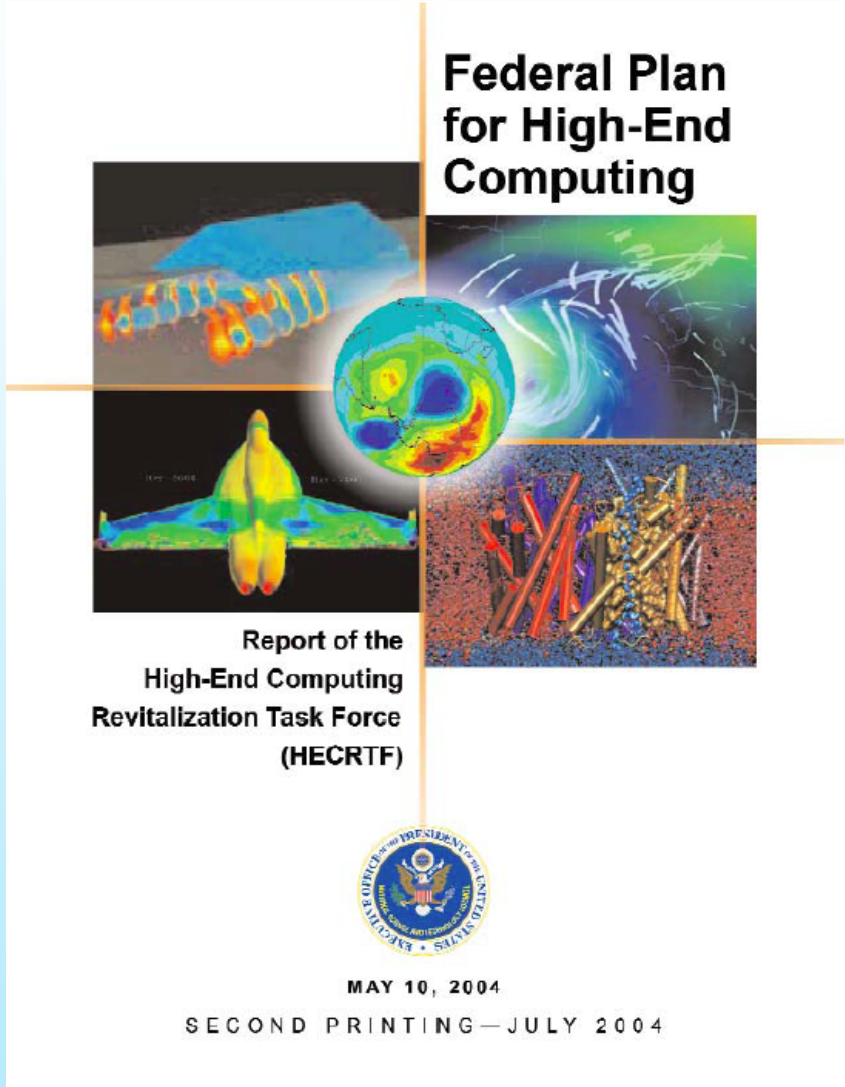
Revitalizing High End Computing

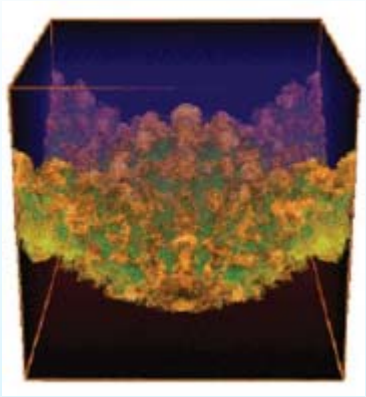
- *Federal Plan for High-End Computing* released May 10, 2004
- Initial implementation has begun



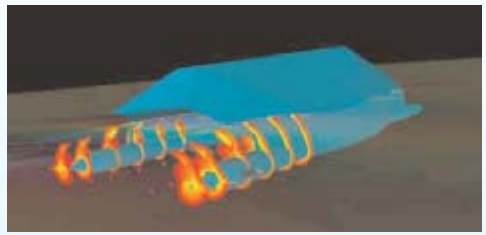
High-End Computing Revitalization Task Force (HECRTF)

- **Inter-agency planning group**
  - **Develop 5-year plan/roadmap to improve how the Federal government develops, purchases, and provisions HEC**
  - **Participants include DoD (DARPA, ODUSD (S&T), HPC Modernization Program, NSA), DOE (NNSA and Science), EPA, NASA, NIH, NIST, NOAA, NSF, OMB, OSTP, NCO (approx. 60 people)**
  - **Focus on advancing agency/end-user needs in HEC**
- **Established by OSTP, under the auspices of the National Science and Technology Council, in March 2003. Plan published May 10, 2004.**

