U.S. Department of Energy's Office of Science

COV Findings, Congressional Actions, and American Competitiveness Initiative

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R&D Programs – Major Findings

Advanced Scientific Computing Research Program

- COV evaluated three ASCR R&D Programs (Applied Mathematics, Computer Science, and Collaboratories Programs) in 2004
- In general the programs reviewed were effective and reasonably well managed
- The Lab proposal process needed standardization
- A more formal review process for Lab proposals was recommended
- More standardized documentation was desired for Lab project selection decisions
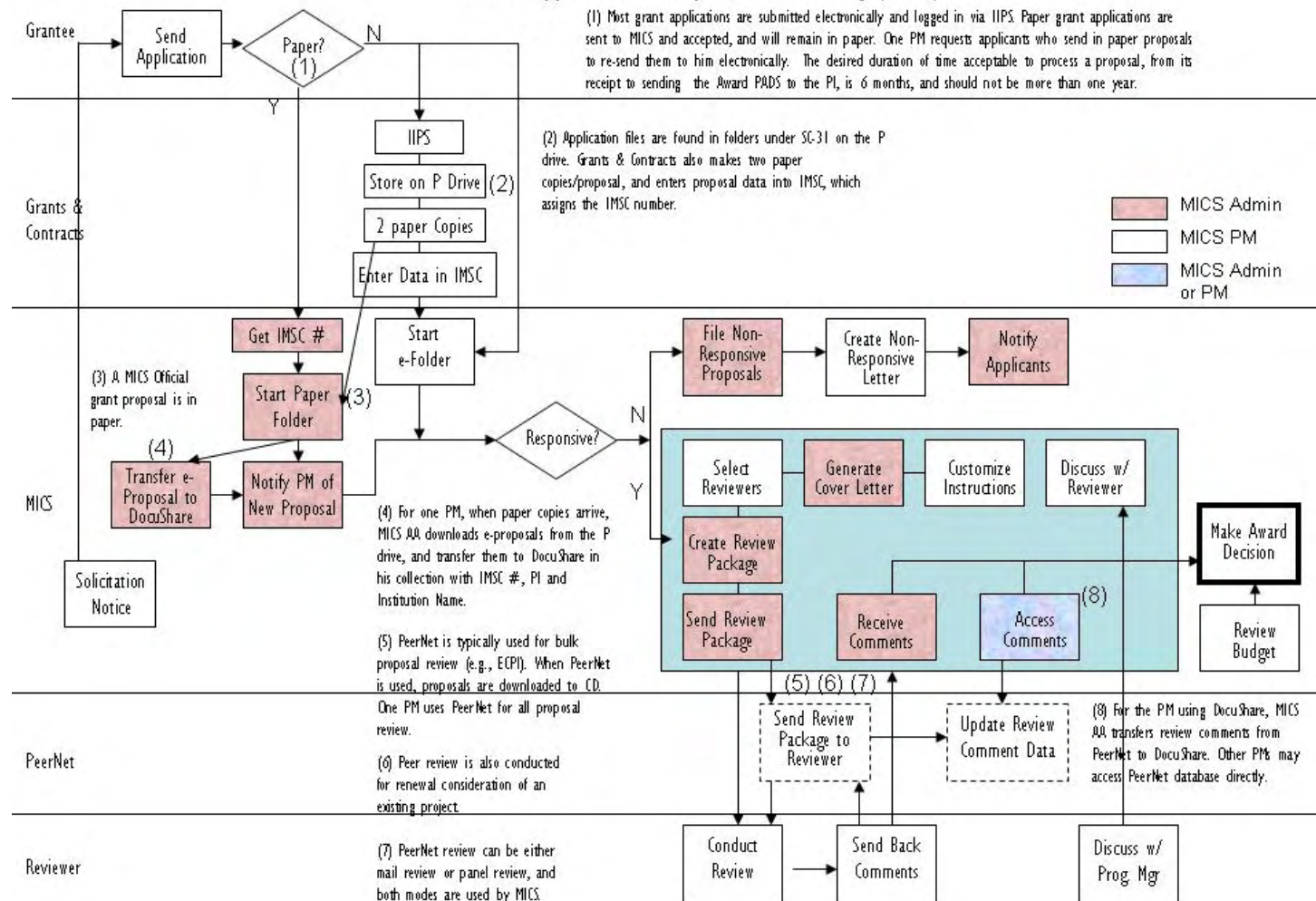- Document management needs improvement

