Understanding SBIRs for Researchers

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Session 1 – SBIR / STTR Program
Outline For Today’s Class

- Course Overview and Expectations
- Description of SBIR/STTR Programs
- Overview of Participating Agencies
- Getting Started
- Additional Resources
- Homework
Course Overview and Expectations

- See Course Outline
- Five sessions
- Interactive class
- Homework Assignments
- No bad questions
- Need your participation
- Goal is to improve your chances of winning
SBIR and STTR Programs

What are they?
What are their differences?
How do they work?
Some facts!
Future?
SBIR and STTR Programs were legislated to fund early-stage R&D at small technology companies to:

- stimulate technological innovation
- increase private sector commercialization of federal R&D
- increase small business participation in federally funded R&D
- foster participation by minority and disadvantaged firms in technological innovation

Reference – NIST Dr. Clara Asmail
From the Industrial Triangle to the Entrepreneurial Box

- Personal Savings
- Angel Investing
- Venture Capital

- Stockholders' Investments
- Corporate Debt

- Government Contracts
- Foundation Grants
- Endowment Income
- Gifts

- Tech Transfer Process
- Corporate Transformation

- Industry / Government Contracting
- Government / University Collaboration

- Establishing Large-scale Firms

Start-Ups

Universities

Government
SBIR/STTR Program Descriptions

2.5%

**SBIR (Small Business Innovation Research):** set-aside program for small businesses to participate in federal research and development—with potential for commercialization

0.3%

**STTR (Small Business Technology Transfer):** set-aside program to facilitate cooperative research and development between small businesses and non-profit research institutions—with potential for commercialization
SBIR Program

Federal agencies expending > $100 M in extramural R&D must set aside 2.5% for SBIR

11 participating agencies:

Agriculture  Commerce  Defense
Education  Energy  EPA
HHS  Homeland Security  NASA
NSF  Transportation

grants  contracts  both: grants+contracts
<table>
<thead>
<tr>
<th>Agency</th>
<th>SBIR Amount</th>
<th>STTR Amount</th>
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<tbody>
<tr>
<td>DoD</td>
<td>$1.23 Billion</td>
<td>$141 Million</td>
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<tr>
<td>HHS (NIH/CDC/FDA)</td>
<td>$600 Million</td>
<td>$72 Million</td>
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<tr>
<td>Energy</td>
<td>$138 Million</td>
<td>$17 Million</td>
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<tr>
<td>NASA</td>
<td>$113.4 Million</td>
<td>$13.6 Million</td>
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<tr>
<td>NSF</td>
<td>$97 Million</td>
<td>$13 Million</td>
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<tr>
<td>Homeland Security</td>
<td>$20.5 Million</td>
<td></td>
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<tr>
<td>Agriculture</td>
<td>$18.3 Million</td>
<td></td>
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<tr>
<td>Education</td>
<td>$9.9 Million</td>
<td></td>
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<tr>
<td>Transportation</td>
<td>$8 Million</td>
<td></td>
</tr>
<tr>
<td>Commerce (NOAA/NIST)</td>
<td>$8 Million</td>
<td></td>
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<tr>
<td>EPA</td>
<td>$5 Million</td>
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$2.5 Billion in FY09
Agency Differences: Type of Award

- **Contracting Agencies**
  - Agency establishes plans, protocols, and requirements
  - Highly focused topics
  - *Procurement mechanism* for DoD and NASA
  - More fiscal requirements

- **Granting Agencies**
  - Investigator initiates approach
  - Less-specified topics
  - *Assistance mechanism*
  - More Flexibility

- **DoD, NASA, EPA, DOC, HHS/NIH, DOT, ED, DHS**

- **HHS/NIH, ED, NSF, USDA, DOE**
Agency Differences

Many differences among agencies with regard to:
- Funding levels
- Topic areas
- Number and timing of solicitations
- Proposal preparation instructions
- Submission process
- Type of award
- Review process
- Odds of receiving funding
STTR Program

Federal agencies expending > $1 B in extramural R&D must set aside 0.3% for STTR

5 participating agencies:

