

Winning SBIRs

Steve Derezinski
MIT SBIR IAP class 1

Critical funding for your tech spinout

About Steve Derezinski

- S.B. Mechanical Engineering; MBA, Sloan Fellow, all MIT
- Founded and ran GT VentureLab – spun out 8 companies and raised \$43M in capital
- Today: Kendall Square Cofoundry – forming multiple companies from early technology



My Federal Contract experience

Federal Awards/Contracts (partial list ~\$23M)

- 2023: \$275k: NSF SBIR Phase I on DAO Governance
 - 2020: \$250k: NSF SBIR Phase I on Prize-Linked Stablecoins
 - 2015: \$2.85M: ARPA-E Program on transformational metal production
 - 2013: \$4M: ARPA-E Program on Aluminum
 - 2011: \$4M: ARPA-E Program on Magnesium
 - 2010: \$12M: DOE Vehicle Program on New Magnesium production
 - 2009: \$100k: NSF SBIR Phase I: Innovative Magnesium Production
 - 2007: \$90k: NASA SBIR Phase I: nano-G accelerometer / micro laser interferometer
- + another \$17M of various Federal Contracts

Commercializing Disruptive Technology is HARD!

“

If I had asked people what they wanted, they would have said faster horses.

-Henry Ford

“

What we have found is that, in general, customers don't know what they want until you show it to them.

