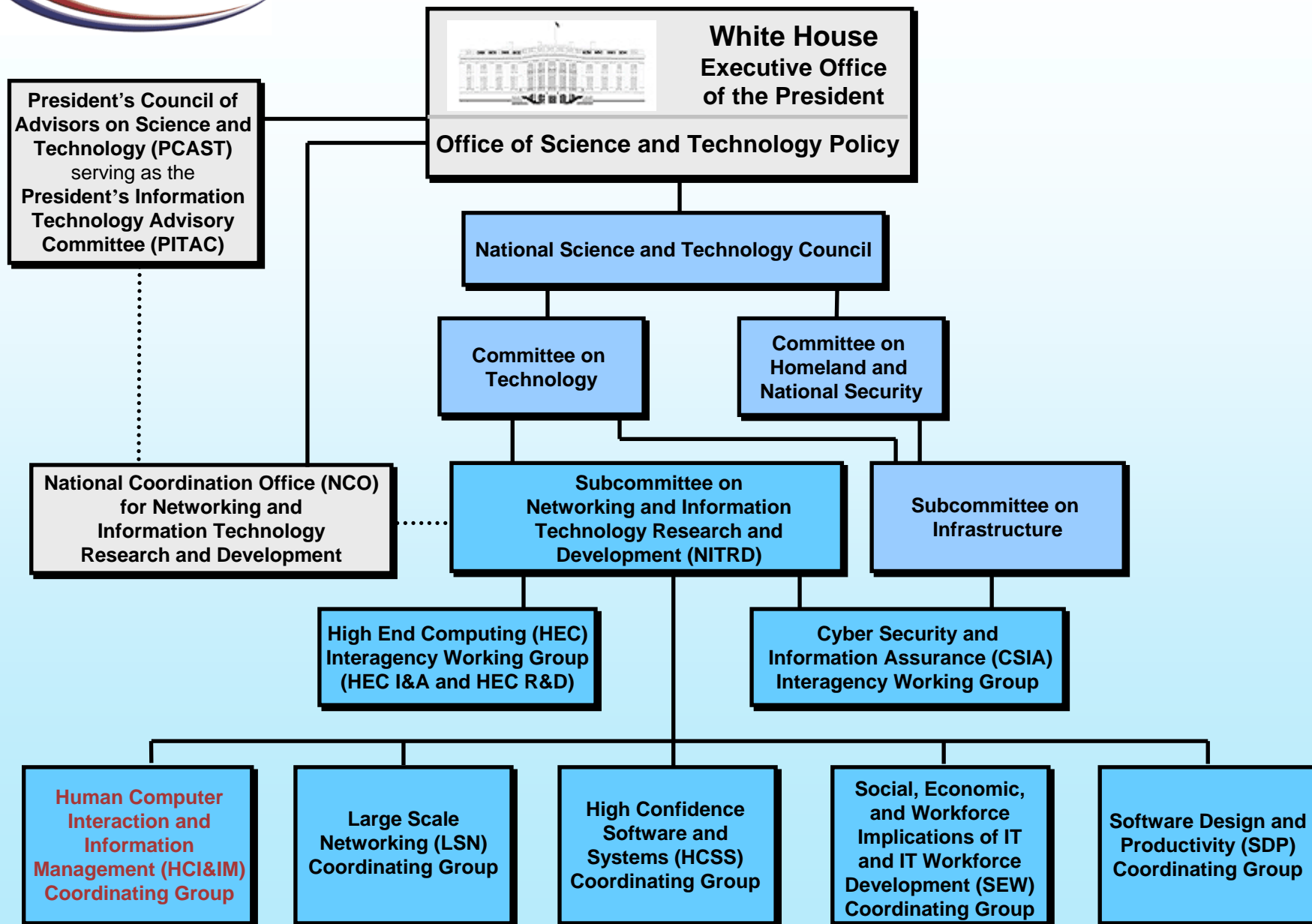


Overview of the NITRD Program

- **Program budget of \$3.1 billion proposed for FY 2007**
- **The NITRD Program is organized into technical domains called Program Component Areas (PCAs)**
- **The activities in the PCAs are coordinated through the NITRD Subcommittee of the National Science and Technology Council (NSTC)**
 - Has two Interagency Working Groups (IWGs) and five Coordinating Groups (CGs)
 - Representatives from
 - 14 program member agencies
 - White House Office of Management and Budget (OMB)
 - White House Office of Science and Technology Policy (OSTP)
 - NITRD National Coordination Office