- Defense
- Energy
- HHS
- NASA
- NSF
Agency Differences

- Odds of receiving funding
  - Phase I: \(~1/5 - \sim 1/12\) for SBIR; average across agencies is \(~1/8\).
    - you may be *invited* to apply for Phase II for some agencies
  - Phase II: \(~1/3 - \sim 1/2\)
  - Depends on budget, number of proposals submitted, target number of Phase I vs. Phase II
  - You must receive a Phase I award before applying for Phase II
Comparing SBIR and STTR Programs:

<table>
<thead>
<tr>
<th></th>
<th>SBIR</th>
<th>STTR</th>
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<tr>
<td><strong>Firm eligibility</strong></td>
<td>US, for-profit, and fewer than 500 employees</td>
<td></td>
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<tr>
<td><strong>Collaboration with research institution</strong></td>
<td>May subcontract</td>
<td>Must have formal collaboration agreement with university, FFRDC or other non-profit research institution</td>
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<tr>
<td><strong>Principal Investigator</strong></td>
<td>Must spend more than 1/2 time employed by firm</td>
<td>Not specified</td>
</tr>
<tr>
<td><strong>Work breakdown</strong></td>
<td>1/3 of Phase I and 1/2 of Phase II</td>
<td>Firm must perform a min of 40% of work and the research institution a min of 30% of work for both phases</td>
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STTR

SBIR
Key Differences Between the SBIR and STTR Programs

- **Research Partner**

  **SBIR:** *Permits* research institution partners
  (Outsource ~ 33% Phase I and 50% Phase II R&D)

  **STTR:** *Requires* research institution partners
  (e.g., universities)

  [40% small business concern (for-profit) and 30% U.S. research institution (non-profit)]

*Funding is always awarded to the small business*
“The SBIR Program supports the transfer of research into the marketplace, as well as the general expansion of scientific and technical knowledge ...”

> 1/3 respondents to NRC study reported involvement with university in their SBIR project … among those:

> 2/3 of companies reported at least one founder was former academic

~ 1/3 of founders were most recently employed as academic before founding company

~ 27% of projects used university faculty as contractors, 17% used universities themselves as subcontractors, and 15% employed graduate students”

Eligibility

- Small business must have fewer than 500 employees, including affiliates
- Must be organized for profit
- Must be >51% US-owned by individuals and individually operated OR at least 51% owned and controlled by another for-profit business concern that is at least 51% owned and controlled by one or more individuals
- All work must be performed in the US
Eligibility

- Principal Investigator must be primarily employed (>50%) by the small business for SBIR; for STTR DoD, NIH, and NASA permit PI to be primarily employed by the non-profit partner
- SBIR company must perform at least 2/3 of effort for Phase I projects and at least 1/2 of Phase II
- Small business must perform at least 40% of the effort for an STTR project
- Requirements apply “at the time of award and for the duration of the project”
Overview of the SBIR/STTR Programs

- **Phase I**
  - Proof-of-concept/feasibility study
  - Up to $150,000 for 6 month project (SBIR) or $100,000 for 12 month project (STTR)
  - Ranges from $80k to $150k

- **Phase II**
  - Full Research/R&D effort
  - Up to $1,000,000 for 2 year project ($750,000 for STTR)

- **Phase III**
  - Commercialization phase
  - Requires the use of non-SBIR/STTR funds
  - Can lead to a DOD contract
Agencies describe R&D topics in solicitations.

Small Business Concerns prepare proposals. Unsolicited proposals are not accepted.

Agencies evaluate proposals based on technical merit, firm’s qualifications, and commercial potential/societal impact.

Agencies make Phase I awards.
Improving Your Odds

- Need an innovative idea
- Need credibility as a researcher and a company
- Understand the agency’s mission and needs—example EPA’s White Paper.
- Respond to the appropriate solicitation or topic (unsolicited proposals are not accepted)
- Follow the rules
- Call the program manager prior to the date and discuss your idea.
Two Congressional SBIR Bills

S 3362  
Passed SBC

- Limits VC owned firms to 18% of NIH and 8% elsewhere
- Increases set-aside to 3.5%
- Extends SBIR until 2022
- Increase award amount by inflation only

HR 5819  
Passed House

- Allow unlimited participation of majority owned VC firms
- Does not increase set-aside
- Extends SBIR until 2010
- Triple award sizes
- Allows multiple phase 2 and possibility of skipping phase 1
Improving Your Odds: Meet Agency Priorities