Steve Jobs

Co-Founder & former CEO of Apple Inc



Valley of Death help with SBIR

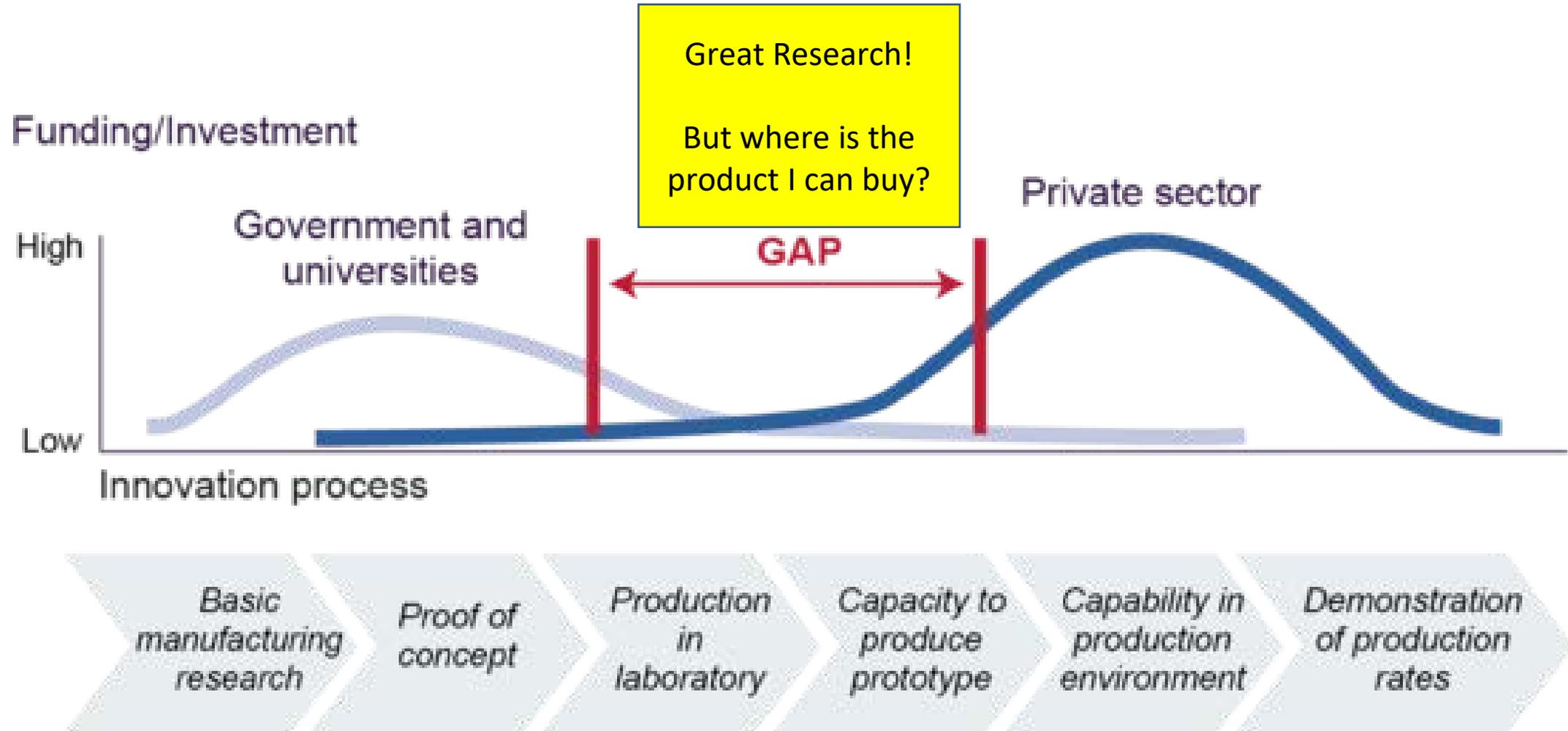
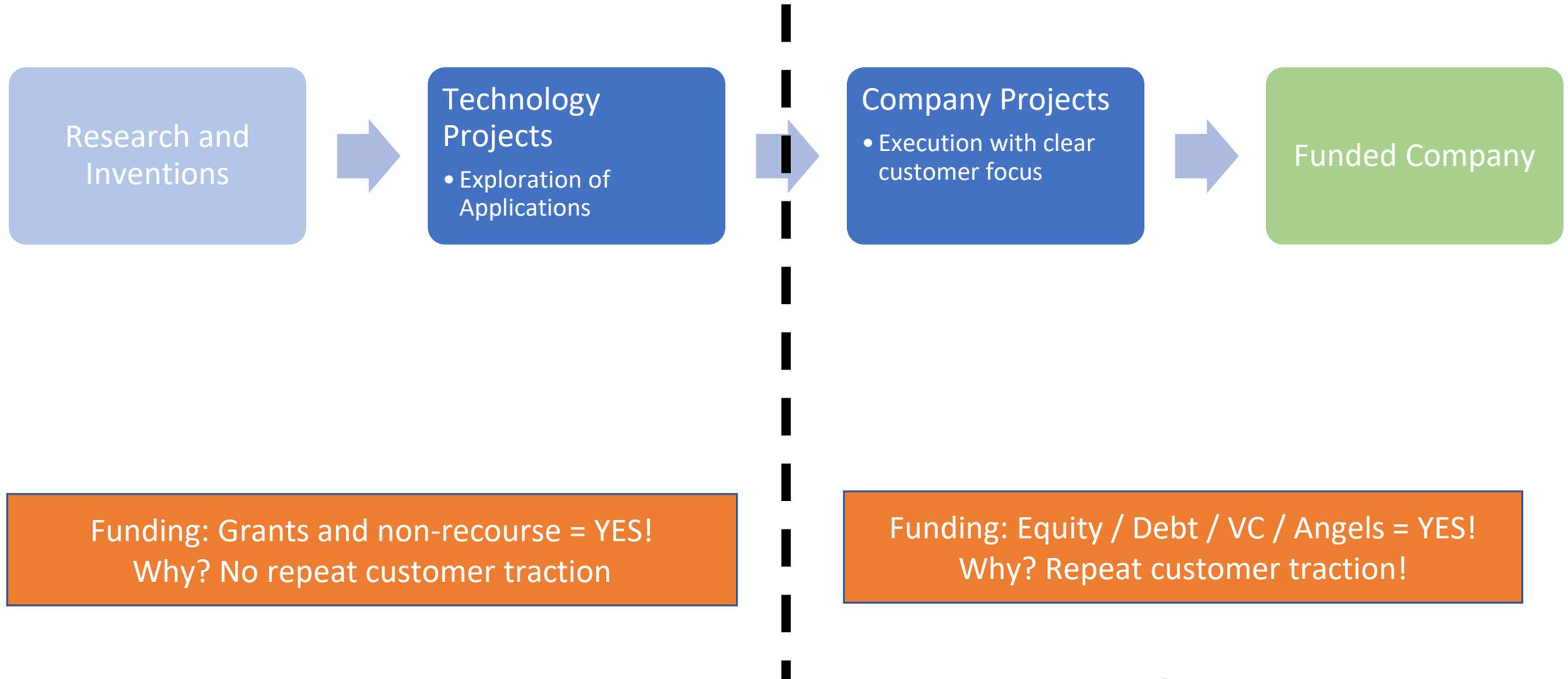


Image is in the public domain and is by GAO.

