

# FREE MONEY FEDERAL SBIR/STTR PROGRAMS

## AMERICA'S SEED FUND™

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# Ralph Hershberger CV

- ❑ Graduated from CMU in 1973 in Metallurgy & Material Science (Material Science & Engineering).
- ❑ MBA from Wharton in 1981.
- ❑ Entered the start-up world in 1990.
- ❑ Active in 3 startups with a 2-1 record.
- ❑ NSF SBIR commercial reviewer since 2001.
- ❑ Member of the NSF I-Corps pilot team.
- ❑ SBIR writer since 2005.
- ❑ Small Business columnist for the Arizona Daily Star.
- ❑ Member of Desert Angels and Maine Angels.
- ❑ Former Mentor-in-Residence at the AZ Center for Innovation.
- ❑ Past President of the Southern Arizona chapter of SCORE.

# SBIR SEMINAR TOPICS

- 1. History, Purpose, Participants, Definitions, Funding Continuum, Reasons to Consider
- 2. Proposal Mechanics, Registrations, Agency and Domain Selections, Awards
- 3. Proposal Review Process, Reviewers, Helpful hints
- 4. FAQ

# SBIR/STTR HISTORY

- Government side-aside program, administered by the SBA, that requires 3.2% of an agency's award budget goes to small businesses.
- Started in 1977 by NSF.
- 11 Federal Agencies participate with multiple entities.

# SBIR/STTR HISTORY

- SBIR (Small Business Innovation Research) are for company and individual researchers. 87% of awards are for SBIRs.
- STTR (Small Business Technology Transfer) is a cooperative effort to expand public private partnerships that usually involves universities.

# GENERAL REQUIREMENTS FOR AN SBIR.

- ❑ To be defined as a small business the grantee must:
  - ❑ Set up as a for profit organization
  - ❑ 500 or fewer employees
  - ❑ Principal Investigator (PI) must be employed by the company
  - ❑ Must be U.S. majority owned



# PARTICIPATING AGENCIES

## ranked by 2018 award \$

Defense (13)

