

# The National Science Foundation



Presentation to PITAC NGI Review Team

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# Outline

- Progress on NGI goals
  - Research (NGI Goal 1)
  - 100x Network (NGI Goal 2.1)
  - Applications (NGI Goal 3)
- Progress on geographic coverage and involvement of minority-serving institutions
- Planning for the future
- Achievements



# Research (NGI Goal 1)

- Proposals since previous report
  - June 1, 1999: 42 proposals (8 will be funded)
  - Careers (July 22, 1999): 31 proposals (8 will be funded)
  - August 15, 1999: 11 proposals (3 will be funded)
  - December 1, 1999: about 62 proposals submitted, review panels being set up now

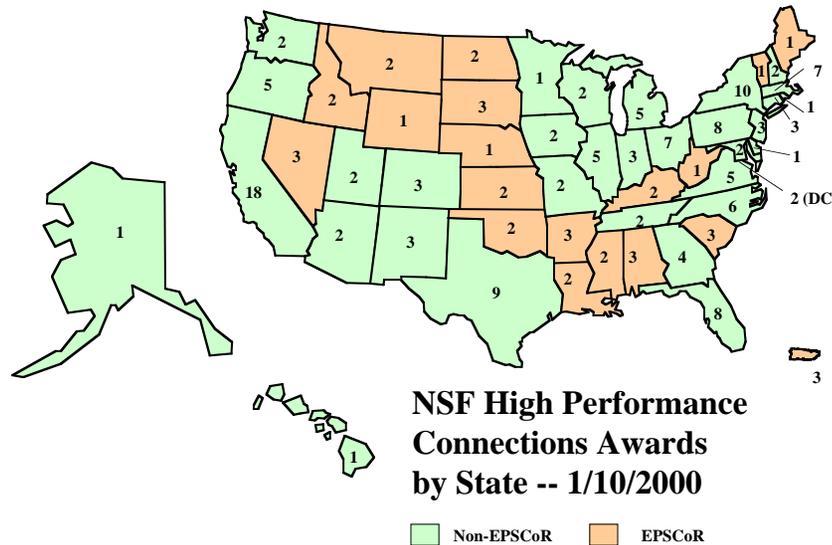


# 100x Network (NGI Goal 2.1)

- High performance connections awards:
  - Final round of proposals was July, 1999
  - October panel recommended 10 awards
  - These awards include:
    - 2 additional EPSCoR awards
    - 2 additional minority-serving institutions
    - 3 additional R1 institutions
    - Additional involvement of observatory facilities

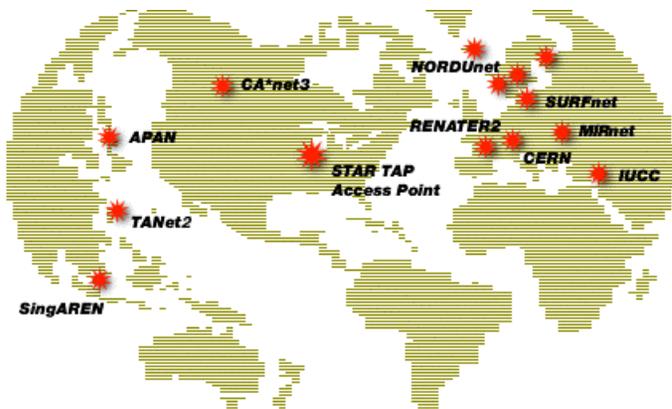


# 100x Network (NGI Goal 2.1)



## ■ 177 sites

- 5 original supercomputing sites
- 40 EPSCoR sites in 18 states and Puerto Rico
- 7 minority-serving sites (2 HBCUs, 5 Hispanic)
- 117 of the 126 Carnegie-designated R1/R2 schools



## ■ 10 international network connections via STAR TAP

NSF-5



# 100x Network (NGI Goal 2.1)

## ■ Connectivity details and status:

- 95 vBNS connections
- 87 Abilene connections
- 42 dual connections
- 32 recent awards still negotiating local loops and connection details
- most sites are Internet2 members
- MCIWorldcom has announced vBNS+
- Abilene operational for over one year
- NLANR, MCI, Abilene have met the network measurement responsibility