Source: GAO adapted from Executive Office of the President. | GAO-21-202

Research to Market Process



Why SBIR? A few reasons...

- You have a technology that has been well researched, published, maybe invention disclosure toward a patent.
- You need funding to build a prototype that CUSTOMERS can test.
- Where can you get the funding? Angels? VCs? Mom & Dad?
- DO NOT TAKE RECOURSE FUNDING AT THIS STAGE!

SBIR Funding is non-recourse and is perfectly designed for this.

- It is ~\$4B EVERY YEAR of federal funds meant to help move technology
 - (\$4.4B in FY22)
- It is the best source of funding de-risk the technology
- Some equity investors view winning an SBIR as positive during due diligence

VC vs. SBIRS

Understanding Incentives of fund sources

- “Show me the incentives, and I'll show you the outcome” – C. Munger
- VC Investor Incentive?
 - Maximize returns
 - get a big piece of equity
 - get to fast exit
- SBIR Program Manager Incentive?
 - DO NOT GET FIRED
 - Do not be embarrassed by their decision to fund you
 - Fund interesting technologies to progress their agenda

Agencies and Amount of Awards, PHI

Award Summary By Agency, FY22, Phase I only				
Agency	Award Count	# Of Firms	Obligated Amount	Avg Award Ph I
DOD	1,691	1,012	\$274,304,177	\$162,214
HHS	868	736	\$306,428,684	\$353,028
DOE	442	329	\$93,766,444	\$212,141
NASA	331	255	\$50,036,314	\$151,167
NSF	324	324	\$82,776,384	\$255,483
USDA	78	77	\$12,725,308	\$163,145
DHS	30	29	\$4,460,061	\$148,669
ED	12	12	\$3,000,000	\$250,000
DOC	39	39	\$5,412,353	\$138,778
EPA	31	30	\$3,089,894	\$99,674
DOT	12	12	\$2,086,671	\$173,889
Totals:	3,858		\$ 838,086,291	

Agencies and Amount of Awards, PHII

Award Summary By Agency, FY22, Phase II only				
Agency	Award Count	# Of Firms	Obligated Amount	Avg Award PhII
DOD	1,593	1,004	\$1,979,387,787	\$1,242,554
HHS	512	454	\$974,988,552	\$1,904,275
DOE	246	197	\$279,116,881	\$1,134,621
NASA	151	129	\$150,823,787	\$998,833
NSF	121	121	\$141,464,248	\$1,169,126
USDA	34	34	\$21,678,752	\$637,610
DHS	14	13	\$12,174,333	\$869,595
ED	10	10	\$10,000,000	\$1,000,000
DOC	19	19	\$8,796,922	\$462,996
EPA	9	9	\$3,999,571	\$444,397
DOT	17	16	\$11,332,494	\$666,617
Totals:	2,726		\$ 3,593,763,327	
		FY22	\$ 4,431,849,618	

NSF Video Prerequisite by Ben Schrag

Questions he answers:

- Admin process
- Which sites to register with
- How long the standard process takes
- How the NSF does their applications

Federal Funding.

Federal agencies with extramural R&D budgets exceeding \$100 million are required to allocate 3.2% to fund small businesses through the SBIR (Small Business Innovation Research) program.

In the same way, federal agencies with extramural R&D budgets exceeding \$1 billion are required to allocate 0.45% to fund small businesses through the STTR (Small Business Technology Transfer) program. STTR bridges the gap between small business and the U.S. research institution ecosystem:

- Requires partnership with a U.S. non-profit research institution
- Requires R&D from both the business (at least 40%) and research institution (at least 30%)

