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From: Katehi, Linda [mailto:katehi@purdue.edu]
Sent: Wednesday, January 12, 2005 9:20 AM
To: Brighton, John A.
Cc: Queen, Cassandra M.; Culbertson, Joanne D.; Whitlock, Sharon K.
Subject: COV Report on SBIR-STTR Program

Dear John

With this email, I would like to acknowledge acceptance of the COV report on the SBIR-STTR Program by the Engineering Directorate Advisory Committee. The committee of visitors did an excellent job in assessing the performance of this successful program within NSF. The ADCOM has found this program to be of exceptional quality and we strongly recommend its continuing support

Best

Linda P.B. Katehi

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Small Business Innovation Research
and
Small Business Technology Transfer
(SBIR/STTR)

Committee of Visitors Members
May 4-6, 2004

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June 23, 2005

TO: Gay May
Chair ENG Advisory Committee

FROM: John Brighton
Assistant Director, ENG

SUBJECT: Report on Diversity, Independence, Balance and the Resolution of Conflicts
for the SBIR/STTR Program CoV Members

This is my report to you, as the Chair of the Advisory Committee for the Engineering Directorate, on the diversity, independence and balance of the Committee of Visitors (CoV) for the SBIR and STTR programs within the Division of Design, Manufacture and Industrial Innovation held during May 4-6, 2004.

The Committee of Visitors, which was assembled to review the SBIR/STTR programs, and whose report was presented to the SBIR/STTR Advisory Committee on June 15-17, 2004 and subsequently to the Engineering Advisory Committee on November 3-4, 2004, consisted of eight persons, of whom six are male and two are female. One of the members of the committee is African-American, one is Hispanic and one is Native American.

Four of the COV are from SBIR firms, three are from the academia, one is from the investment sector and one from the State Government. The COV chair Dr. Chris Busch has used SBIR program to grow his company, sold to SAIC and has since retired to assist other small business firms. The Co-Chair Prof. Meg Wilson is a business school faculty from the U. Texas, Austin. All invited COV members attended a preliminary meeting on January 5-8, 2004 in Dallas, Texas at the divisional annual grantees conference. All invited CoV members actively participated in the COV process on May 4-6, 2004 at NSF.

Two members Dr. Busch and Prof. Wilson are also members of the SBIR/STTR AdComm, which is a sub-committee of the ENG AdComm. Prof. Castro was a former member of the SBIR/STTR committee. Dr. Sommer and Mr. Hall are recipients of

federal SBIR awards. Dr. Hammersla and Mr. Skinner are in the fields of tech-transfer and Mr. Jones represents the seed investment community. A conflict of interest briefing was held on the first day of the CoV visit. The absence of any conflict of interest was confirmed by asking all to complete the NSF Conflict of Interest form, none of which disclosed any conflicts that could not be resolved. Assignments were made to ensure that there would be no conflicts of interest. No real or apparent conflicts arose during the course of the meeting that had to be resolved.

Committee of Visitors (COV) FY 2004 Report

**Small Business Innovation Research (SBIR)
and
Small Business Technology Transfer (STTR)
Programs**

Division of Design, Manufacturing & Industrial Innovation
National Science Foundation
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4-6 May 2004

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INTRODUCTION

a. Background

The Committee of Visitors (COV) met at the National Science Foundation (NSF) 4-6 May 2004 to review the agency SBIR and STTR Programs for the three-year period 2001 through 2003. The general procedures followed were those provided by NSF. These focused on evaluating:

- A. The integrity and efficiency of the SBIR/STTR Program's processes & management;
- B. Outputs and outcomes of NSF investments in the SBIR/STTR Program; and
- C. Other topics related to the NSF SBIR/STTR Program.

Specific review comments on these three items are provided in Sections A through C below.

The first of the three days began with a welcome and introduction from Warren DeVries (Director, Design, Manufacture and Industrial Innovation (DMII) Division). Kesh Narayanan provided an overview of the NSF SBIR/STTR Program, and Program Managers presented highlights of their program portfolios. Fae Korsmo (NSF Office of Integrative Activities) discussed the NSF COV process.