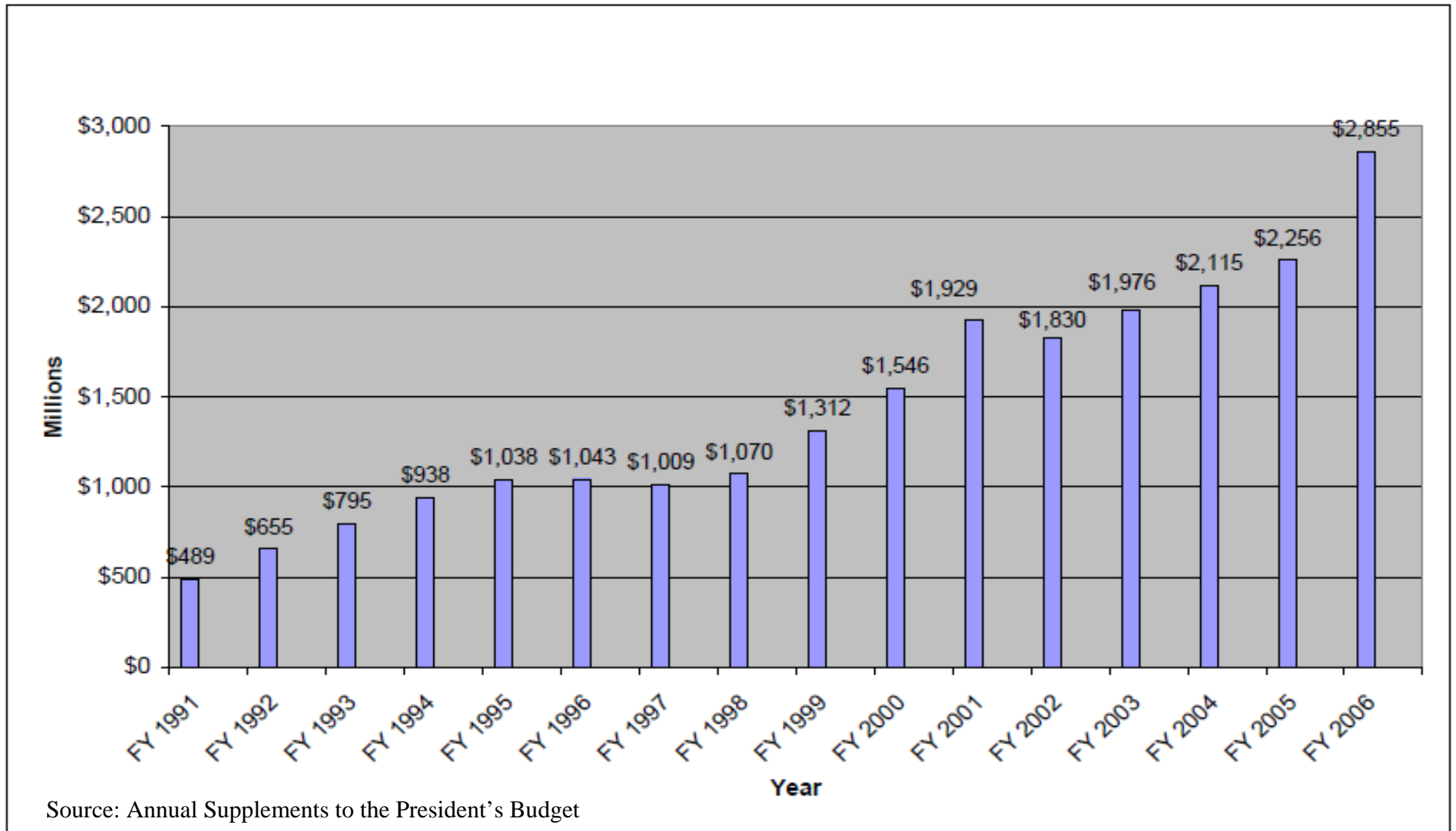


NITRD Program Coordination Structure





NITRD Program Budget History





President's American Competitiveness Initiative (ACI)