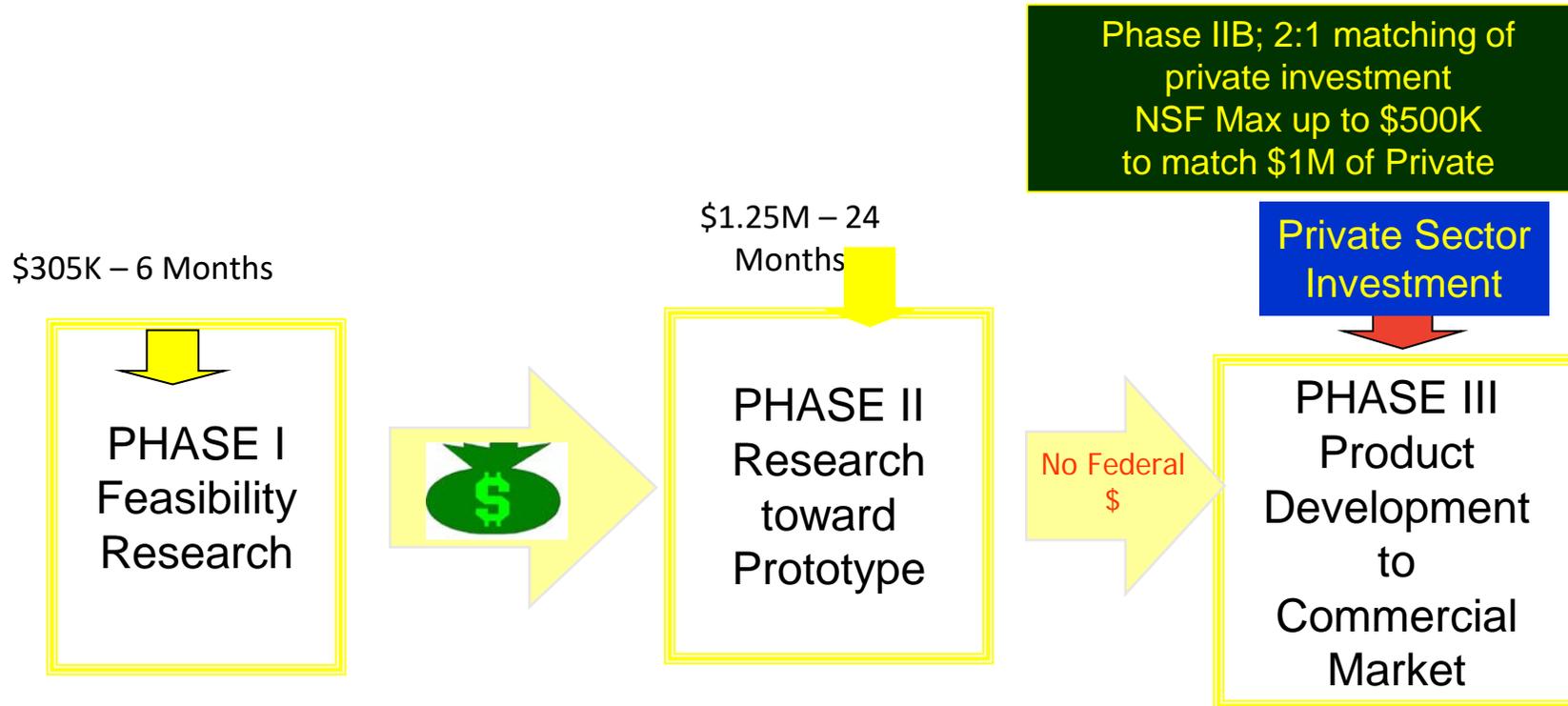


How It Works

Participating in America's Seed Fund happens in three phases.



