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Some HEC work going on at NIST in the Mathematical and Computational Sciences Division

- Parallel Adaptive Multigrid: http://math.nist.gov/phaml/
- Modeling High Performance Concrete with Parallel Dissipative Dynamics: http://math.nist.gov/mcsd/savg/parallel/dpd/ (INCITE)
- Modeling Cement Paste Hydration and Microstructure Development: http://math.nist.gov/mcsd/savg/parallel/hydration/index.html
- Interoperable MPI: http://impi.nist.gov/
- Computation of Atomic Properties with the Parallel Hy-CI Method: http://math.nist.gov/mcsd/savg/parallel/atomic/
- Nanostructure Modeling: http://math.nist.gov/mcsd/savg/parallel/nano/
- OOMMF: Micromagnetic Modeling System: http://math.nist.gov/oommf/
- Screen Saver Science: http://math.nist.gov/mcsd/savg/parallel/screen/
- Modeling Fluid Flow in Complex Geometries with Parallel Lattice Boltzmann:
- http://math.nist.gov/mcsd/savg/parallel/lb/
- Immersive Scientific Visualization: http://math.nist.gov/mcsd/savg/vis/
- Others…

NIST funding through the Technology Innovation Program (TIP)

TIP Purpose

"Assisting United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions, to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of *critical national need*."

America COMPETES Act
(PL 110-69)
August 9, 2007

Key Features of TIP

- **Novel Purpose: address societal challenges not being addressed in areas of Critical National Need with benefits that extend significantly beyond proposers**
- **Rich Teaming: businesses, academia, national labs, nonprofit research institutions and other organizations**
- **Scientific & Technical Merit: high-risk, high-reward research**
- **Transformational Results: strong potential for advancing state-of-the-art and contributing to U.S. science and technology base**
- **Societal Challenges: justifies government attention**

Key Features of TIP (continued)

- Clear Government Need: no other funding sources are reasonably available
- Allows institutions of higher education to lead a joint venture R&D project
- Intellectual property: Resides with U.S. company or any joint venture member (including a university joint venture member)
- Opportunities for state involvement with R&D planning
- Program assessment and annual reports from Program and Advisory Board to Congress are required

TIP Project Funding

- Funding
  - Single company projects up to $3M over a maximum of three years
  - Joint Venture (JV) projects may be funded up to $9M over a maximum of five years
  - Note: TIP funds direct project costs only
- Cost share
  - At least 50% of the yearly total project costs – direct plus indirect
  - Composed of both cash and in-kind

TIP Evaluation Criteria

- Two Evaluation Criteria
  - Scientific and Technical (S&T) Merit (50%)
  - Potential for S&T and National Impacts (50%)
- Subject to multidisciplinary peer review

A Pipeline of Critical National Need Topics

- Leverage nationally recognized science and technology reports and know-how
- Evaluate a large field of areas where transformative research could be expected to have large societal impact
- Use a TIP evaluation framework to assess a diversity of areas and challenges
  - Maps to Administration Guidance
  - Justifies Government Attention
  - Essentials for TIP Funding
- Identify interest areas that fit TIP

A Pipeline of Critical National Need Topics (cont'd)

- **TIP seeks input from a host of external stakeholders and organizations**
  - **Government agencies and advisory bodies (such as the National Research Council, the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine)**
  - **Science and Technology Policy Institute**
  - **Industry organizations, leading researchers from academic institutions, and others**

A Pipeline of Critical National Need Topics (cont'd)

- **TIP solicits white papers http://www.nist.gov/tip/call_for_white_papers.pdf**

2008: Civil Infrastructure

Advanced Sensing Technologies For Infrastructure: Roads, Highways, Bridges and Water Systems

$9M in grants expect to be awarded

- **Now accepting white papers to complement future critical national need identification: Deadline Dec 1, 2008**
- **TIP website available**
  - **http://www.nist.gov/tip/**

Technology Innovation Program (TIP)

For Info on TIP and to

Join the TIPMailing List . . .

- **Phone: 1-888-TIP-NIST (1-888-847-6478)**
- **Fax: 301-926-9524 or 301-590-3053**
- **E-mail: *tip@nist.gov***
- **Visit TIP's website:** *www.nist.gov/tip/*