National Science Foundation

Directorate for Engineering
Division of Industrial Innovation and Partnerships

Barry W. Johnson
Division Director
Division of Industrial Innovation and Partnerships

May 5, 2016
NSF Mission and Vision

Mission

“to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”

Vision

“A Nation that creates and exploits new concepts in science and engineering and provides global leadership in research and education.”

NSF Strategic Goals

• Strategic Goal 1: Transform the frontiers of science and engineering.
• Strategic Goal 2: Stimulate innovation and address societal needs through research and education.
• Strategic Goal 3: Excel as a federal science agency.
NSF and ENG Initiatives and Priorities Address National Interests

- Innovations at the Nexus of Food, Energy, and Water Systems
- Risk and Resilience
- Clean Energy Technology
- Cyber-Enabled Materials, Manufacturing, and Smart Systems
  - Advanced Manufacturing
- Smart and Connected Communities
- National Nanotechnology Initiative
- Understanding the Brain
  - BRAIN Initiative
- Broadening Participation
  - NSF INCLUDES: Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science
- National Strategic Computing Initiative
- Innovation Corps
IIP Programs

- GOALI – Grant Opportunities for Academic Liaison with Industry
- IUCRC – Industry University Cooperative Research Centers
- PFI:BIC – Partnerships for Innovation: Building Innovation Capacity
- I-Corps – Innovation Corps
- PFI:AIR-TT – Partnerships for Innovation: Accelerating Innovation Research-Technology Transfer
- PFI:AIR-RA – Partnerships for Innovation: Accelerating Innovation Research-Research Alliance
- SBIR/STTR – Small Business Innovation Research / Small Business Technology Transfer
## IIP Budget

<table>
<thead>
<tr>
<th>Program</th>
<th>FY 2015 Request</th>
<th>FY 2015 Plan</th>
<th>FY 2016 Request</th>
<th>FY 2016 Estimate</th>
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<td><strong>226.98</strong></td>
<td><strong>248.11</strong></td>
<td><strong>239.93</strong></td>
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**Notes:**

1. Numbers are in millions of dollars.
2. Numbers are IIP budget only.
   a. Total NSF FY 2016 estimate for I-Corps is $30.0 million.
   b. Total NSF FY 2016 estimate for IUCRC is $20.0 million.
Industrial Innovation and Partnerships

Division Director
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Prakash Balan

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Glenn Larsen

Electronic Hardware, Robotics and Wireless Technologies (EW)
Murali Nair

Information and Communication Technologies (IC)
Peter Atherton

Semiconductors (S) & Photonic (PH) Devices and Materials
Steven Konsek

Smart Health (SH) and Biomedical (BM) Technologies
Jesus Soriano
SBIR/STTR Mission and Goals

The mission of the SBIR program is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy.

The SBIR program goals are:

- Stimulate technological innovation.
- Meet federal research and development needs.
- Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons.
- Increase private-sector commercialization of innovations derived from Federal research and development funding.

The mission of the STTR program is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy.

The STTR program goals are:

- Stimulate technological innovation.
- Foster technology transfer through cooperative R&D between small businesses and research institutions.
- Increase private-sector commercialization of innovations derived from Federal research and development funding.
NSF SBIR/STTR INNOVATION MODEL

Phase I
Feasibility Research
$225K/6-12 mos

Phase II
Research towards Prototype
$750K/24 mos

Phase III
Product Development to Commercial Market

Private Sector or Non-SBIR Investment
Phase IIB Third-Party Investment + 1:2 NSF Matching (up to $500K)

Federal Investment

Taxes
IUCRC Fast Facts – FY15 Snapshot

- $20.6M in Program Funding (ENG, CISE)
- 75 Active Centers (52 ENG Funded Centers 23 CISE Funded Centers)
- 110 U.S. institutions involved with 225 sites
- 6 official international sites
- Approximately 1200 industry members involved (~19/center)
  60% Large Business, 20% SB, 10% Federal Members, ~10% (State + Others)
- Approximately 1100 senior research investigators involved (~17/center)
- More than 2000 students involved – 30% of the graduates hired by the industry members
- 7 startups spun out (FY14)
- 6:1 leveraging of NSF funds
- 47:1 leveraging of member funds
IUCRC Focus Areas

- Advanced Electronics and Photonics
- Advanced Manufacturing
- Advanced Materials
- Biotechnology
- Civil Infrastructure Systems
- Energy and Environment
- Health and Safety
- Information Communication & Computing
- System Design and Simulation

Center Directory: http://www.iucrc.org/
Innovation Corps (I-Corps)

- Designed to foster entrepreneurship that will lead to the commercialization of NSF-funded research
  - Uses customer discovery and business model development to validate commercialization opportunities
  - Successful I-Corps projects will be prepared for business formation

- Distinct components of I-Corps program
  - Teams – Composed of Principal Investigator (PI), Entrepreneurial Lead (EL), and Mentor (M)
  - Nodes – Hubs for education, infrastructure, and research that engage academic scientists and engineers in innovation
  - Sites – Academic institutions that catalyze the engagement of local teams in technology transition and strengthen local innovation
NSF Innovation-Corps (I-Corps) The complete process

Pool of eligible PIs & projects: 
~50,000 projects (NSF)

Pool of eligible Teams (from NSF): 
- EL 
- PI 
- Mentor

Pool of eligible Teams (from I-Corps Sites)

Recruiting processes (NSF)

Team Selection (NSF)

Node Assignment (NSF)

Awarded I-Corps Teams (NSF)

Curriculum Delivery & Refinement (Nodes)

Business Model Canvasses (Teams)

Customer Discovery (Teams/Nodes)

"Go" Decision (Teams)

"No-Go" Decision (Teams)

Resource Infusion

Private Sector

Strategic Partnership

Private Capitalization

Public Funding (e.g., SBIR, STIR, ....)

NSF SBIR/STTR Innovation Model

Industrial Innovation and Partnerships
I-Corps Nodes and Sites

Legend
- I-Corps™ Node
- I-Corps™ Site

7 Nodes
51 Sites
645 Teams trained to date
220 startups created
Example of Impact with Georgia Tech

**Impact of NSF Innovation Corps: Georgia Tech Node**

<table>
<thead>
<tr>
<th>Cohorts</th>
<th>Teams</th>
<th>Entrepreneurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 National</td>
<td>120+</td>
<td>360+</td>
</tr>
<tr>
<td>40+ Regional</td>
<td>600+</td>
<td>1700+</td>
</tr>
<tr>
<td>5 International</td>
<td>65+</td>
<td>180+</td>
</tr>
</tbody>
</table>

**99 Companies Created**

**$445M Capital Activity**

**Interdisciplinary Entrepreneurship Courses Established**
- StartupLab
- Idea 2 Prototype
- StartupSummer

“Don’t Take A Job - Make a Job”

- 800+ Jobs
- $32M Grants
- $265M Equity
- 39 GT Teams

The #5 university incubator in the nation is the home of the Georgia Tech I-Corps Node.
Questions and Contact

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