# Applications (NGI Goal 3)

- Our NLANR team has created an applications database:
  - 808 entries in the database at present
  - <http://dast.nlanr.net/Clearinghouse>
  - many involve multiple applications
  - 557 of these were analyzed earlier relative to scientific discipline and with regard to applications features



# NSF HPC Proposals: Meritorious Research Applications by “Directorate”

- 557 meritorious applications were analyzed:
  - Mathematical & Physical Sciences (MPS) - 31%
  - Computer & Information Sciences & Engineering (CISE) - 18%
  - Geosciences (GEO) - 13%
  - Engineering (ENG) - 11%
  - Health Sciences (HS) - 10%
  - Biological Sciences (BIO) - 7%
  - Other (Business, Libraries, Fine Arts, Humanities) - 7%
  - Education (EHR) - 3%
  - Sociological, Behavioral, Economic Sciences (SBE) - <1%



# NSF HPC Proposals: Meritorious Research Applications “Features”

- Data transfer - 73%
- High-end computing - 45%
- Collaboration - 39%
- Federal facilities, networks, or other agency support - 37%
- Visualization, imaging - 34%
- Multi-media, multicasting - 28%
- Simulation, modeling - 23%
- Instrument access or remote device control - 19%
- Data mining, databases - 17%
- Education, distance learning, collaborative learning - 13%
- Medical uses - 12%
- Highly distributed experiments - 10%
- International involvement - 7%
- Networking research - 4%



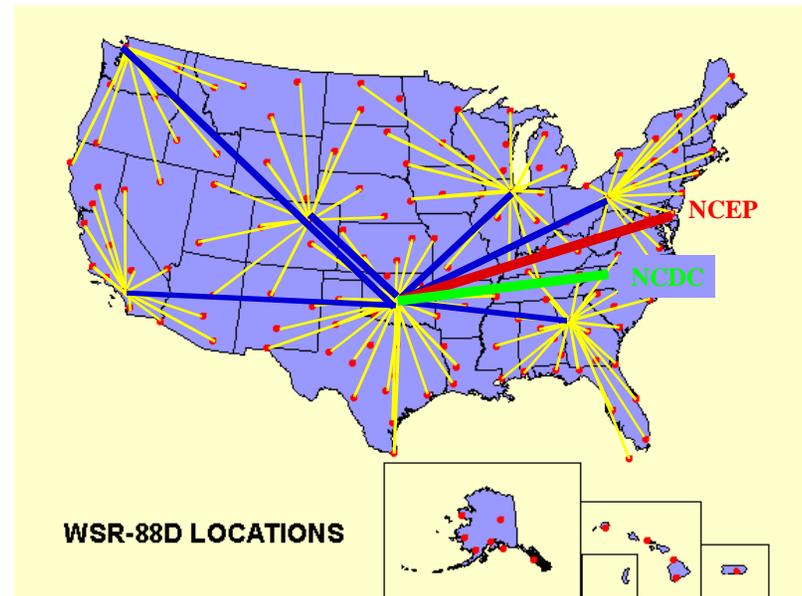
# Applications (NGI Goal 3)

- 64 applications reported by NSF sites in spreadsheet provided to you
- Directly funded work
  - Web100
  - IIS: Digital libraries
  - ACIR: Grid activities--remote instruments, integrated NT compute and storage clusters, security and Globus testbeds, databases
  - EIA: Logistical QoS through Application-driven Scheduling of Remote Storage, Accessible Language Resources for Research and Education, National Center for Sign Language and Gesture Resources, Advanced Semiconductor Technology Access



# Applications (NGI Goal 3)

- Center for the Analysis and Prediction of Storms (Droegemeier, Oklahoma)
- Potential societal benefit of one application
  - protection against loss: personal safety, damage reduction, resource protection
  - economic benefits: business planning, agriculture