- **Calls for a doubling over 10 years of the investment in three Federal agencies — NSF, DOE/SC, and NIST — that support basic research programs in the physical sciences and engineering**
- **All three are NITRD Program member agencies; received 2007 budget increases that exceed the percentage increase in the overall NITRD budget**
 - NSF: 12% increase
 - DOE/SC: 35% increase
 - NIST: 10% increase
 - Collective increase for ACI agencies is \$186 million (17% above 2006 estimates)
 - Increase in ACI agency budgets accounts for over 85% of the overall NITRD Program budget increase for 2007
- **These agencies' physical sciences and engineering R&D will play a key role in generating technical advances in IT systems**



NCO/NITRD Objectives

- **The National Coordination Office (NCO) for NITRD supports the Program's multi-agency technical activities.**
- **The NCO's objectives are:**
 - To support NITRD-related policy making in the White House Office of Science and Technology Policy (OSTP)
 - To serve as the Federal focal point for interagency technical planning, budget planning, and coordination for the Federal NITRD Program
 - To serve as a source of timely, high-quality, technically accurate, in-depth information on accomplishments, new directions, and critical challenges relevant to the NITRD Program



Collaborative Vision for the NITRD Program

- **Increased NITRD interagency R&D coordination and planning activities**
- **Increased conferences, workshops, and meetings that aid in identifying NITRD needs in strategic areas that are aligned with and benefit Federal missions and national priorities**
- **Increased NITRD agency interaction and outreach with non-governmental experts to help identify and implement NITRD Program priorities**

▪ HCI&IM PCA Definition

- HCI&IM R&D aims to increase the benefit of computer technologies to humans, particularly the science and engineering R&D community.
- HCI&IM R&D invests in technologies for mapping human knowledge into computing systems, communications networks, and information systems and back to human beings, for human analysis, understanding, and use.
- R&D areas include: cognitive systems, data analysis in fields such as human health and the environment, information integration, multimodal and automated language translation, robotics, and user interaction technologies



HCI&IM CG Overview

- **HCI&IM agencies**
 - AHRQ, DARPA, DHS, EPA, NARA, NASA, NIST, NOAA, ONR, OSD

- **HCI&IM Participating Agencies**
 - DTO, GSA, VA

- **HCI&IM is the second-largest PCA by budget**
 - Over \$800M in R&D investments



HCI&IM Strategic Priorities

- **Key strategic priorities to advance national priorities**
 - Information accessibility, integration, mitigation, and management
 - Federal information management architecture test beds
 - Long-term preservation
 - Multimodal devices, interfaces, and data
 - Systems that know what they are doing – intelligent, adaptive, autonomous, self-healing
 - Modeling and visualization technologies and tools



HCI&IM Applications

- **Fundamental R&D applicable across critical domains of multiple national priorities**
 - Large-scale scientific research
 - National defense
 - Homeland security
 - Air-traffic control
 - Emergency planning and response
 - Health care
 - Space exploration
 - Weather forecasting
 - Climate prediction



HCI&IM Approach

- **Complements the work of other NITRD areas by focusing on the scientific foundations needed for increasing the benefit of computer technologies to humans. Related activities include:**
 - HEC: Advanced platforms and software for file systems I/O and storage, high-end modeling and simulation
 - LSN: Next-generation network technologies and architectures
 - CSIA: Security technologies to safeguard systems and information
 - HCSS: Software and systems for assured reliability, survivability, and safety in mission- and life-critical applications (e.g., aviation and air traffic control, critical infrastructures, medical devices)
 - SEW: Interactions between humans and IT devices and capabilities, and the role of innovative IT applications in education and training.



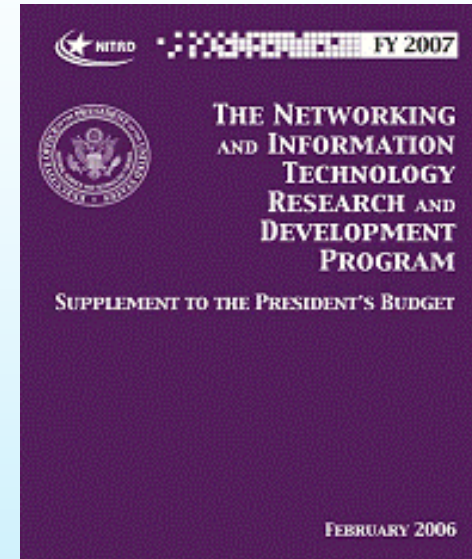
The Information Integration Workshop's Importance to the NITRD Program

- **The HCI&IM Information Integration Workshop is an excellent example of NITRD coordination at work**
 - The HCI&IM CG is taking on the task of identifying the R&D challenges associated with advancing IT to better understand, use, access, and analyze increasingly complex, heterogeneous, and disparate modalities of information.
 - Your presence here today shows your commitment to contributing to a collaborative effort of the Federal, academic, and industry research communities, to identify the IT technical challenges and to develop an R&D roadmap for future research in this important area.