Improvements

Advanced Scientific Computing Research Program

- **Lab Proposal Processing Standardization**:
    - Conducted Workflow Analyses for Grant (see next slide) and Lab proposals
    - Implemented a more formal Lab proposal review process including:
        - Use of PeerNet for Lab proposal reviews
        - "Reviewable" Lab proposals
        - At least 3 Reviewers to each proposal
    - Implemented a new Lab process in Applied Math Program since last August and Computer Science program is next
- **Documentation**
    - Office of Science updated the Selection Statement Form for grants that requires clear documentation of selection justification in 2005
    - The Applied Math Program is using the SC Selection Statement Form for both grants and Lab projects (Computer Science is next)
    - DocuShare is used as central documents repository

Grant Proposal Processing Analysis

Advanced Scientific Computing Research Program

Grant Application Receipt and Processing (2004)

(1) Most grant applications are submitted electronically and logged in via IIPS. Paper grant applications are sent to MICS and accepted, and will remain in paper. One PM requests applicants who send in paper proposals to re-send them to him electronically. The desired duration of time acceptable to process a proposal, from its receipt to sending the Award PADS to the PI, is 6 months, and should not be more than one year.

(2) Application files are found in folders under SC-31 on the P drive. Grants & Contracts also makes two paper copies/proposal, and enters proposal data into IMSC, which assigns the IMSC number.

(3) A MICS Official grant proposal is in paper.

(4) For one PM, when paper copies arrive, MICS AA downloads e-proposals from the P drive, and transfer them to DocuShare in his collection with IMSC #, PI and Institution Name.

(5) PeerNet is typically used for bulk proposal review (e.g., ECPI). When PeerNet is used, proposals are downloaded to CD. One PM uses PeerNet for all proposal review.

(6) Peer review is also conducted for renewal consideration of an existing project.

(7) PeerNet review can be either mail review or panel review, and both modes are used by MICS.

(8) For the PM using DocuShare, MICS AA transfers review comments from PeerNet to DocuShare. Other PMs may access PeerNet database directly.

Legend:
- MICS Admin
- MICS PM
- MICS Admin or PM

Facilities & Network – Major Findings

Advanced Scientific Computing Research Program

- **COV evaluated the Facilities and Network Research Program in April 2005**

- **Deemed "the reviewed ASCR facilities and Networking Research Program to be highly effective and well managed"**

- **Found "ASCR management applies vision and judgment throughout the areas under review"**

- **In particular, "services to users provided by the ASCR facilities (NERSC and ESnet) are outstanding." --- COV 2005 Report**

Recommendation

Advanced Scientific Computing Research Program

- **Need Capacity and Capability Planning**

Department of Energy High-End Computing Revitalization Act of 2004

Advanced Scientific Computing Research Program

- **Became Public Law 108-423 on Nov. 30, 2004**

- **Requires the Secretary of Energy to carry out a program of research and development to advance high-end computing using Leadership Systems**

- **Scope includes establishment of at least 1 High-End Software Development Center**

Implementation of PL 108-423

Advanced Scientific Computing Research Program

- **Leadership Computing Facilities**
  - ORNL: Cray-based
  - ANL: IBM Blue Gene-based

- **High-End Software Development Center(s) will be implemented as SciDAC Institute(s) to be selected by a competitive proposal process**

The Advanced Research Projects Agency - Energy (ARPA-E)

- **Bill was introduced in Dec 2005/Jan 2006**
- **To be established within the DOE**
- **Take on high-risk, high pay-off research to move advanced energy technologies into marketplace faster**
- **Goal: Reduce the amount of energy imports by 20% over the next 10 years**
- **Funding was proposed to begin at the $3B level in FY07 and end at the $9B level in FY12**

Potential Impact on ASCR

- **ASCR could be a major resource by providing:**

  - World-class HPC capability
  - New, multi-scale, multi-disciplinary solutions
  - Cutting-edge simulation & modeling capability
  - Cutting-edge data management and analysis capability and distributed environment

American Competitiveness Initiative (ACI)

- **Introduced by President Bush in the State of the Union Address on Feb 2, 2006**

- **Encourage American innovation and strengthen America's ability to compete in the global economy**

- **Will double the Federal commitment to the most critical basic research programs in physical sciences and engineering over the next 10 years**

Potential Impact on ASCR

- **Continued support on ASCR's efforts on:**

  - Leadership Computing Facilities;
  - Large-scale, multiscale data processing, analysis, and visualization;
  - Simulation and modeling,
  - All of the above supporting innovative science applications.