# Geographic Issues; Minority-Serving Institutions

- Each state has at least one award
- 40 awards in 19 EPSCoR states and Puerto Rico
- Award set includes 2 HBCUs, 5 Hispanic-serving institutions
- EDUCAUSE funded to help prepare smaller colleges and MSIs for advanced networking



# EDUCAUSE Projects

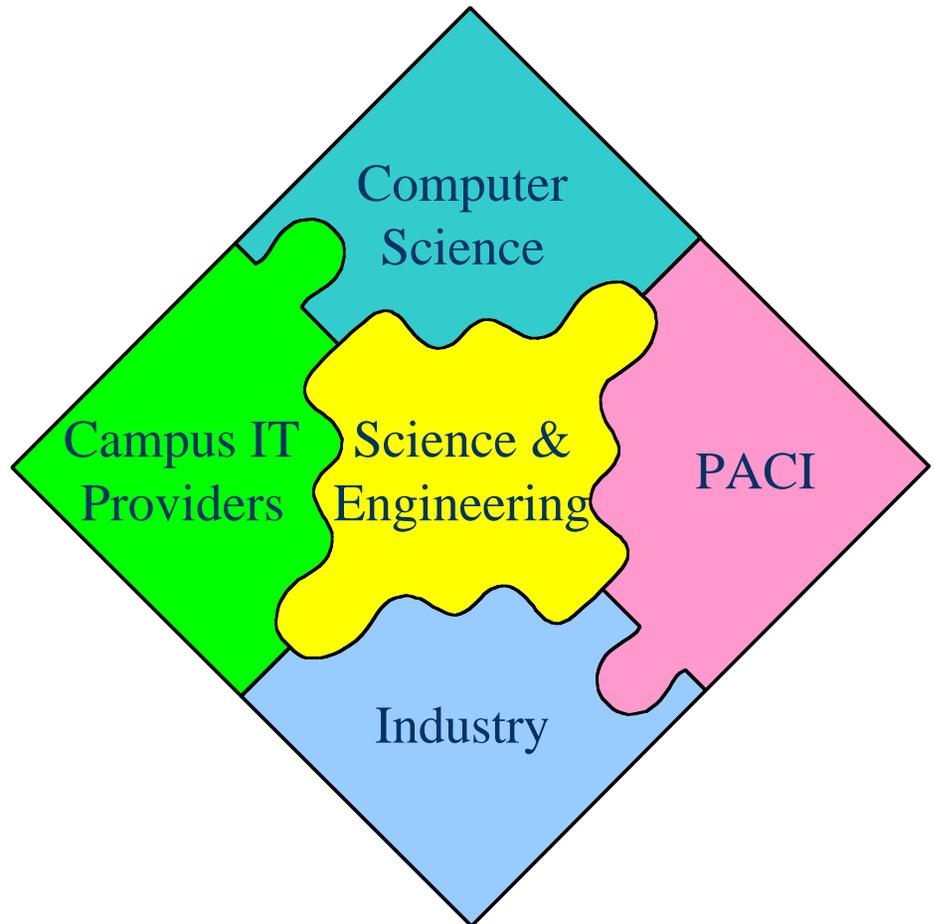
- Preparing for advanced networking:
  - Involves PACI EOT and EPSCoR
  - Workshops
  - Mainstreamed activity
- Advanced Networking for MSIs:
  - Involves all Hispanic, HBCU, and Tribal College institutions
  - Involves PACI EOT
  - Builds on other EDUCAUSE project
  - Only three months into the work



# Planning

## ■ Workshops:

- EDUCAUSE (campus IT providers; 8/98)
- AAAS (science & engineering community; 2/99 & 5/99)
- CRA (computer science community; 3/99)
- PACI (PACI partnerships; 3/99)
- CNRI/XIWT (industry; 5/99)
- Miscellaneous others