Health & Human Services-NIH (30), CDC

Energy

NSF

NASA

Agriculture

Homeland Security

Education

Commerce (2) NIST, NOAA

EPA

Transportation

# PARTICIPATING AGENCIES

## ranked by award cycles/year

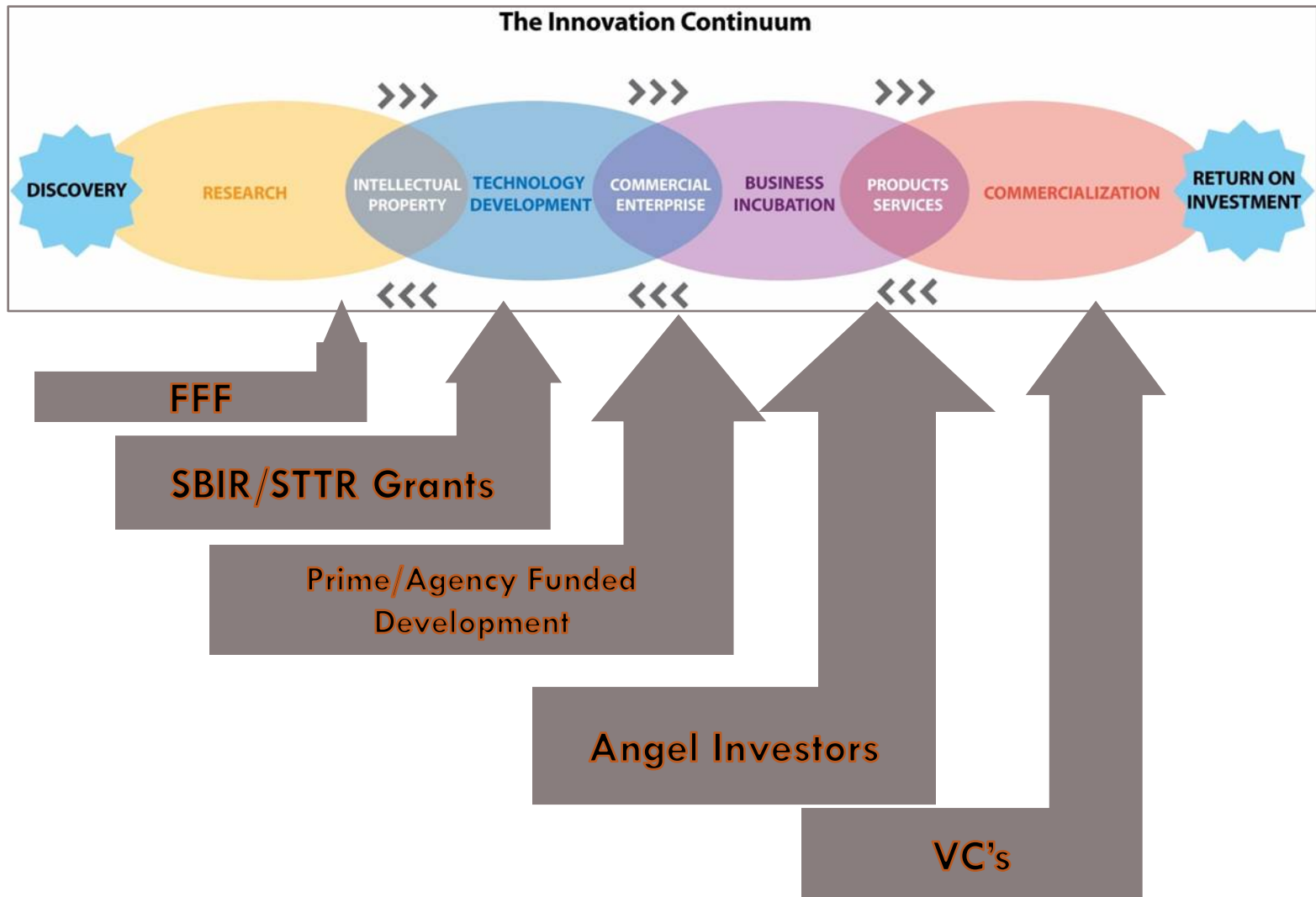
1X Agriculture  
Health & Human Services  
EPA  
Education  
Homeland Security  
NASA  
NIST, NOAA  
Transportation

3X Energy, DOD, NIH

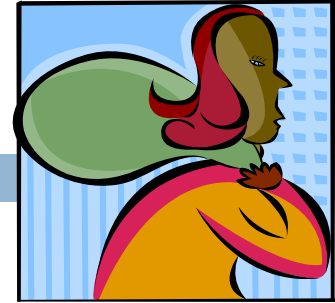
4X NSF



# THE INNOVATION CONTINUUM



# WHY DO THIS?



- SBIR programs fill a gap.
- What are the traditional sources of funding?
  - ▣ FFF – limited amounts.
  - ▣ Banks – reduce exposure, want 3 years of statements.
  - ▣ Angel investors – equity dilution, favored verticals
  - ▣ Venture capital – selective & moved to mezzanine financing
  - ▣ SBA loans – insured by the SBA but local bank determines approval, rates, and terms. They want collateral.
  - ▣ Microloans-Loans for small amounts.

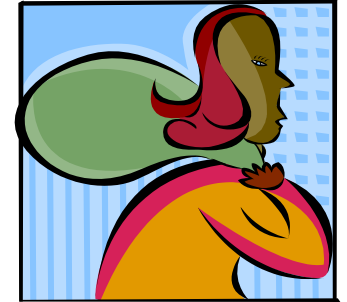
# WHY DO THIS (NSF)?

- All phases=\$1.506MM grant

- Phase 1 = \$256,000

- Phase II = \$750,000

- Phase IIB = \$500,000 @ 50%



- PLUS the \$1MM raised to secure the "B" money.

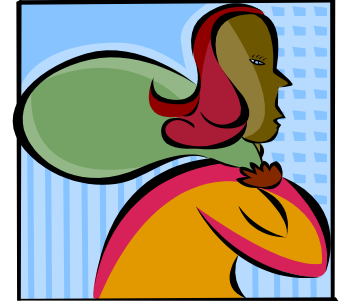


# WHY DO THIS (NIH)?

□ All phases=\$1,932,000 grant

□ Phase 1 = \$ 252,000

□ Phase II = \$1,680,000



# WHY DO THIS?



There are two compelling reasons to consider an SBIR.

