

# **NATIONAL SCIENCE FOUNDATION**

**Renaissance HarborPlace Hotel- Baltimore, MD 21202**

## **Engineering Directorate Division of Industrial Innovation and Partnerships**

Report of the Advisory Committee for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs

May 15-16, 2014

### **1.0 INTRODUCTION**

The National Science Foundation (NSF) Advisory Committee (AdCom) for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs met May 15-16 in Baltimore, Maryland, in conjunction with the Phase II Grantees Conference.

#### **Advisory Committee members in attendance included:**

Susan Butts  
Trish Costello  
Arlene Garrison  
Karen Kerr  
Tom Knight (Chairman)  
Eugene Krentsel  
William Lockwood Benet  
Richard Paul  
Susan Preston  
Karthik Ramani  
Skip Rung  
Ann Savoca  
David Spencer

#### **Advisory Committee members absent:**

Angus Livingstone

#### **NSF IIP representatives attending all or part of the meeting included:**

Grace Wang, Division Director, IIP  
Joseph Hennessey, Senior Advisory, IIP

Graciela Narcho, Staff Associate, IIP  
 Prakash Balan, SBIR/STTR Program Director, IIP  
 Steven Konsek, SBIR/STTR Program Director, IIP  
 Glenn Larsen, SBIR/STTR Program Director, IIP  
 Rajesh Mehta, SBIR/STTR Program Director, IIP  
 Ben Schrag, SBIR/STTR Program Director, IIP  
 Ruth Shuman, SBIR/STTR Program Director, IIP  
 Jesus Soriano, SBIR/STTR Program Director, IIP  
 Murali Nair, SBIR/STTR Program Director, IIP  
 Lindsay D'Ambrosio, Science/Engineering Analyst, IIP  
 Alexandria Hale, Program Specialist, IIP

## 2.0 AGENDA

The agenda for the meeting is included below.

<b>Thursday, May 15<sup>th</sup></b>	
8:30 a.m.	Light Breakfast
9:00 a.m.	<b>Welcome &amp; Introductions</b>
	Review & Approve Fall 2012 Meeting Minutes
9:30 a.m.	<b>IIP Overview and Update on Strategic Goals</b>
10:30 a.m.	Break
10:45 a.m.	<b>Diversity Panel and Discussion</b>
12:30 p.m.	<b>Working Lunch</b> How can AdCom help in Outreach and Broadening Participation
2:30 p.m.	<b>De-brief of Commercialization Assistance Survey</b>
3:00 p.m.	<b>Commercialization Assistance Update</b>
3:30 p.m.	<b>Break-out Discussion Sessions with Assigned Facilitators</b>

	<p>Topic A: Entrepreneurial Education</p> <p>How to help develop more entrepreneurs among current SBIR/STTR grantees and transform their startups into viable business entities through much more business-driven teams?</p>	<p>Topic B: Leveraging Networks</p> <p>How to leverage networks of non-profit organizations and investors to provide more networking opportunities to current NSF SBIR/STTR grantees?</p>	<p>Topic C: Crowdsourcing</p> <p>Would you consider capital raised through crowdsourcing as eligible third party investment for Phase IIB matching? Why or why not?</p>
5:00 p.m.	<b>Report Out from Breakout Sessions</b>		
6:30 pm	Dinner		

## Friday, May 16<sup>th</sup>

8:00 am	Light Breakfast
9:00 am	<b>IIP Question &amp; Answer Session</b>
9:30 a.m.	<b>AdCom Deliberations</b>
10:30 a.m.	Break
10:45 a.m.	<b>AdCom Feedback to NSF</b>

11:30 pm	Adjourn
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### **3.0 COMMENTS and FEEDBACK**

The AdCom considered and provided feedback on the following discussion items from the meeting agenda.

#### Discussion and Approval of Minutes from Prior Meeting

Approval of Minutes: After a brief discussion and noted correction (Skip Rung was incorrectly left off the attendance list), the AdCom approved the minutes from the prior meeting held in May 2013.

The AdCom noted that all action items and recommendations from the last meeting have either been met or incorporated into this year's agenda.

#### Organizational Changes & Comments

The AdCom congratulated Kesh Narayanan on his retirement and commended him for his strong leadership and myriad contributions within IIP and NSF.

The AdCom welcomed new Program Director to IIP, Dr. Peter Atherton, SBIR Program Director, and Information Communication Technologies.

The AdCom congratulated Dr. Babu DasGupta on his new assignment in ENG/OAD and thanks him for his many contributions to with IIP.

The AdCom thanked E. Jennings Taylor his long-time service. His contributions have been greatly appreciated and will be missed.

#### Industrial Innovation Partnership (IIP) Overview

The AdCom stated its support of the vision Grace Wang presented not only for SBIR/STTR but also for IIP.