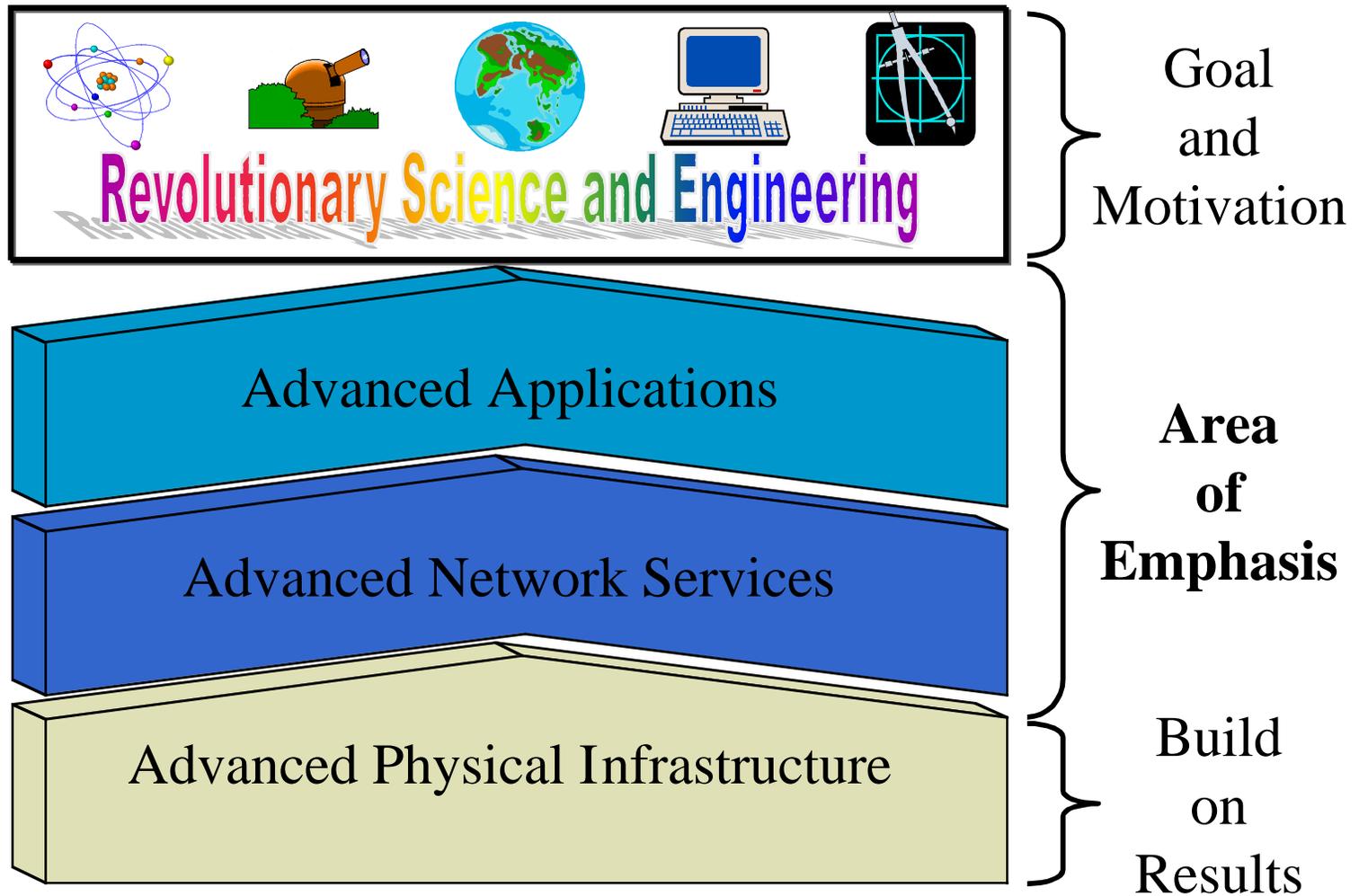


# Plans

- A limited new connections program focused on next tier institutions
- Internet technologies program to include a focus on access networks
- Centerpiece program focused in a mutual way on:
  - applications
  - applications-enabling, network-based middleware



# Plans



# Achievements



- Helped to create an environment in which new backbone developments could occur
- Helped to expose the campus and desktop level problems
- NLANR (National Laboratory for Applied Network Research)--measurement, applications support, and campus engineering
- International results
- Geographic reach and diversity