Chris Busch (COV Chair) summarized a pending proposal and corresponding rationale to organize the SBIR/STTR Program as an Office reporting to the Engineering Directorate. Currently, the NSF SBIR/STTR Program reports to DMII, a Division within the Engineering Directorate.

For the balance of the first day, the COV worked in three teams (two members in each team) in reviewing approximately 123 SBIR/STTR proposal jackets. The first day concluded with preparation of a draft report for the "A" items of the COV report template provided. Informal discussions were held among COV members during the jacket review process.

The morning of the second day included further discussion of findings, and focused on preparing the "B" and "C" sections of the COV report. In the early afternoon, the COV members independently reviewed and edited the draft report. The day concluded integrating comments into the report through group interactions and discussions.

On the morning of the third day, additional comments were integrated into the draft report. Beginning at 9:30 AM, the COV presented its findings to NSF representatives. Attendees included: John Brighton (ENG AD), Warren DeVries (ENG/DMII DD), Kesh Narayanan (ENG/DMII Director Industrial Innovation), and NSF SBIR/STTR Program Managers. The meeting concluded at approximately 12 Noon.

The work of the COV was greatly facilitated by the initial presentations by NSF officials cited above. These comments together with the availability and support of NSF SBIR Program Managers and support staff enabled effective and efficient work by the COV.

b. Proposal Jacket Sample Selection

Out of 5814 SBIR/STTR proposals processed by NSF during the three year period 2001-2003, the COV selected 123 proposal jackets for review – forty-one for each of the three years. These included 78 Phase I proposals, 36 Phase II proposals, and 9 Phase IIB proposals.

The general methodology used in selecting the proposal jackets for review is represented in the Appendix of this report. The selection process aimed to achieve a representative distribution of proposals across geographic regions and among underrepresented groups.

c. Proposal Jacket Review Process

After being provided with detailed orientation on the contents of each proposal jacket, the COV broke into three teams of two each to review the selected proposal jackets. Each team focused on one of the three years of the COV review. The team composition and assignments were as follows:

Hammersla and Sommer:	2001
Jones and Skinner:	2002
Hall and Zayas-Castro:	2003

Meg Wilson (COV Co-Chair) focused on reviewing project outcomes and statistical data provided, and helped guide the COV's activity and report preparation. Chris Busch (COV Chair) was responsible for overall direction of the COV.

d. Summary and Conclusions

Specific key findings and recommendations are listed below.

1. The COV commends the NSF SBIR/STTR Program for managing a 100% + increase in proposal volume while maintaining process and program quality. The COV believes this was enabled by effective use of FastLane, NSF SBIR/STTR Program and contractor personnel, and allocation of its resources.
2. The COV commends the NSF SBIR/STTR Program for its successful program outcomes. The COV identified several SBIR/STTR recipients whose impressive

success is predicated on Program funding. Examples of these small businesses include Vivisimo and Nanosys.

3. The NSF SBIR/STTR Program provided critical resources to new and emerging startups during the recent economic downturn from 2000 – 2003. Without the support of the SBIR/STTR program, it is questionable whether several of these small businesses would exist today. This benefits the general public by providing new employment opportunities, wealth creation, and important new products and services.
4. The COV commends the NSF SBIR/STTR Program for substantial progress implementing 2001 COV recommendations. For example, the COV noted substantial improvement in the commercial reviews of Phase II proposals.
5. Successful SBIR/STTR awardees are now recognized by the investment community as having a technical stamp of approval and increased commercial credibility. These may be attributed, in part, to the NSF SBIR/STTR Program open solicitation, peer review process and its well-managed programs. As a result, SBIR/STTR grantees are viewed by the investment community as having substantially reduced technical and commercial risk when compared to non-grantee companies.
6. Commercialization reviews generally were done well in Phase II proposals. The COV recommends that more consideration be given to commercial potential in evaluating Phase I proposals in order to provide earlier input to PI's and small businesses. This also will improve the overall success rate of Phase II/IIB proposals.
7. Based on the economic trends of the last several years and heightened acceptance of SBIR/STTR grantees in the commercial sector, continued growth in submissions is expected. Therefore, the COV is concerned that unless NSF provides additional resources for the SBIR/STTR Program, the evaluation processes and award outcomes will suffer.

