

CISE/OCI Management Response

to the

Report of the Committee of Visitors for the
CISE Division of Shared Cyberinfrastructure

December 26, 2005

Foreword

The Committee of Visitors (COV) for the CISE Division of Shared Cyberinfrastructure (SCI) met June 20-21, 2005, when SCI was a Division within the Directorate for Computer and Information Science and Engineering (CISE). As this COV meeting was taking place, NSF's senior management team was developing and implementing a new approach to cyberinfrastructure governance. While some details were shared with the COV, others were not fully developed at that time.

A summary of the changes made during the summer of 2005 is provided below:

- The NSF Director established a Cyberinfrastructure Council (CIC) that includes the Assistant Directors and Office Heads of the agency's science- and engineering-focused directorates and offices. The CIC has responsibility for the agency's strategic cyberinfrastructure agenda.
- A comprehensive strategic planning process for cyberinfrastructure was initiated. The agency plans to finalize its first strategic plan for cyberinfrastructure in the summer of 2006. Over the winter of 2005 and the spring of 2006, the strategic plan will continue to be shared in draft form with the science and engineering community for comment.
- Effective July 22, 2005, the Division of Shared Cyberinfrastructure was renamed the Office of Cyberinfrastructure (OCI). The OCI Director now reports directly to the NSF Director. OCI assumed responsibility for the SCI budget and the SCI programmatic portfolio. All SCI staff lines were moved to OCI.

Introduction

The Committee of Visitors (COV) for the CISE Division of Shared Cyberinfrastructure (SCI) met June 20-21, 2005, to review and provide its expert judgment on SCI programs and plans. The COV provided expert judgment on the Division's programmatic portfolio, focusing in two areas: 1). Assessment of the quality and integrity of the Division's operations and program-level technical and managerial matters pertaining to proposal decisions; and 2). Comments on how the outputs and outcomes generated by awardees have contributed to the attainment of NSF's mission and strategic outcome goals.

Summary of COV findings

Regarding the integrity and efficiency of the Division's processes and management, the COV responded positively to all COV questions posed.

- With respect to the quality and effectiveness of the Division's use of merit review procedures, the COV found that: review mechanisms were appropriate, efficient and effective; reviews were consistent with priorities and criteria stated in solicitations, guidelines and announcements and provided sufficient information for PI's to understand the basis for funding recommendations; panel summaries provided PI's with sufficient information; recommendation documentation was complete and that Program Directors provided sufficient information to justify their recommendations; and, time-to-decision was appropriate. Overall, the COV noted that the *"merit review process is run with high integrity with appropriate care on criteria, consideration and judgment."*
- With respect to implementation of NSF's two merit review criteria (intellectual merit and broader impacts), the COV found that individual reviews, panel summaries and review analyses addressed both merit review criteria, and that *"reviews and summaries did an excellent job of addressing both quality and impact criteria."*
- Concerning the selection of reviewers, the COV found that the Division made use of an appropriate number of reviewers with appropriate expertise and/or qualifications and representing a balance among characteristics such as geography, type of institution and underrepresented groups, and that the Division recognized and resolved conflicts when appropriate. Overall, the COV found that the Division *"managed reviewers very well"* and was *"impressed in most cases by the size and quality of the pool as well as the selection."*
- Regarding the resulting portfolio of SCI awards, the COV found the overall quality, size and duration of projects to be appropriate. They found an appropriate balance of innovative, high risk, multidisciplinary projects considering a number of important diversity considerations. The COV noted, *"the overall quality of accepted projects seems gratifyingly high."*

The COV also provided insightful comments on the Division's contributions to realization of NSF's strategic outcome goals: PEOPLE, IDEAS, TOOLS and ORGANIZATIONAL EXCELLENCE.

Management Response to COV Recommendations

The COV also made a number of management recommendations. These recommendations are being given serious consideration, as discussed below.

- **Vision:** The COV recommended that some aspects of cyberinfrastructure receive more attention, including data-intensive applications (e.g. metadata management, shared ontologies), system interoperability (specifically including exploitation of web services) and networking. Moreover, the COV recommended the development of a “*long term strategic vision for the integration of complementary activities across NSF.*” As indicated in the foreword, NSF senior management had also recognized this need, and in fact has initiated an agency-wide strategic planning exercise to address comprehensively the science and engineering community’s broad cyberinfrastructure needs. A draft of the resulting strategic plan, entitled “NSF’s Cyberinfrastructure Vision for 21st Century Discovery”, is available at <http://www.nsf.gov/dir/index.jsp?org=OCI>. It includes chapters focused on: high performance computing; data, data analysis and visualization (addressing data-intensive applications); collaboratories, observatories and virtual organizations (web services and advanced networking are addressed here); and learning and workforce development. This ongoing strategic planning exercise will ensure that adequate attention is paid to all aspects of cyberinfrastructure to optimize the impact of OCI investments in science and engineering research and education broadly.
- **Software engineering:** The COV recommended the development of new criteria and validation processes for software engineering processes and products. In the fall of 2004, SCI hosted a workshop to examine just such needs, and the workshop recommendations are being incorporated into the OCI planning process for 2006 and thereafter.
- **Complementary foci:** The COV recommended that SCI remain cognizant of and engaged in activities with promise for longer-term impact (e.g. as exemplified by SCI’s former Experimental Infrastructure Networks program). With the organizational realignment described previously, OCI will increasingly focus on nearer-term development and deployment activities, with CISE remaining focused on longer-term research activities. This said, OCI and CISE will build and maintain a strong partnership to ensure the rapid transfer of CISE research outcomes into development and deployment activities that provide additional functionality and value-added cyberinfrastructure services to the national science and engineering community.
- **Advisory Committees:** The COV recommended the establishment of appropriately balanced external advisory committees to examine and provide advice on strategic directions at the agency level. An NSF-level Advisory Committee for Cyberinfrastructure (ACCI) was chartered in the fall of 2005. The first meeting of the ACCI is being planned for the spring of 2006. The advice and recommendations of the ACCI will add value to the cyberinfrastructure-related input being provided by the agency’s domain-specific advisory committees.

- Common concerns: The SCI COV also expressed concerns common to a number of NSF COVs, including concern about reviewer burn-out due to increasing proposal pressure; and limited staff resources. Looking to the future, OCI will manage its competitions to minimize the burden placed on the review community while not compromising the quality and efficiency of the agency's merit review process, and will continue to advocate for staffing adjustments as workload changes arise.

Conclusion

This was an insightful COV report that in many ways validated the changes being made within NSF with respect to cyberinfrastructure governance, planning, development and deployment. NSF management is indebted to the members of the COV for their comprehensive and substantive inputs and recommendations.