They endorsed her plans to drive the expansion of our nation's innovation capacity, including Technology Innovations, Partnerships, and Innovators.

AdCom supported the following changes Grace presented:

- AIR – increased size and duration of AIR grants
- BIC – inclusion of social behavior and/or cognitive science disciplines
- STTR – broadening of topics
- I/UCRC – international collaboration and updated IP agreements

The AdCom congratulated IIP for its leverage of third-party funds. SBIR Phase 2B matching funds generated in FY2013 reached \$83 million, up from \$78 million in 2012. I/UCRC generates \$8 dollars in matching funds for each \$1 invested by IIP.

The AdCom would like to see further data on the I/UCRC Program and how it assesses its funding leverage as well as its broader impact, as it may inform IIP's plans to improve SBIR assessment.

The AdCom encouraged IIP to increase this leverage of third-party funds, and to continue to track and report these figures in the future.

The AdCom endorsed supplemental support for SBIR/STTR grantees to attend selected tradeshow/venture fairs. We recommend IIP survey grantees after these events to gauge the value and quality of individual events.

The AdCom endorsed recent IIP improvements in entrepreneurial education, including:

- the inclusion of the "Beat the Odds Entrepreneurial Bootcamp" at the grantees conference
- the partnership with the USPTO

The AdCom endorsed recent IIP improvements in outreach, including:

- the use of social media such as LinkedIn or Twitter
- partnerships with Professional Societies
- increased participation by IIP in trade shows and meetings with partner organizations
- the plans to enhance the grantees conference to attract partners that can support our grantees

The AdCom recommends IIP continue to perform outreach to increase the number of SBIR Phase 1 proposals from new companies and new PIs. Outreach should continue/expand in several areas, including:

- encouraging iCorps teams to submit proposals
- raising awareness of the SBIR/STTR programs among non-academics
- education on how to write Phase 1 SBIR/STTR proposals
- targeted efforts focused on outreach to women and other underrepresented groups

The AdCom requests that IIP provide us with marketing materials that describes NSF's SBIR/STTR program, which we can use as we volunteer as "ambassadors" for our Program.

The AdCom recommends IIP continue its “in-reach” activities, such as the AIR program, with other divisions and directorates within NSF.

#### Diversity Panel & Discussion on Broadening Participation

The AdCom appreciated the panel discussion by Karen Kerr, Trish Costello, Ann Savoca, and Kris Appel (CEO of Operations of Ignition 72)

The AdCom recommends IIP expand its outreach efforts to encourage more women and underrepresented minorities to submit Phase 1 proposals. To achieve this, the AdCom recommends three key activities based on the panel discussion:

1. Raise awareness of SBIR/STTR among women and underrepresented groups via outreach activities and partnerships.
2. Provide additional educational resources on how to submit a Phase 1 proposals
3. Build a community of role models and mentors among women and underrepresented groups, particularly among current and prior SBIR/STTR grantees.

The AdCom recommends we expand our outreach efforts to include not only PIs who are women or underrepresented, but also owners and leaders (CEOs, etc.) from these groups. For example, are there options to expand our metrics to also track participation in all three roles: PIs, Owners, and Leaders (CEO, etc.).

The AdCom recommends IIP identify as partners (as part of their broader list of potential partners) those groups that can be leveraged to attract/educate members of underrepresented groups.

The AdCom recognizes the challenges in this area, particularly in creating a strong pipeline of women and underrepresented minorities who have the STEM training and qualifications necessary for participation in SBIR/STTR. For example, we encourage IIP to continue its ASEE Postdoctoral Fellowship program and explore additional methods to expand the pipeline, perhaps in partnership with alumnae of past SBIR grantees and other NSF-funded programs focused on STEM education.

The AdCom commends IIP for its fourth successful year hosting a breakfast focused on women entrepreneurs at the annual SBIR/STTR Grantees Conference. We endorse the recent creation of a LinkedIn group to build a virtual community for the attendees at these breakfast meeting. We recommend IIP utilize this LinkedIn group to build a community of role models and mentors to support outreach activities. We noted that the attendees at the breakfast meeting had a strong desire to form a virtual community of SBIR

“alums” who can support outreach activities. See the attached PowerPoint slides for additional details on our observations and recommendations from the breakfast meeting.

All the members of AdCom request that we be added to the LinkedIn group that was created this week so that we can support this powerful emerging community.

The AdCom expressed its desire to work with IIP to broaden participation of underrepresented groups. The AdCom volunteered to continue as needed to support these activities and plans to continue their Subcommittee on Broadening Participation. The Subcommittee includes:

- Karen Kerr
- Tom Knight
- Eugene Krentsel
- Ann Savoca (Our New Chair)
- William Lockwood-Benet

The AdCom requested that IIP talk with Ann after this meeting on the best way for this subcommittee to support IIP in its efforts to improve broadening participation.