Date of COV: May 4-6, 2004

Program: Small Business Innovation Research / Small Business Technology Transfer

Division: Design, Manufacture and Industrial Innovation

Directorate: Engineering

Number of actions reviewed: 123

A. INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES & MANAGEMENT

A.1 Questions about the quality and effectiveness of the program's use of merit review procedures.

Is the review mechanism appropriate?

Generally, the review mechanism for the SBIR/STTR Programs is appropriate.

For Phase I proposals, the COV recommends that the panels have more representatives from the business sector in order to provide earlier input to PI's and small businesses, and to improve the market success rates in the commercial world. More balance between technical and business reviewers should be achieved. The COV suggested that commercialization review of Phase I proposals could be separate from the technical review if resources continue to be limited. Such commercial review could be done via FastLane or by mail review. SBIR/STTR Program Managers should perform the technical and business review integration. The COV noted the comments of the 2001 COV on this issue, and reiterates its interest in Phase I commercialization considerations.

For Phase II proposals, the COV observed that more than one process was used for Phase II panels (e.g., technical and commercial panels together and separately). The COV found that generally jacket documentation was quite good. However, there is room for improvement in consistent feedback to the small business and PI. It was noted that in some panels with wider variation in individual reviews, the basis for the consensus decision could be better documented.

Is the review process efficient and effective?

Generally, the COV believes the review process is efficient and effective.

The COV observed that the SBIR/STTR Programs managed effectively the 100%+ increase in proposal submissions over the three year period of this COV review. The number of panelists that the program involved in peer reviews showed a 300% increase, in response to the prior COV recommendations. The NSF SBIR/STTR

Program effectively leveraged its technology tools (FastLane), contractors and program staff to accomplish attentive, effective service despite a major increase in workload.

Are reviews consistent with priorities and criteria stated in the program's solicitations, announcements, and guidelines?

Yes.

Do the individual reviewers (either mail or panel) provide sufficient information for the principal investigator(s) to understand the basis for the panel recommendation?

Phase I reviewers were primarily technical, and consequently the Phase I reviews lacked consideration of the "broader impacts" criterion. The COV found that the technical reviews generally were well done. The COV recommends more attention to commercialization considerations in Phase I proposal reviews.

The COV found that most of the Phase II technical and commercial reviews were well done. However, the NSF SBIR/STTR Program should strive for more consistency in providing detailed feedback to the small business and PI. Improved documentation also would provide a better basis for Project Managers' decisions.

Do the panel summaries provide sufficient information for the principal investigator(s) to understand the basis for the panel recommendation?

Comments on the panel summaries track COV comments on the individual reviews.

Is the documentation for recommendations complete, and does the program officer provide sufficient information and justification for her/his recommendation?

Generally, the jacket documentation was well done. However, there were a few instances in which it was not possible to follow the rationale for the award/decline decision.

Is the time to decision appropriate?

Yes.

The *time to decision* for the SBIR/STTR Program improved substantially from 2001 to 2003 despite an almost doubling of applications and no change in program staff. Across all proposals and all phases, the processing time decreased from an average of 5.27 months in 2001 to 4.59 in 2002 to 3.71 in 2003. During the same time period, the

standard time deviation from this average declined substantially for Phase IIs and increased only slightly for Phase Is – understandable given the increase of proposals from 1157 in 2001 to 2,405 in 2003.

Another factor that makes the improved productivity notable is the number of panel reviews: the number of panel reviewers increased from 5146 for all proposals in 2001 to 11,563 in 2003. The NSF SBIR/STTR Program increased its contractor support and fully implemented FastLane proposal reviews over this same time period. This helped the Program achieve its productivity increase. It is a laudable accomplishment with the limited resources at hand. The NSF SBIR/STTR Program time to decision is actually better than the institutional investment community which ranges between four to six months. Therefore, SBIR/STTR grantees are able to more quickly raise capital to determine commercial feasibility of their innovations than their non-SBIR/STTR counterparts.