- E.O. 13329 “Encouraging Innovation in Manufacturing”
  - SBIR/STTR program managers are instructed to give priority to manufacturing-related R&D
  - Priority for all agencies

  - Directs SBIR Programs to give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system R&D projects.
Agency Differences: Funding Levels

- **Phase I SBIR (up to 6 months duration)**
  - $75,000: ED (grants)
  - $80,000: EPA
  - $90,000: USDA, NIST,
  - $95,000: NOAA
  - Up to $100,000: DoD, NASA, DOE, DOT, DHS, ED (contracts)
  - Up to $150,000: NIH, NSF, and DHS

- **Phase II SBIR (up to two years duration)**
  - $300,000: NIST, EPA
  - $400,000: USDA, NOAA
  - $500,000: NSF, ED (grants)
  - $600,000: NASA
  - $750,000: DoD, DOE, DOT, DHS, ED (contracts)
  - $1 million: DHS, NIH
Agency Differences: Funding Levels

- Phase I STTR
  - Up to $100,000: NASA, NIH, DoD, DOE
  - Up to $150,000: NSF
  - Up to 12 months in duration

- Phase II STTR
  - Does not include supplements or matching funding programs
  - $500,000: NSF
  - $600,000: NASA
  - $750,000: DoD, NIH, DOE
  - Up to two years duration
Agency Differences: Follow-on Funding

Several agencies have mechanisms for “gap” or follow-on funding to continue development of technologies that may need to go through a regulatory approvals process or to meet additional developmental requirements for successful commercialization.

Often these require the small business to provide matching funds from a third party.
Innovation through Partnerships

Filling Gaps in Current Portfolio

Valley of Death

Resources Invested

University

Investors

Industry

Foundations

Small Business

Discovery

Development

Commercialization

Level of Development
Agency Differences: Contact

- Direct contact with agency officials concerning a particular topic may be limited to a specified time period
  - DoD
    - Monitor questions posted on SBIR/STTR Interactive Topic Information System (http://www.dodsbir.net/sitis/)
  - ED (contracts)
  - Homeland Security
- Direct contact with agency officials may be prohibited
  - NOAA
Agency Differences: Deadlines

- There is no single deadline for submitting SBIR or STTR applications
- Some agencies have multiple deadlines per year
- Some agencies have one deadline per year
- Deadlines vary as to the date and time
Agency Differences: Submission Process

- May be required to use agency website for submission
  - DoD (DoD Submission Site)
  - NSF (Fastlane)
- May be required to use Grants.gov
- EPA, NIST and NOAA require hard copies of proposals to be mailed in
Agency Differences: Contact

- Can contact other agencies throughout the solicitation period
- Helps with SBIR/STTR strategy:
  - Identify the agency’s needs that are being addressed by the topic
  - Assess appropriateness of your idea for a particular topic
  - Determine how much competition or target number of awards
  - Identify other potential opportunities
Agency Differences: Contact

- Contacting program officials:
  - Look through solicitation or guidelines first.
  - Be prepared: have “elevator speech” or white paper that briefly describes your technology or idea.
  - Have a prioritized list of questions.
  - Spend about 10–15 minutes on the phone: many others are also contacting them.
  - Send an email if you can with your summary and schedule a time to talk.
Many agencies use administrative review to screen proposals

- May reject proposals without further review if they fail to adhere to proposal preparation guidelines or other screening criteria
  - Page limitations
  - Font sizes
  - Specified elements (in order)
  - Technical merit
  - “Responsiveness”
  - Need Intellectual merit and broader impact
Review Process

- Internal (agency officials, scientists, engineers)
  - NASA
  - DoD
  - NIST
  - DOT

- Get to know the agency before submitting: contact program manager/topic author (when permitted) and find out as much as possible about the topic
Review Process

- External (Peer)
  - USDA (4–6 ad hoc reviewers)
  - NIH (academia/industry)
  - NSF (academic/industry)
    - Phase I and Phase II have both technical and commercial reviewers
  - DOE (three independent external reviewers)
  - ED
Agency Differences: Review Process

- Both
  - Homeland Security—may include internal and external reviewers as well as end-users
  - EPA—external peer review to assign ratings; internal relevancy review (only for proposals rated excellent and very good)
Duplicate Proposals