Comments or Questions?

- More detailed information on the NITRD Program is available in the *FY 2007 Supplement to the President's Budget for the NITRD Program*
- To download a copy of the Budget Supplement or any of our other publications, please visit: <http://www.nitrd.gov/>





Backup Slides

NITRD Program Background and Overview



Overview of the NITRD Program

- **Statutory basis for the NITRD Program**
 - High-Performance Computing Act of 1991
 - Next Generation Internet Research Act of 1998
- **One of the few formal interagency R&D efforts – regarded as a successful model of Federal interagency coordination**



NITRD Member Agencies

- **Agency for Healthcare Research and Quality (AHRQ)**
- **Defense Advanced Research Projects Agency (DARPA)**
- **Department of Homeland Security (DHS)**
- **Department of Energy/National Nuclear Security Administration (DOE/NNSA)**
- **Department of Energy/Office of Science (DOE/SC)**
- **Environmental Protection Agency (EPA)**
- **National Archives and Records Administration (NARA)**
- **National Aeronautics and Space Administration (NASA)**
- **National Institutes of Health (NIH)**
- **National Institute of Standards and Technology (NIST)**
- **National Oceanic and Atmospheric Administration (NOAA)**
- **National Security Agency (NSA)**
- **National Science Foundation (NSF)**
- **Office of the Secretary of Defense (OSD) and DoD Service Research Organizations**



NITRD Participating Agencies

- **Central Intelligence Agency (CIA)**
- **Department of Justice (DOJ)**
- **Department of State (DOS)**
- **Department of Transportation (DOT)**
- **Department of the Treasury (Treas)**
- **Department of Veterans Affairs (VA)**
- **Federal Aviation Administration (FAA)**
- **Food and Drug Administration (FDA)**
- **General Services Administration (GSA)**
- **Technical Support Working Group (TSWG)**
- **United States Geological Survey (USGS)**



Scope of NITRD Program

- **Eight major R&D areas, called Program Component Areas (PCAs):**
 - High End Computing Infrastructure and Applications (HEC I&A)
 - High End Computing Research and Development (HEC R&D)
 - Cyber Security and Information Assurance (CSIA)
 - Human-Computer Interaction and Information Management (HCI&IM)
 - Large Scale Networking (LSN)
 - High Confidence Software and Systems (HCSS)
 - Social, Economic and Workforce Implications of IT (SEW)
 - Software Design and Productivity (SDP)
- **Broad participation: R&D conducted by thousands of researchers spanning government laboratories, national laboratories, universities, and private-sector partnerships**
- **Technical Leadership: NITRD efforts shape national R&D agendas**



NITRD Coordination

HEC I&A

HEC R&D

CSIA

HCI&IM

LSN

HCSS

SEW

SDP

- **The NITRD Subcommittee coordinates broad goals, policies, and directions for the Program**
 - Subcommittee members are senior NITRD agency managers
 - Serves as liaison with White House officials
 - Oversees preparation of annual NITRD Supplement to the President's Budget



NITRD Coordination

HEC I&A

HEC R&D

CSIA

HCI&IM

LSN

HCSS

SEW

SDP

- In each PCA, agency managers participate in an Interagency Working Group (IWG) or a Coordinating Group (CG)
 - IWGs and CGs, co-chaired by agency reps, meet monthly to:
 - Develop joint or multi-agency R&D efforts
 - Exchange information
 - Coordinate R&D plans across agencies to avoid duplication, leverage investments, maximize potential for widely useful results
 - Cooperate on multi-agency workshops, program and grant reviews, development of technical publications
 - Many Federal agencies, not just those in the NITRD Program, participate in IWG and CG activities
 - IWG, CG co-chairs meet as a group to discuss cross-cutting issues