Discuss issues identified by the COV concerning the quality and effectiveness of the program's use of merit review procedures:

The COV believes that the merit review process works well for both Phase I and Phase II.

A.2 Questions concerning the implementation of the NSF Merit Review Criteria (intellectual merit and broader impacts) by reviewers and program officers.

Have the individual reviews (either mail or panel) addressed whether the proposal contributes to both merit review criteria?

Generally, yes. See comments in A.1 above.

The COV recommends that the NSF SBIR/STTR Program continue to require more uniform completion of both merit review items by its reviewers.

The COV specifically recommends that more attention be paid to the societal impact consideration in the “broader impacts” criterion. This is especially important for the technical reviewers to address.

Have the panel summary reviews addressed whether the proposal contributes to both merit review criteria?

Same comments as for individual reviews.

Have the “review analyses” (Form 7’s) addressed whether the proposal contributes to both merit review criteria?

The review analyses generally were complete, and did address both merit criteria. Intellectual merit issues were addressed more consistently than societal values and commercial reviewers addressed societal value more often than technical reviewers did. The Form 7’s generally were complete. By improving the number of commercial reviewers in Phase I, it’s feasible that this balance between intellectual merit and societal benefit will be more consistent.

Discuss any issues or concerns the COV has identified with respect to NSF’s merit review system.

The COV observed substantial improvement in the Phase II commercialization reviews over the 3 year period. This had been a recommendation of the 2001 COV and the NSF SBIR/STTR Program was very responsive to this recommendation. The COV reviewed 9 Phase IIB proposals and found that the additional funding from this milestone-based process was effective, but needs to be tracked to get information on long-term impact.

A.3 Questions concerning the selection of reviewers.

Did the program make use of an adequate number of reviewers for a balanced review?

Yes. Most proposals had at least 3 reviewers at the Phase I level and at least 4 reviewers at the Phase II level. There were 2 Phase I jackets in 2001 with only 2 reviewers - both resulted in awards.

Did the program make use of reviewers having appropriate expertise and/or qualifications?

Generally, yes.

The COV recommends that additional reviewers with commercialization expertise be used in Phase I. This COV has the same observation as the 2001 COV report stating, “...in some cases, commercial reviews appeared superficial, indicating that some of the commercial reviewers may not have the breadth of business experience necessary to adequately evaluate commercial potential.” This COV recommends that the SBIR/STTR Program continue to seek the highest qualifications among the commercial reviewers and establish a consistent group of reviewers with appropriate domain expertise to draw on for Phase I and Phase II reviews.

Did the program make appropriate use of reviewers to reflect balance among characteristics such as geography, type of institution?

Generally, yes. Based on the 2001 COV report, good improvement has been made.

However, in one case four of the five reviewers for a proposal jacket reviewed by the COV were from the same university, and two of the four were from the same department. Care should be taken to insure more diversity within individual panels.

The COV observed that there were few reviewers from private universities in the proposals sampled for review. Based on the 2001 COV report, this may be an overcorrection to a 2001 recommendation. The reason for this apparent bias should be established.

Did the program recognize and resolve conflicts of interest when appropriate?

Generally, COI was not an issue, and reviewers were sensitive to this issue. However, in one case, there appeared to be a reviewer conflict. Based on information available, COV members believe this review should have elected to recuse.

The NSF SBIR/STTR Program should clarify the issue of having a reviewer comment on a proposal from the same institution (e.g., an STTR proposal with reviewer and proposer from the same campus).

Discuss any concerns identified that are relevant to selection of reviewers.

The COV recommends that the NSF SBIR/STTR Program create and post a reviewer assistance section at its website to help reviewers understand review criteria, COI issues, and including examples of good and bad reviews. Incorporating these ideas in the panel orientation during the review process may also be beneficial.