NSF SBIR/STTR 'Innovation' Model



Source: NSF SBIR website

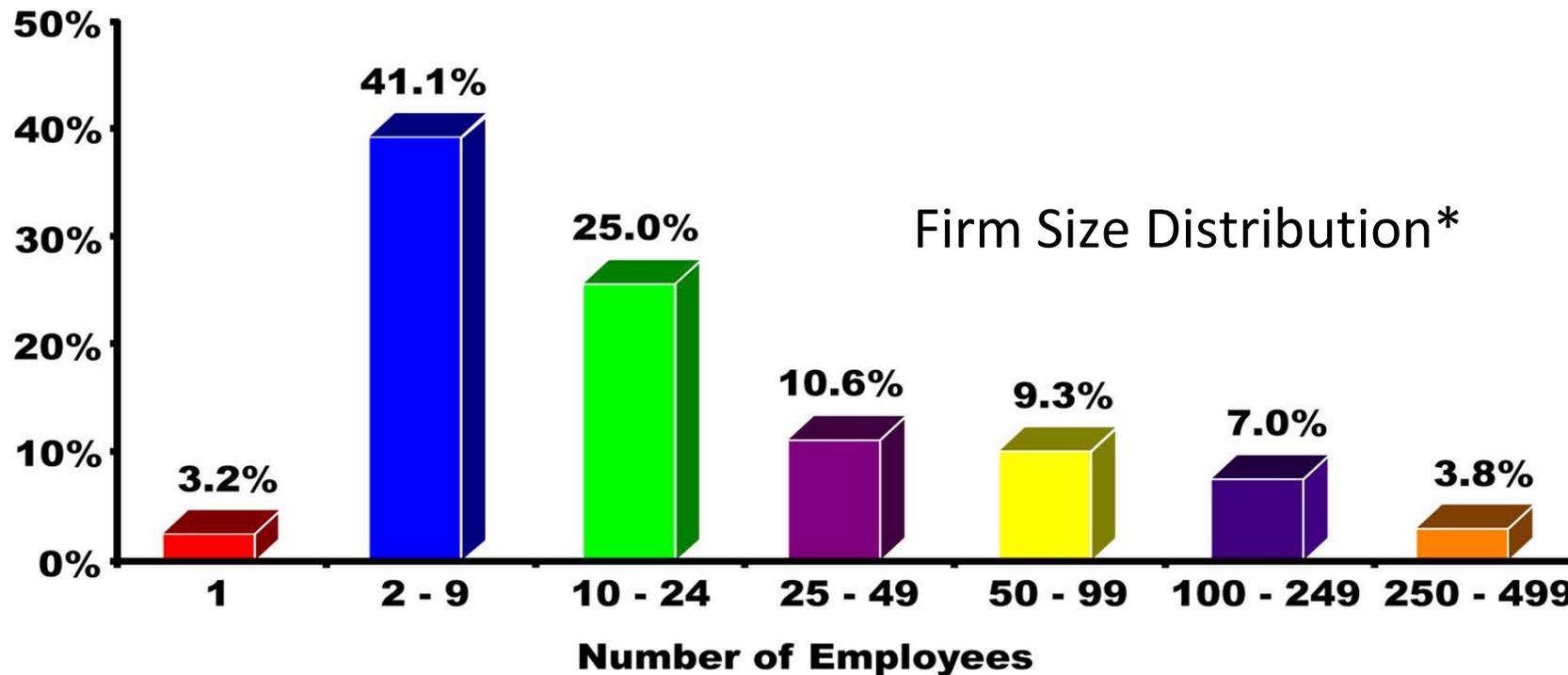
Are you eligible?

Funding through America's Seed Fund is available to small businesses that are:

- ✓ For-profit entities located in the U.S.
- ✓ Fewer than 500 employees (most are fewer than 10)
- ✓ Owned and controlled by U.S. citizens or permanent residents
- ✓ Startups or established companies



Who Participates in SBIR?



*FY01 Phase I DOD Award Winners

Source: NSF SBIR Website

Participating federal agencies.

Explore opportunities or find local assistance from our partners to identify the right option for you.

Market-driven

Agencies that invest in technologies to solve problems through the commercial marketplace:

- Department of Energy (DOE)
- Department of Health and Human Services (HHS), including NIH, FDA, CDC
- National Science Foundation (NSF)
- Department of Agriculture (USDA)
- Department of Commerce, including NIST and NOAA
- Department of Education (ED)
- Environmental Protection Agency (EPA)

Mission-driven

Agencies that invest in technologies to solve government defined problems with dual-use, commercial potential:

- Department of Defense (DoD), including Air Force, Navy, Army
- National Aeronautics and Space Administration (NASA)
- Department of Homeland Security (DHS)
- Department of Transportation (DOT)



	DOD	NASA	DOT	EPA	DOE	DHS	DOC	NSF	USDA	DoED	NIH
Award Type <i>Contract</i> <i>Grant</i>	C	C	C	C	G	C	C	G	G	GIC	GIC
Review Process	I	I	I	I	E	I	I	E	E	I	E
Research Topics	S	S	S	S	S	S	S	B	B	S	B
Gap Funding	Y	N	N	N	Y	N	N	Y	Y	N	Y
Communication	R	R	R	R	R	R	R	O	O	O	O

C - Contract **G - Grant**
I - Internal Review **E - External Review**
S - Specific **B - Broad**
R - Restricted **O - Open**