#### Assessment and Evaluation

The AdCom appreciated the presentations by George Vermont and Lindsay D'Ambrosio on IIP assessment.

The AdCom recommended that IIP utilize the tools presented to track the key strategic metrics such as:

1. Dollars of third-party matching funds raised, perhaps as a percentage of total IIP budget
2. Percentage of SBIR Phase 1 awards to new PIs. The AdCom complements IIP on the large and increasing percentage of proposals from PIs that are new to NSF or that have never received a prior Phase 2 award.

The AdCom observes that the new software tools provide an exciting, breakthrough opportunity to turn the excellent data collected by George into meaningful information reported visually in the OBIEE tool.

To capture this opportunity, the AdCom recommends IIP pursue partnerships with outside experts who can “mine” our assessment data along with other grantee and award data and prepare additional valuable assessment information. We expect such partnerships will provide IIP with data-driven insight on ways to improve IIP portfolio management, and are also likely to provide insight on ways to enhance our nation’s innovation ecosystem well beyond IIP’s investments.

The AdCom recommended that IIP track not only direct outcomes, like dollars of matching funds, but also to estimate indirect outcomes, such as the number of jobs created by SBIR Phase II/IIB grantees, and the indirect impacts beyond jobs created.

In addition, The AdCom recommended that IIP provide Program Directors with access to the DIMS and OBIEE tools to assess past performance of grantees.

The AdCom continued to volunteer to assist with these efforts. Members of the Subcommittee on Assessment include:

- Susan Butts
- Dick Paul
- Susan Preston
- Karthik Ramani
- Robert “Skip” Rung (Chair)
- David Spencer

The AdCom requested that IIP talk with Skip after this meeting on the best way for this subcommittee to support IIP in its efforts to improve assessment.

## Entrepreneurial Education & Commercialization Assistance

The AdCom endorsed the presentation by Trish Costello, Chair of the Subcommittee on Commercialization Assistance, and thanks the AdCom members who participated in the survey on commercialization assistance.

Given changes in the SBIR reauthorization legislation, the AdCom endorsed IIPs recent changes in commercialization assistance to Phase 2 grantees, as summarized in communication NSF 14-072, a Dear Colleague Letter-Commercialization Assistance Program Supplement, published May 12, 2014.

The AdCom observes that IIP needs a broad variety of entrepreneurial education resources, and that “commercialization assistance” is just one element of these broader educational materials. Therefore, we have decided to expand the scope of our Subcommittee on Commercialization Assistance to a renamed Subcommittee on Entrepreneurial Education, consisting of the following members:

- Susan Butts
- Trish Costello
- Eugene Krentsel
- Angus Livingstone
- William Lockwood-Benet
- Susan Preston (Chair)
- Karthik Ramani
- Skip Rung

The AdCom requested that IIP talk with Susan after this meeting on the best way for this subcommittee to support IIP in its efforts to improve entrepreneurial education. For example, the Subcommittee is willing to leverage its networks, and/or to provide input to support the recently revised Phase 2 commercialization assistance.

## Working Group on Entrepreneurial Education

### Topic A: Entrepreneurial Education

*Facilitator: Eugene Krentsel*

Tom Knight

David Spencer

Susan Preston

Ruth Shuman

Glenn Larsen

Gracie Narcho

Live programs: conduct a 1-2 day training, similar to I-Corp but content appropriate to cover how to move into the commercialization phase.

Topics for a program could consist of:

- Funding: angel/venture/etc and the milestones for the stages of funding.
- Hiring/Teambuilding:
- Sales & Marketing: defining the terms, who are the sales reps,
- Outsourcing: manufacturing, distributing, etc.
- IT: properly licensing, product development and launching
- Strategic Partnerships
- Governance: understanding the basics, building a Board of Advisors
- Acquisitions/Mergers:
- Scalability:
- Financial Planning & Strategy
- Customer Service Warranty
- Lean Startup: how to grow your company properly
- *\*Leadership (suggested by Karen Kerr)*

Sources for covering materials:

- Online: [OCW.mit.edu/courses/entrepreneurship](http://OCW.mit.edu/courses/entrepreneurship) (offers 40 courses)
- Funding: Angel Resource Institute
- SIIA- Software Commercialization Education
- NCT2: National Council on Technology Transfer
- Kaufman Academy
- Networking: Entrepreneur's Organization
- Creating a customizable course- single provider (Top 5 or Top 10 Entrepreneur Programs at Universities)

Keeping the topics and format general, it allows the information to be conveyed to a broader base.