A.4 Questions concerning the resulting portfolio of awards under review.

Overall quality of the research and/or education projects supported by the program.

Generally, the projects in the SBIR/STTR portfolio were appropriate in terms of quality and consistent with the scope of the project funding. Some inconsistencies were noted in the award threshold across topic areas (e.g, the number of “good” or “excellent” ratings varied by topic area). The COV recommends that the NSF SBIR/STTR Program strive for more uniformity of the quality of funded projects across all topics.

Are awards appropriate in size and duration for the scope of the projects?

The projects in the SBIR/STTR portfolio were consistent with the parameters prescribed in the solicitation. These amounts also are consistent with current commercial investor amounts.

Does the program portfolio have an appropriate balance of high risk proposals?

Yes, the portfolio has adequate balance of high risk proposals.

Does the program portfolio have an appropriate balance of multidisciplinary proposals?

The nature of many funded projects is inherently multidisciplinary. The COV notes the 2004 NSF SBIR/STTR Program solicitation specifically solicits multidisciplinary approaches (Security topic). In general, the SBIR/STTR proposals are more multidisciplinary than those of entrepreneurs funded by the investment community.

Does the program portfolio have an appropriate balance of innovative proposals?

The NSF SBIR/STTR award portfolio was found to support innovation.

Does the program portfolio have an appropriate balance of funding for centers, groups and awards to individuals?

Not applicable for the NSF SBIR/STTR Program.

Does the program portfolio have an appropriate balance of awards to new investigators?

Yes. For the three years that the COV reviewed, out of 800 PIs awarded, 578 were first time awardees in the SBIR Program. The COV recommends that the NSF SBIR/STTR Program provide data to identify and track specific small business awardees as well as at the PI level.

Does the program portfolio have an appropriate balance of geographical distribution of Principal Investigators?

Yes.

Does the program portfolio have an appropriate balance of institutional types?

Not applicable. The COV observed significant involvement of university researchers in many projects.

Does the program portfolio have an appropriate balance of projects that integrate research and education?

Not generally applicable. However, some jackets were reviewed that addressed research and education technology under the IT topic.

Does the program portfolio have an appropriate balance across disciplines and subdisciplines of the activity and of emerging opportunities?

Yes.

Does the program portfolio have appropriate participation of underrepresented groups?

Based on the data available to the COV, the participation of underrepresented groups appears to be satisfactory. The COV recommends that NSF track the participation of small businesses owned by underrepresented groups and summarize this data on an annual basis.

Is the program relevant to national priorities, agency mission, relevant fields and other customer needs? Include citations of relevant external reports.

Yes, the NSF SBIR/STTR Program is pertinent to national priorities for research, technology development and economic growth. The four NSF SBIR/STTR topic areas can all be found within the 1995 National Critical Technology report (see, for instance, the living systems, materials, manufacturing and information and communication chapters in:

<http://clinton3.nara.gov/WH/EOP/OSTP/CTIformatted/>.

The NSF SBIR/STTR Program also reflects even more recent priority concerns for the nation. For example, several projects falling under the four NSF SBIR/STTR topic areas echo the October 2003 reports by the National Science & Technology Council on the National Nanotechnology Initiative and the Advanced Foundations for American Innovation: Information Technology Research and Development Supplement to the President's FY2004 Budget. See the two websites below.

http://www.ostp.gov/NSTC/html/nni04_budget_supplement.pdf
<http://www.ostp.gov/NSTC/html/NITRD04BB-final.pdf>

The NSF SBIR/STTR Program funded several projects during the COV study period that predate, but directly support the President's Feb. 24,2004 executive order to encourage innovation in manufacturing. See the website below.

<http://www.whitehouse.gov/news/releases/2004/02/20040224-6.html>

And, during a time of war, it is valuable to see the parallel between the NSF SBIR/STTR topic areas and those of the Department of Defense Military Critical Technologies List (revised). See:

http://www.dtic.mil/mctl/MCTL_REV.html

Discuss any concerns identified that are relevant to the quality of the projects or the balance of the portfolio.

No additional comments.