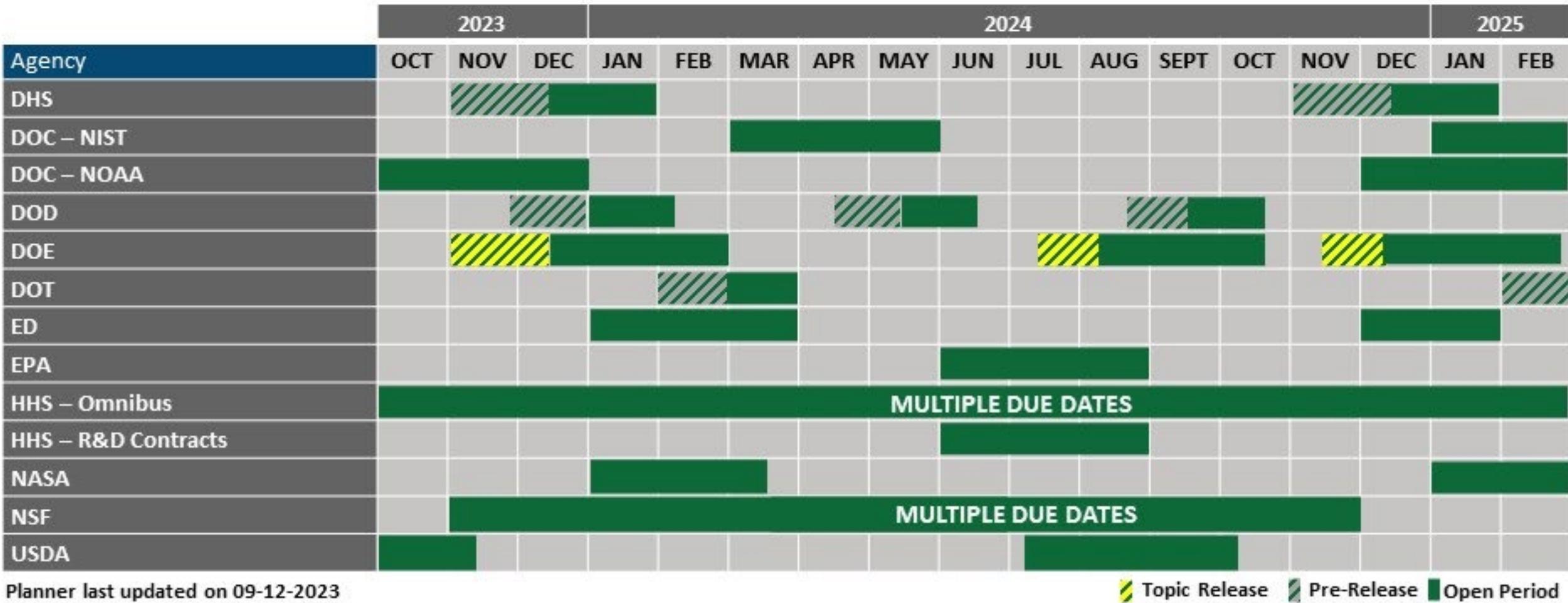
^a **Varies among DOD subcomponents.**
^b **Deviations permitted with justification**
^c **Some agencies offer Ph II options**

Source: NSF SBIR Website

	USDA	DOC	DOD	DOE	ED	HHS	DHS	DOT	EPA	NASA	NSF
Agency Budget	\$42 M	\$15 M	\$2.3 B	\$315 M	\$10 M	\$1.2 B	\$18 M	\$9 M	\$5 M	\$174 M	\$215 M
Phase I Funding Amount	\$125,000 - \$175,000	\$100,000	\$50,000 - \$250,000	\$200,000 - \$250,000	\$250,000	\$275,000 +	\$150,000	\$200,000	\$100,000	\$150,000	\$300,000
Phase II Funding Amount	\$600,000	\$400,000	\$800,000 - \$1.83 M	\$1.1 M - \$1.6 M	\$1 M	\$1.83 M	\$1 M	\$1 M	\$400,000	\$1 M	\$1.25 M
Funding Type	Grants	Grants	Contracts	Grants	Contracts	Grants	Contracts	Contracts	Contracts	Contracts	Grants
Program	SBIR / STTR	SBIR	SBIR / STTR	SBIR / STTR	SBIR	SBIR / STTR	SBIR	SBIR	SBIR	SBIR / STTR	SBIR / STTR

Source: <https://www.sbir.gov/participating-agencies>

Timing of solicitations (as of 9/12/2023)