### Working Group on Leveraging Networks

*Facilitator: Arlene Garrison*

Dick Paul

Ann Savoca

Skip Rung

Ben Schrag

Peter Atherton

Jesus Soriano  
George Vermont

Categories of networks are:

- Industry Associations: Industrial Research Institute
  - o IRI President could visit IIP (or vice versa) to figure out what commonalities are and take action to promote partnerships (participating in Grantee events) or have AdCom members or IIP staff participate in IRI events (webinars, forums, town halls, etc.)
- Professional Societies: ACS, IEEE
  - o ACS is always looking for webinar content; perhaps IIP can broadcast their information via their webinars.
- Investors: they like to develop relationships with potential partners and grantees
  - o Early stage investors are interested in developing these ideas.
  - o They may also make useful introductions to potential customers for grantees
- AdCom Members' Personal Networks, and other Personal Networks
  - o Advisory Committee Members, Distinguished Alumni (former grantees) and other curated networks and friends of the SBIR/STTR Program. Creating a directory would be helpful.
- Local Services Networks: regional, state, and local
  - o Small Business Development Corporations (SBDCs), incubators and accelerators, legal and financial professionals, and state/local loan programs.
- Government Networks: Federal Laboratory Consortium (FLC)
  - o FLC includes all federal labs, which have a mandate to share their taxpayer-funded technology, facilities, and expertise with the private enterprise (including start-ups and small businesses) to assist in technology commercialization.
- Contractor enlisted by IIP to develop networking function, perhaps growing into an independent grantees association

## Working Group on Crowdsourcing

*Facilitator: Susan Butts*

Karen Kerr

William Lockwood Benet

Karthik Ramani

Trish Costello

Steve Konsek

Prakash Balan

Rajesh Mehta

Crowdfunding is the wave of the future, and NSF must find a way to recognize this and identify circumstances under which crowdfunding will be eligible for matching.

Crowdfunding is made up of several components (listed below). Our recommendations about whether/how to accept these for NSF matching follow each entry.

- Crowd investing: accredited investors acquiring an equity stake in companies (via the New Jobs Act under Title II) – Should be accepted
- Non-accredited investors acquiring an equity stake in companies (via the New Jobs Act under Title III): Should be accepted
- Crowd lending: NSF does not currently accept loans, so this should not be accepted
- Crowd pre-buying: true market validation; NSF does not match funds if they can be withdrawn by the investor. NSF should accept this as long as it is stated that money cannot be given back.

Crowd Donation: another good way to validate, but less due diligence. NSF should accept for matching within a range of minimum and maximum amounts to reduce the administrative burden. Also recommend that the current NSF requirement that each donor/investor recognize the participation of NSF in the subject business opportunity could be met by requiring that the web posting used to advertize the crowd funding proposition carry a standard statement must regarding NSF funding; it could also include the NSF logo. This would be good branding for the NSF.

The AdCom encouraged similar conversations with Program Directors in future meetings, and welcomed input from the IIP Program Mangers on topics they feel would be most valuable to discuss with the AdCom.

## **FUTURE MEETING AGENDA**

The next AdCom meeting will occur at October 23rd 2014 at noon and ending October 24 at 2PM.

The AdCom recommended that one meeting each year continue to be held at the same location as a grantee workshop. They welcomed alternating between the Phase I and the Phase II grantees conference.

The AdCom appreciated how IIP shared the meeting agenda prior to this meeting.

To further improve the AdCom's effectiveness, they requested that IIP send succinct presentation materials to all AdCom members in advance of future meetings via email **and** via Wiki.

AdCom's Proposed Agenda for the Fall meeting:

1. Update on IIP strategic goals, including an update on key strategic metrics
  - a. matching funds
  - b. percentage of SBIR phase 1 awards to new PIs
  - c. plus any other metrics IIP may care to present
2. Discussions with Program Managers on topic(s) preselected to be of particular interest to the Program Managers.
3. Update on Assessment, and Report from Subcommittee on Assessment. Please present an update on progress and plans. We invite Alexandra Medina-Borja to participate, if possible. The AdCom would like to see further data on the I/UCRC Program and how it assesses its broader impact, as it may inform IIP's plans to improve SBIR assessment.
4. Update on Broadening Participation, and Report from Subcommittee on Broadening Participation. Please present updated data tracking the number of Phase I proposals submitted from women and underrepresented groups, and plans to increase the number of quality proposals from women and underrepresented groups.
5. Update on Entrepreneurial Education, and Report from Subcommittee on Entrepreneurial Education
6. Deliberations and Report Out

**AdCom's ACTION ITEMS PRIOR TO NEXT MEETING:**

1. Skip Rung will chair the Subcommittee on Assessment, and ask for input from Gracie Narcho within IIP on ways to best engage prior to our next meeting
2. Ann Savoca will chair the Subcommittee on Broadening Participation, and will ask for input from Gracie Narcho within IIP on ways to best engage prior to our next meeting

3. Susan Preston will chair the Subcommittee on Entrepreneurial Education, and will ask for input from **Joe Hennessey** within IIP on ways to best engage prior to our next meeting.