A.5 Management of the program under review.

Management of the program.

The COV observed continued management improvement of the SBIR/STTR portfolio over the period of this review. It is clear to the COV that resources available to the NSF SBIR/STTR Program Managers are inadequate. This includes, for example, contract support and travel expenses. The COV recommends that NSF urgently address this issue.

Responsiveness of the program to emerging research and education trends.

Very appropriate.

Program planning and prioritization process (internal and external) that guided the development of the portfolio under review.

The COV recommends that the SBIR/STTR Program reevaluate workload and priorities of in-house staff and outside contractors to strive for a more effective and balanced process and workload.

Discuss any concerns identified that are relevant to the management of the program.

The COV observed that two Program solicitation topic schedules (e.g., EL and BT) changed during the course of the COV review period. The COV recommends that additional topics be added to the solicitation rather than replace the basic topics.

The COV recommends that NSF SBIR/STTR Program employ an external group of experts to review SBIR/STTR solicitation topics periodically to assess technical and market relevance.

The COV recommends that NSF SBIR/STTR Program retain the “open” nature of the SBIR/STTR solicitation topics.

The COV is convinced that additional resources are needed for SBIR/STTR Program Managers and the SBIR/STTR Program Office in order to achieve program objectives. Action to address this problem is strongly recommended.

The COV believes quality mentoring support to small businesses is key to improved commercialization success of the SBIR/STTR awardees. The COV recommends that NSF review and evaluate methods for improved mentoring support to awardees, including increasing the travel budget for Program Managers.

The COV recommends that the NSF SBIR/STTR Program reevaluate the allocation of outreach resources, including the National SBIR Conferences.

B. RESULTS: OUTPUTS AND OUTCOMES OF NSF INVESTMENTS

B.1 OUTCOME GOAL for PEOPLE: Developing “a diverse, competitive and globally engaged workforce of scientists, engineers, technologies and well-prepared citizens.”

The COV believes that the NSF SBIR/STTR Program meets the goals of developing a diverse workforce through the companies funded, the partners they have and the benefits to society from important new products and services. For instance,

- ◆ Project 0349577 is developing broad spectrum disease resistance in crop plants;
- ◆ Project 0321686 is developing an assistive reading device for persons with disabilities, for musicians and for avid readers.
- ◆ An Electronics project is developing polymer photovoltaic products in a variety of form factors. Such an approach could finally allow for inexpensive proliferation of solar power.
- ◆ The SBIR/STTR IT topic area includes an entire section on Teaching and Learning technologies and another on Mathematics, Science, Engineering and Analysis.

Additionally, NSF SBIR/STTR Program outcomes measures show a satisfactory level of involvement with women and minority owned businesses, participation with a variety of universities and a diverse body of students, especially through STTR and through funding projects in EPSCoR states.

B.2 OUTCOME GOAL for IDEAS: Enabling “discovery across the frontier of science and engineering, connected to learning, innovation and service to society.”

The NSF SBIR/STTR Program topics are very broad and inclusive and do not specifically exclude any topic area – they cover the entirety of the science and engineering frontiers. For example, award DMI 0216212, develops software that enables manufacturers to cut inventory costs and improve supply chain management using the internet. This could have a substantial impact on the manufacturing sector – a sector very important to the health of our national economy. Solicitations seek innovative proposals in over 8 broad areas of biotechnology including medical devices, 7 areas of IT, and a broad array of topics in electronics, manufacturing, chemicals and materials science

B.3 OUTCOME GOAL for TOOLS: Providing “broadly accessible, state-of-the-art S&E facilities, tools and other infrastructure that enable discovery, learning and innovation.”

The NSF SBIR/STTR program supports quality research and partnering activities that support tool development, effective tool use and the introduction of tools into the marketplace. The NSF IT topic area, reinforced by the Electronics topic area, has supported development of wireless infrastructure and web-based tools, (e.g. translations, knowledge access, e-learning) – technologies that have a high probability of success in the marketplace, but will also have a high societal benefit. Another example is advanced instruments for monitoring asthma (DMII 0321447) which has potential for many other medical and environmental applications. Also, DMII 0216620 is developing imaging tools for nanobiology and other types of nanotechnology which can potentially lead to other R&D and emerging market applications.