Important Facts to Remember

- Eligibility is determined at time of award
- The PI is not required to have a Ph.D. or M.D.
- The PI is required to have expertise to oversee project scientifically and technically
- Applications may be submitted to different agencies for similar work
- Awards may not be accepted from different agencies for duplicative projects

SBIR AND STTR PROGRAMS CRITICAL DIFFERENCES

- **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)**

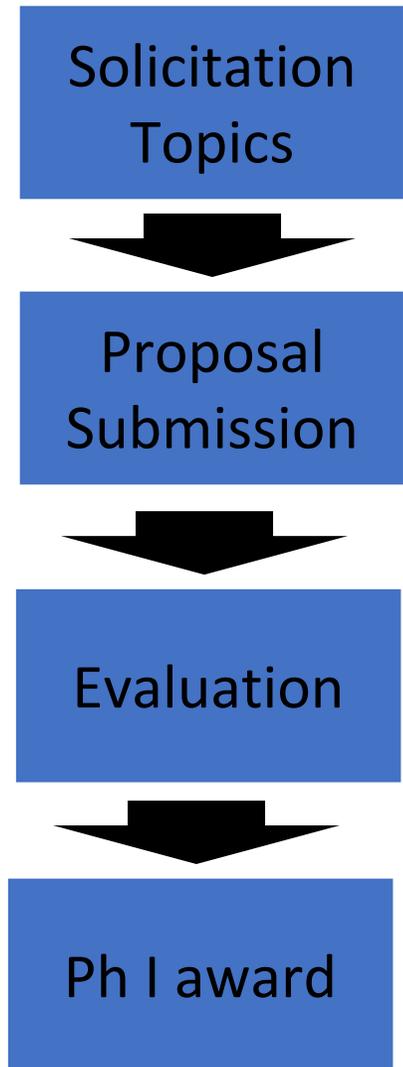
**[40% small business concerns (for-profit) and
30% U.S. research institution (non-profit)]**

**AWARD ALWAYS MADE TO SMALL
BUSINESS**

Proposal Submission Details

Only the most important parts

Standard Phase I Process



About 6-9 months

- **Agencies describe R&D topics in solicitations.**
- Small Business Concerns prepare short (usually 25-page) proposals. Unsolicited proposals not accepted.
- Agencies evaluate based on technical merit, firm's qualifications, and commercial potential / societal benefit.
- Agencies make Phase I awards.

Proposal Title: SBIR Phase I: MIT IAP SBIR [Edit](#)

Funding Opportunity: NSF 23-515 [Edit](#) - NSF Small Business Innovation Research (SBIR)/ Small Business Technology Transfer (STTR) Programs Phase I

Where to Apply: Dir for Tech, Innovation, & Partnerships (TIP) - Translational Impacts (TI), SBIR Phase I

Proposal Type: Small Business Innovation Research Program (SBIR)

Submission Type: Full Proposal

Collaborative Type: Not Collaborative

Due Date: [Select Due Date](#)

Date Type: [Window](#)

Proposal Actions	Proposal Sections	Last Updated	Compliance Status [Key]
Share Proposal with SPO/AOR Check Error(s) and Warning(s) Manage Personnel and Subaward Organizations Print Proposal Delete Proposal	Required		
	Cover Sheet		Form not checked
	SBIR Phase I Questionnaire		Form not checked
	SBIR Phase I Certification Questions		Form not checked
	Project Summary		Document unavailable for check
	Project Description		Document unavailable for check
	References Cited		Document unavailable for check
	Budget(s)		Form not checked
	Budget Justification(s)		Document unavailable for check
	Facilities, Equipment and Other Resources		Document unavailable for check
Senior Personnel Documents i		Document unavailable for check	
Data Management Plan		Document unavailable for check	
Postdoctoral Mentoring Plan i <i>Conditionally required</i>		Document unavailable for check	
Optional			
Letter(s) of Support (Strongly recommended)		Document unavailable for check	
IP Rights or Cooperative Research Agreement (Projects with subawards i)		Document unavailable for check	
Other Personnel Biographical Information i		Document unavailable for check	
Other Supplementary Documents		Document unavailable for check	
List of Suggested Reviewers (Single Copy Document i)		Document unavailable for check	
List of Reviewers Not to Include (Single Copy Document i)		Document unavailable for check	
Deviation Authorization i (Single Copy Document i)		Document unavailable for check	
Additional Single Copy Documents i		Document unavailable for check	

