President's Information Technology Advisory Committee

FY 2001 IT R&D Budget Review

Joe Thompson, Co-Chair
Hector Garcia-Molina, Co-Chair

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Review Process

- Review of agencies' budget materials
- Meetings to discuss FY2001 plans
  - NSF: Ruzena Bajcsy, George Strawn
  - DOE: Jim Decker, Ed Oliver
  - NASA: Lee Holcomb, Betsy Edwards
  - NOAA: Bill Turnbull, Bruce Ross
  - NIH: Carol Dahl
  - DARPA: Shankar Sastry (via teleconference)

IT R&D Review: General Findings

- **General**
  - There seems to be good understanding of the PITAC recommendations.
  - Overall, the agency budget plans address those recommendations.
- **Cross-Agency coordination**
  - NSF is showing good hands-on cross-agency leadership.
- **Multidisciplinary Teams & Centers**
  - There is good emphasis on multidisciplinary research teams at both NSF and DOE.
  - DOE is directly addressing in the Enabling Technology Centers (ETCs) in FY 2001.
  - NSF and NIH, in effect, are also addressing this concept.
  - However, no agency is addressing the larger Expedition Centers, although DARPA is using the term for centers.

IT R&D Review: General Findings

- **High-End Acquisitions**
  - The agencies are generally addressing enabling technology driven by applications, rather than end applications themselves.
  - Major HPC facility acquisition is targeted by NSF in FY2001.
  - Smaller acquisitions are planned by NASA, NOAA, and DOE.
  - NIH and NSF views in regard to access to HPC facilities for biomedical computing appear to diverge.
- **NSF/NIH High-End Facilities**
  - NIH intends to continue to rely on the NSF PACI centers for HPC resources.
  - NSF is concerned about recovering the cost of providing this resource for NIH.
  - Perhaps this is more a question of funding for HPC facilities than technical or operational concerns.

IT R&D Review: Recommendations

- **Focus**
  - **The IT R&D programs do generally have the appropriate balance of long-term research driven by, and cutting across, applications.**
  - **Opportunities for joint agency funding of IT research driven by applications outside the sciences are encouraged.**
  - **The committee is concerned that research on computer architecture is not adequately represented in the IT R&D program, in spite of the PITAC recommendation that research into strategies that overcome limits of current scalable systems be included. The committee continues to feel that major paradigm shifts will be required to reach the petaflop level.**

IT R&D Review: Recommendations

- **Focus**
  - **This is a critical time in biomedical research, and integration of IT in biomedical R&D is vitally important. NIH should develop well-articulated plans for supporting the long-term needs of the biomedical research community, including funding plans.**
    - **These plans should be coordinated with the on-going IT R&D programs and include discussions with the NSF regarding the role of the NSF PACI centers in supporting the needs of NIH-funded researchers.**
  - **There should be close coordination across internal components of both NSF and NIH in the IT R&D program. This is especially a concern at NIH where the component institutes are largely autonomous.**
    - **The movement of the coordination of BISTI efforts across the NIH to the Office of the Director of the NIH and ultimately to the emerging Office of Bioengineering, Bioimaging, and Bioinformatics is positive.**

IT R&D Review: Recommendations

- **Access to High End Facilities**
  - **NSF and NIH should coordinate funding for high-end facilities in order to leverage shared expertise, and NIH must contribute funding for high-end facilities in proportion to its research program.**
    - **If it is not feasible for adequate NIH support to be provided for the NSF PACI centers, then a separate NIH "PACI" center should be established.**
    - **In either case, there should be close coordination and cooperation between NSF and NIH in the provision of these high-end facilities.**

IT R&D Review: Recommendations

- **Access to High-End Facilities**
  - **The committee continues to be seriously concerned about access to high-end facilities for the university research community.**
    - **Present DOE acquisition plans for the NERSC facility surpass the combined capacity of all the NSF centers.**
    - **The growing demands of NIH researchers could overwhelm the projected NSF facilities.**
  - **NSF should continue to bear the responsibility for providing access to high-end computing facilities for the university research community, and adequate provision for this must be included in the IT R&D funding program.**

IT R&D Review: Recommendations

- **Multidisciplinary Teams**
  - **The emphasis on multidisciplinary teams and ETC recommended in the PITAC's report at DOE, NSF, and NIH is commended and strongly encouraged**
  - **NSF should consider making provision for the $1M team proposals to identify, without prejudice, potential interactions with other such proposals that might enhance both efforts through virtual collaboration while maintaining that each is self-sufficient in the competition, with the possibility of this even extending across agencies.**
  - **No Expedition Centers of the type recommended by the PITAC are proposed. We believe that projects of moderate size cannot alone address the entire spectrum of long-term research needed, and strongly encourage funding of Expedition Centers as described in the PITAC report to the President**

IT R&D Review - Recommendations

- **Cross-Agency Coordination**
  - **—NSF's successful understanding and leadership of the cross-agency IT R&D effort, and within the agency, must continue**