- Can you submit duplicate proposals?
Can submit essentially duplicate proposals to different agencies (but not to different components within an agency)

However, *duplicate proposals will not be funded*

Can submit multiple proposals related to a “platform” technology, provided the projects are substantially different
Key Differences Between SBIR/STTR Proposals and Other Research Proposals

- SBIR/STTR research topic must have commercial potential
  - Requires knowledge of market space as well as state-of-the-art of technology
  - Goal should be a product or service, not more research or publications
  - Impacts can be financial as well as scientific or educational
  - Phase II applications require a detailed commercialization plan
Key Differences Between SBIR/STTR Proposals and Other Research Proposals

- SBIR/STTR funding is not meant to build your laboratory
  - Assume you have or have access to equipment and facilities you need to complete the project
  - Equipment requests may be capped by agencies

- SBIR/STTR funding is not intended to develop your career
  - No special consideration or programs for “new” investigators
  - Newcomers compete with well established and experienced companies
Key Differences Between SBIR/STTR Proposals and Other Research Proposals

- SBIR/STTR awards may be contracts
  - Contracts mean milestones and deliverables
- SBIR/STTR awards come with more stringent reporting requirements
  - Accounting system approval may be required
  - Expect audits in Phase II
- Companies may be penalized for receiving too many SBIR or STTR awards
Similarities Between SBIR/STTR Proposals and Other (Research) Proposals

- Scientific merit is critical for success
- Must address agency/organizational needs or program priorities
- Selection is a highly competitive process
- Proposal development and writing process are similar
- All types of proposals can be viewed as marketing documents
Health and Human Services (NIH)

- Grants and Contracts
  - Grants: investigator-initiated (many “topic” areas)
  - Contracts: specific topics
  - “Omnibus” solicitation and special program announcements/requests for applications

- Multiple deadlines throughout the year
  - April 5, August 5, and December 5 for non-AIDS related topics
  - May 1, September 1, and January 1 for AIDS related topics
  - Contracts deadline will be announced

- External review (new review criteria implemented)

- New page limits and other changes in proposal structure in place for 2010 submissions

- FY 2009 funding: $600 Million (SBIR); $72 Million (STTR)

- Flexible agency (can exceed statutory guidelines for funding limits and time frames)

- Has STTR program

- Has FastTrack Program

- Other assistance (Niche assessment, Competing continuation Phase II, CAP)

- Electronic submission: register on Grants.gov and eRA Commons

Grants
Solicitation topics vary year to year but are typically broad
External review (both technical merit and commercial potential)
Electronic submission through FastLane
FY 2009 funding: $97 Million (SBIR); $13 Million (STTR)
Additional assistance (Phase Ib; Phase IIa, IIb, MatchMaker)
NSF is typically not the final customer
Focus on near-term commercialization potential: Phase I applications require 3–5 commercialization plan
Contracts (topics are very specific)
Differences exist among the various DoD components
Multiple deadlines throughout the year (but always at 6:00 am ET)
Internal review
Establishing a relationship with program managers/topic authors (TPOC) is very important
FY 2009 funding $1.23 billion (SBIR and STTR)
Electronic submission through DoD submission site
DoD SBIR/STTR Help Desk is very helpful (866–724–7457)
Grants (one application deadline per year)
13 Topic areas, usually do not vary from year to year
  ◦ Ideas are investigator initiated
  ◦ Very broad array of technologies are funded
Review panel of outside experts
Phase I and Phase II commercialization programs
Electronic submission through Grants.gov
FY 2009 funding: $18.3 Million
Department of Commerce: NIST

- Awards contracts
- Emphasizes transfer of federal technologies to small businesses (SBIR TT) and meeting NIST programmatic goals (SBIR R)
- Has administrative and internal review process
- Does not accept electronic submission of proposals
- Direct contact with agency prohibited during open solicitation period (monitor bulletin board on website)
Awards contracts
Focuses on Ecosystems, Climate, Weather and Water, and Commerce and Transportation
Review process includes administrative screening and internal evaluation
Uses hardcopy submission
Direct contact with agency prohibited during open solicitation period
Website: http://www.oar.noaa.gov/orta/
Awards contracts ($100K Phase I, $750K Phase II)
Internal review process
May issue Fast-Track solicitation along with or in lieu of Phase I offering
Focus is on education technology products that improve student learning or teacher practices
FY 2008 funding $5.45 million
Website: http://www.ed.gov/programs/sbir/index.html
Department of Education: OSERS/NIDRR