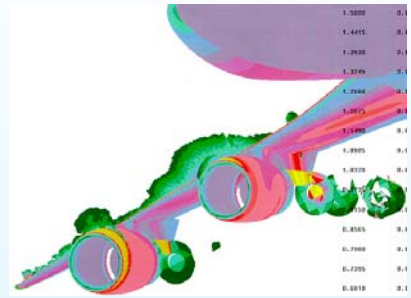
Applications of High-End Computing:
Big Problems with Big Impacts



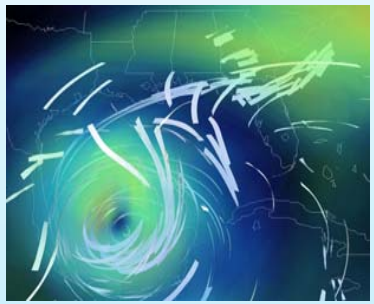
Nuclear Stockpile Stewardship



Ship Design

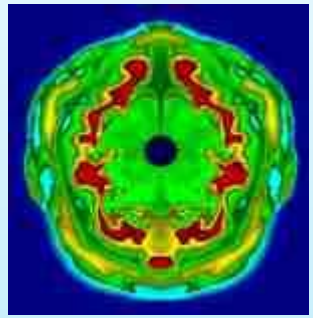


Aeronautics

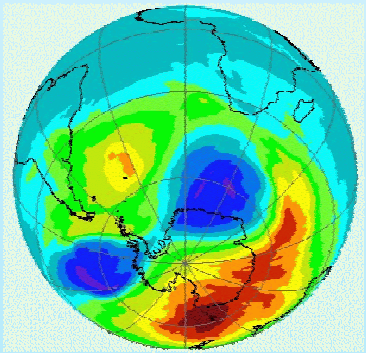


Weather Prediction

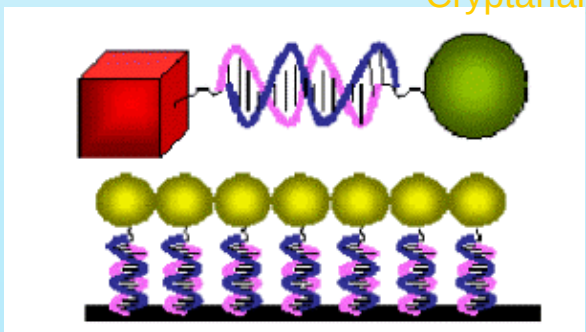
Cryptanalysis



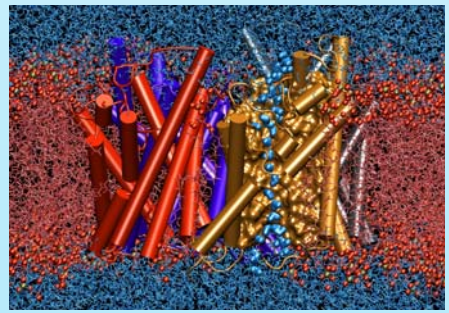
Astrophysics



Climate Modeling



Nano-Science



Biology

High End Computing Revitalization Plan in a Nutshell

	Elements	Major Challenges Addressed
R&D	● Hardware, software, and systems roadmaps ● Basic and applied research, advanced development, engineering and prototypes, and test and evaluation – Research and evaluation systems – Life-cycle software strategy	● Improve performance, programmability, usability, and reliability for Agency applications ● Provide a range of robust HEC architectures and software technologies to address Agency requirements ● Re-establish research pipeline ● Ensure healthy research/tech/industry base
Resources	● Accessibility – Small / Large Agencies & Industry ● Availability – Production Computing ● Leadership – Largest systems for scientific leadership	● Lack of access to HEC resources by small agencies (e.g., NIST) ● Increasing demands for HEC exceed resources ● Large-scale systems to attack high-priority national problems
Procurement	● Pilot studies in benchmarking, total cost of ownership, and procurements	● Improve efficiencies in procurement for government and industry ● Improve evaluation methodologies of HEC systems for procurements and systems designs

OSTP-OMB Memo on FY06 Research Priorities

"Networking and Information Technology R&D

The Networking and Information Technology **R&D (NITRD)** program is a high Administration priority. While the importance of each of the NITRD program areas continues, high-end computing (supercomputing) and cyberinfrastructure R&D should be given higher relative priority due to the potential of each in furthering progress across a broad range of scientific and technological application areas. The recent report of the High-End Computing Revitalization Task Force (HECRTF) describes a coordinated R&D plan for core high-end computing technology, as well as multi-agency approaches for addressing high-end computing capability, capacity, and accessibility issues. Agency plans in high-end computing should be consistent with the HECRTF plan, emphasize coordination, leverage the efforts of all agencies and, where appropriate, provide explicit benefit to multiple agencies through coordinated multi-agency investments."

http://www.ostp.gov/html/m04-23.pdf