B.4 OUTCOME GOAL for ORGANIZATIONAL EXCELLENCE: Providing “an agile, innovative organization that fulfills its mission through leadership in state-of-the-art business.”

The COV has observed that NSF has a process of continual quality improvement in the SBIR/STTR program. In recognition of this, several SBIR program managers received awards from NSF in 2003 for excellence in service and innovative management.

The COV recommends that the SBIR/STTR program be repositioned within NSF to better reflect its size, scope and mission within NSF.

C. OTHER TOPICS

C.1 Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The COV commends the NSF SBIR/STTR Program for making great strides in responding to the recommendations from the 2001 COV report.

The COV observes that the NSF SBIR/STTR Program staff has done an excellent job of accommodating additional work associated with the doubling of proposals with no apparent growth in staff or other resources. However, the COV is concerned about the ability of the SBIR/STTR Program staff to continue managing the growing workload without additional resources.

The COV strongly encourages NSF to resolve the resource issue for the SBIR/STTR Program Office. This resolution could include increased budget for travel to awardee sites allowing more mentoring and evaluation to promote successful development of small businesses that address national needs. This service is critical to the program achieving its mission.

While substantial improvements have been made in the consistency and quality of proposal jacket content, further improvement is encouraged. NSF SBIR/STTR Program Managers and reviewers need to be more attentive to the completion of the broader impacts criterion, and documenting reasons for final decisions, especially when these decisions seemingly are inconsistent with panel recommendations.

The COV observed in jackets reviewed, that there were few reviewers from the leading private universities (institutions who have been particularly successful in promoting development of startups). The COV encourages the NSF SBIR/STTR Program to evaluate appointment of reviewers, and make appropriate adjustments.

C.2 Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

The COV again notes the substantial improvement in commercial reviews of Phase II proposals. The COV believes that the feedback to PIs and small businesses from these improved reviews support more successful projects and thus wider value from the SBIR/STTR funding.

C.3 Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

The COV strongly supports the proposal to move the SBIR/STTR Program Office from the Engineering/DMII to report to the Engineering Directorate. This is essential in order for NSF **and** the SBIR/STTR Program to achieve their mission and goals relating to innovation.

The SBIR/STTR Program could contribute more to the agency's mission if NSF and all its Directorates more fully embraced the SBIR/STTR Program. The COV encourages NSF to nurture this culture.

The COV recommends that NSF implement a better PI and small business tracking process for awards and proposals across all SBIR/STTR agencies. Also, NSF should work with other SBIR/STTR agencies to build a federal knowledge management system for the SBIR/STTR Program to support tracking, its audit functions and successful commercialization of products and services.

The COV recommends that NSF address the critical need for administrative resources for the SBIR/STTR Program. Use of contractors to supplement panel recruitment, formation, and administrative management should be considered as one way to meeting resource needs.

C.4 Please provide comments on any other issues the COV feels are relevant.

No additional comments.

C.5 NSF would appreciate your comments on how to improve the COV review process, format and report template.

The COV understands that the electronic jacket process has been used in other COV meetings. The COV recommends the employment of electronic jackets in subsequent SBIR/STTR COV meetings.

Better summary data should be provided to the COV on the makeup and distribution of reviewers and the makeup and distribution of PIs and companies applying to the Program

The COV recommends that the STTR Phase I and Phase II statistical data be provided separately. Also, since STTR proposals are reviewed with SBIR proposals, information on panel resources used should be clarified for future COVs.

The COV recommends that information on the topic generation and review process for solicitations be provided.

The COV commends NSF for compiling the commercialization information presented, and encourages the SBIR/STTR Program to continue this process. Mechanisms for improving the quantity and quality of this data should be considered and implemented.

SIGNATURE BLOCK:

For the SBIR/STTR Program Committee of Visitors Meeting
Chris W. Busch
Chair