- Award grants ($75K Phase I, $500K Phase II)
- Administrative screening and external review
- Focus is on R&D of technology for individuals with disabilities
- FY 2008 funding $3.63 million
- Electronic submission through Grants.gov
Awards grants
External review
Four agency goals: Defense, Energy, Science, Environment
Topics vary by solicitation; recommended that applicants contact topic authors
Can be considered for under SBIR or STTR if meet all criteria (check box)
FY 2009 funding $138 million (SBIR) and $17 million (STTR)
Web-Based, Technical Assistance Portal (http://doecapreg.foresightst.com/)
Commercialization Assessments
Website: http://sbir.er.doe.gov/sbir/
Awards contracts
Involves DHS’s S&T Directorate and DND Office
  ◦ S&T: $100K Phase I; $750K Phase II
  ◦ DNDO: $150K Phase I; $1 million Phase II
  ◦ Phase II proposals are evaluated and awarded incrementally
Topics align with needs of agency and authored by DHS program managers
Internal review (but may seek outside advice): merit and relevance
Seeking near-term commercialization potential projects
Has Phase II cost-match program
FY 2009 funding $20.5 million
Electronic submission through DHS website
Awards contracts (Phase II by invitation only)
Topics developed by DOT’s Operating Administrations
Internal review
Direct contact with agency not permitted during open solicitation and evaluation period
FY 2009 funding $8 million
Electronic submission through DOT SBIR website
Website: http://www.volpe.dot.gov/sbir/contact.html
Awards contracts
Topics tend vary year to year, but are relatively broad
  ◦ Emphasize EPA regions, but any company across the country can apply
External peer review followed by internal agency relevancy review
Collaboration with NSF on environmental technologies
Phase II options (commercialization and verification)
FY 2009 funding $5 million
Website: [www.epa.gov/ncer/sbir](http://www.epa.gov/ncer/sbir)
Awards contracts
Administrative screening and internal review
Topics align with Mission Directorates priorities
  ◦ Communicate with technical points of contact to help develop an internal champion
FY 2009 funding: $113.4 million (SBIR); 13.6 million (STTR)
Prime customer for SBIR and STTR developed technologies: has issued many multi-million dollar Phase III follow-on contracts
Electronic submission through NASA’s Electronic Submission Handbook
Website: http://sbir.gsfc.nasa.gov/SBIR/SBIR.html
Getting Starting: Register for Electronic Submission

- Most agencies have moved to an electronic submission process for SBIR/STTR applications
- Process requires several time-consuming registration steps
Steps for Registration

1. Obtain a DUNS number: available free by calling Dun & Bradstreet at 1-866-705-5711

2. Register in the Central Contractor Registry (CCR)
   a. Need a DUNS number
   b. Need a Taxpayer Identification Number (TIN)
   c. Need statistical information about your company
   d. Need electronic funds transfer information
   e. Assign an eBusiness Point of Contact (EPOC)
   f. Must renew/validate your registration once a year
Wait! Does This Mean I Have to Have a Company?

- Yes! You need to have formed a legal entity and set up a bank account
- Your company does not need to have significant operations until an award is made
  - But, remember that reviewers will be evaluating your facilities and resources for performing and SBIR or STTR project
4. Register on Grants.gov
   b. Make sure you have an Authorized Organizational Representative (AOR) registered in Grants.gov

1. There are several screens to go through when registering your AOR—be sure to complete the process
2. Your AOR must be authorized to submit grants by your E-Business Point of Contact
Electronic Submission Tips

- Servers get busy near deadlines: submit early if possible
- Be prepared for hiccups
- Be sure you have registered where directed by the agency
- Prepare your proposal as a single document using word processing software, then break into appropriate PDF documents as directed by the solicitation instructions
- If applicable, download application instructions and application package early and save to your hard drive
Useful Links

- [http://www.ccr.gov](http://www.ccr.gov) (CCR site)
- [http://www.grants.gov](http://www.grants.gov) (Grants.gov site)
Homework