1. It's a grant, not a loan.
2. SBIR awards are non-dilutive.

# HOW DO I GET STARTED?

- ❑ Create a corporate entity e.g. LLC
- ❑ Obtain an E.I.N.
- ❑ Register for a DUNS number
- ❑ Register in SAM
- ❑ Register in SBA website
- ❑ Register in appropriate agency websites e.g. grants.gov, FASTLANE
- ❑ Review agency SBIR websites for an appropriate domain.



# DOMAIN SELECTION

- NIH & NSF are open solicitations i.e.
  - ▣ They are not the end customer.
  - ▣ You define the problem and propose a solution.
  - ▣ Select a relevant domain
- Most other agencies have determined what problem they want solved. You are proposing a solution.

# NSF DOMAINS

- ❑ Biomedical Technologies and Medical Devices
- ❑ Artificial Intelligence & Quantum Information Technologies
- ❑ Chemical Technologies, Energy Technologies,  
& Distributed Ledgers
- ❑ Information Technologies
- ❑ Advanced Materials, Nanotechnology, Photonics, Power  
Management, Semiconductors, & Other Topics
- ❑ Environmental Technologies
- ❑ Advanced Manufacturing
- ❑ Pharmaceutical Technologies & Digital Health
- ❑ Robotics, Space Technologies, & Wireless Technologies
- ❑ Biological Technologies
- ❑ Internet of Things (IOT), Instrumentation, & Hardware Systems



# ARE YOU READY?

- ❑ Phase I - \$256K (NSF)
  - ❑ Technology Elements
    - ❑ Research to establish innovation
      - ❑ Review prior awards/awardees
    - ❑ Proof of Concept
      - ❑ Do the critical experiment!
  - ❑ A realistic work scope (12 months).
  - ❑ Qualified team & facilities.



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# ARE YOU READY?

## ❑ Phase I

### ❑ Commercial Elements

- ❑ Business Plan
- ❑ Potential Customers
  - ❑ Letters of support
- ❑ Early stage financing
  - ❑ Explore all options
- ❑ Prior commercial experience

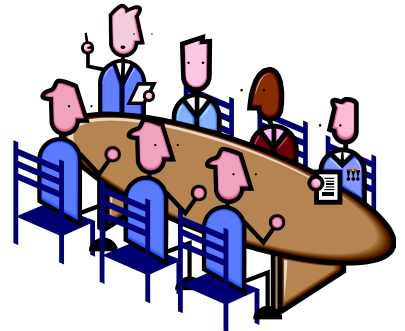


# Unique Aspects of NSF SBIR/STTR

- Must be high-risk, high-payback innovations with the potential for commercialization.
- NSF does NOT fund
  - ▣ *Evolutionary* optimization of existing products and processes or modifications to broaden the scope of an existing product, process or application.
  - ▣ Analytical or “market” studies of technologies.
  - ▣ Combinations of existing technologies.

# THE AUDIENCE (NSF)

- You are writing for two groups.



- Domain Area Program Directors
- Panel Reviewers




# THE AUDIENCE



## □ PANELISTS

- ▣ NSF & NIH use outside experts.
- ▣ Panel consists of 6-10 reviewers divided between technical and commercial expertise.
- ▣ Technical reviewers are academics, heads of R&D, CTO, or CEO of start-ups.
- ▣ Commercial reviewers are business development pros, CEO, strategic & commercial leads from corporations & start-ups, and VC's.
- ▣ Some may have in-depth knowledge, but the proposal should include a tutorial element.

# REVIEW DYNAMICS

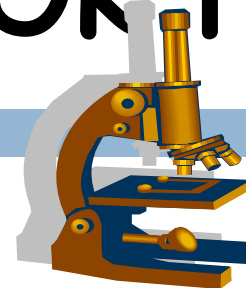
- At least 2 technical & 2 commercial panelists perform a deep dive review of each proposal.
- Prior to the panel meeting, reviewers rate proposals.
- ▣ Receive abstracts and select the subject areas that are within their expertise.
- ▣ Comment on the complete proposal based on a template of issues ([www.nsf.gov](http://www.nsf.gov)).
- ▣ Excellent, very good, good, fair, poor.

# WHAT DO WE LOOK FOR?



- Tell me a story.
  - ▣ Best to start with an identified market need v. a better mouse trap looking for a home.
  - ▣ Impress me. NSF wants a homerun. Incrementalism is fatal.
  - ▣ Context - a review of existing technology, patents, and products in the marketplace.
  - ▣ Reviewers will check your claims of needs, uniqueness, and patent coverage.
  - ▣ DIFFERENTIATION

# WHAT DO WE LOOK FOR?



## □ Phase 1

- Phase 1 emphasizes the proof of concept.
- Perform the critical experiment.
- Emphasize innovation, clarity of proposal, acknowledgement of key challenges.
- Evidence/validation of market need.
  - Third party support letters from potential partner companies, alternative funding sources.



# REVIEW DYNAMICS

Meet at NSF to review proposals and rate them as:

- ▣ HR - Highly recommended
- ▣ R - Recommended
- ▣ DNC - Do not consider.



- ▣ PD's make final selections and recommendations to senior NSF Engineering Directorate staff.

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# FAQ

## WHAT ARE THE ODDS?



- **DOD-2017- # of awards: 2,378**
- Phase 1 awards ranged from \$111,000 to \$256,000 for 12 months.
- 2017 selection rate for Phase I was 19%.
- Phase II awards range from \$1,000,000 to \$1,250,000 for 24 months.
- 2017 selection rate of Phase II was 69%
- Source: [sbir.gov/awards/annual-reports](http://sbir.gov/awards/annual-reports)

# FAQ

## WHAT ARE THE ODDS?



- **NIH-2017 # of awards: 1,165**
- ▣ Phase 1 awards are \$252,131 for 12 months.
- ▣ 2017 Phase II success rate was 29%.
- ▣ Phase II awards are \$1,680,579 for 24 months.
- ▣ 2017 Phase II success rate was 58%.
- ▣ Source: [sbir.gov/awards/annual-reports](http://sbir.gov/awards/annual-reports)

# FAQ

## WHAT ARE THE ODDS?



- **NSF**-2017 # of awards: 346
- The current NSF Phase 1 review cycle has an award pool of \$18,750,000. Awards are \$256K so there are approx. 75 Phase 1 awards per cycle.
- The success rate for Phase 1 proposals is 10-15%. This is entirely dependent on the quality and the number of proposals submitted.
- Phase 2 success rate is 40-50%.
- Source: [sbir.gov/awards/annual-reports](http://sbir.gov/awards/annual-reports)

# FAQ

## IS MY IDEA WORTHY?



- That's the purpose of the Project Pitch (NSF) or 3-page Executive Summary (NIH) sent to the relevant agency or PD/PM. If they believe the idea has merit, you will be invited to submit a full proposal.

□

□

# FAQ-What's the Downside?

## □ Timing

- Proposal preparation can take 100+ hours.
- It's a government program.

Compliance matters more than content

Solicitations and instructions are not user friendly.

- Delayed response.

Proposal submission to receipt of money is about 6 months.

# FAQ-WHAT CONSTITUTES A COMMERCIALIZATION PLAN?

- ❑ The key element is validation of customer interest.
- ❑ You must approach potential customers and discuss your concept. Try to answer:
  - Does it solve any of their problems?
  - If so, what is it worth to them?
  - How many would they buy over time?



# FAQ-Can A Rejected Proposal be Resubmitted?

- Varies by Agency
  - ▣ NSF Phase 1-Yes  
Phase 2-No
  - ▣ NIH Phase 1-Yes  
Phase 2-Yes



Each proposal receives a detailed set of reviewers' comments that explains pros and cons of the proposal and suggestions to include for a resubmission.



# FAQ: Is Shark Tank an Accurate Depiction of an Angel Pitch Process?

- ❑ It is an entertainment program.
- ❑ Valid elements:
  - ▣ Quick fire questions.
  - ▣ Investor focus on the problem-solving aspects of an offering.
  - ▣ Valuation squeeze.
- ❑ Non-valid aspects
  - ▣ Superficial pitches.
  - ▣ Rapid decisions by investors.
  - ▣ Large stakes by 1 or 2 investors.