Proposal Details

Proposal Status: Not Shared with SPO/AOR

Helpful Links

[View Submitted Proposals](#) [i](#)

[Proposal and Award Policies and Procedures Guide \(PAPPG\)](#) [i](#)

[Demo Site FAQs](#)

[Proposal Preparation and Submission FAQs](#)

[Video: How to Upload a Collaborators and Other Affiliations Document](#)

Proposal preparation process

Project Description Outline

- Project Description (15 pages max)
 - Elevator Pitch (1-2 pages)
 - The Technology Innovation (500 words)
 - Technical Objectives and Challenges (500 words)
 - The Market Opportunity (250 words)
 - The Commercial Opportunity (1 page)
 - The Company / Team (250 words)
 - The Technical Solution (7 pages)
 - Technical Merits (R&D Plan) (4 pages)
 - Broader Impacts (1 page)

Letters of Support

Good LOS:

- Customers who would buy after Ph I
- Investors with *serious* interest in the outcomes
- Partners who would invest/partner after successful outcomes

Bad Letters of Support

- Consultants who will get paid from funds
- An investor with no knowledge of the technology
- Senators or congressman who want to support companies in their districts

Questions?

How to get started?

- Apply for an SBIR with your tech:
 - Before spending any money or admin time, you can do a Project Pitch for NSF or a Quad Chart for all.
 - Why? GET FEEDBACK FIRST BEFORE SPENDING ANY ADMIN time + \$!
 - Once you get positive feedback, then do the admin work.
 - Admin: create a company and register it with:
 - Sam.gov, Research.gov, SBA.gov
 - DO THIS EARLY! IT CAN TAKE 30DAYS! Need to be registered before you can submit app.
- SOLICITATION is the official document. This is a legal document and it represents the ultimate source of facts for how to apply, etc.

Quad chart

- Overview
- Download template here: <https://bit.ly/MIT-SBIR-QUAD>



SBIR · STTR America's Seed Fund POWERED BY SBA		SBIR Road Tour SEEDING AMERICA'S FUTURE INNOVATIONS™		
Company:	State:	Name:	Email:	Phone:
TECHNOLOGY DEVELOPMENT Technology/Research Overview: <i>The team has developed a method to reduce triglycerides; improve glucose tolerance; and reduce weight using an adult stem cell technology platform</i> Intellectual Property Protection: <i>Two issued patents and one patent pending</i> Stage of Development: <i>Basic research</i> Value Proposition: <i>Can reduce the risk of cardiovascular disease for those that cannot treat this syndrome with exercise.</i>		COMPANY INTRODUCTION Mission: <i>To improve patient outcomes by transforming great science into actionable solutions for the treatment of metabolic diseases.</i> Founded: <i>2005</i> Number of Employees: <i>20</i> Facility Description: <i>We are currently developing this method in a laboratory located at the Mayo Clinic in Rochester, MN.</i> Product Sales: <i>None to date</i>		
RESEARCH NEED <i>Seeking funding to test this platform on diabetes, high blood pressure, and abnormal cholesterol levels.</i>		OPPORTUNITY Need/Problem: <i>Metabolic syndrome is becoming increasingly common due to a rise in obesity rates among adults. In the future metabolic syndrome may overtake smoking as the leading risk factor for heart disease.</i> Target Customer: <i>About 32% of people in USA are considered to suffer from metabolic syndrome, with the risk increasing with age (e.g., 40% of people aged between 40 and 60 are considered to suffer from this syndrome).</i> Market Opportunity: <i>Our technology aims to address the rise in obesity rates in order to reduce the risk of a debilitating stroke or myocardial infarction.</i>		

NSF Project Pitch

- <https://seedfund.nsf.gov/apply/project-pitch/>

Instructions

The required Project Pitch allows startups to learn if their proposed project is a good fit for funding from America's Seed Fund powered by NSF. See four key questions you'll be asked to answer.

1. The Technology Innovation. (Up to 500 words)

Describe the technical innovation that would be the focus of a Phase I project, including a brief discussion of the origins of the innovation as well as explanation as to why it meets the program's mandate to focus on supporting research and development (R&D) of unproven, high-impact innovations.

2. The Technical Objectives and Challenges. (Up to 500 words)

Describe the R&D or technical work to be done in a Phase I project, including a discussion of how and why the proposed work will help prove that the product or service is technically feasible and/or will significantly reduce technical risk. Discuss how, ultimately, this work could contribute to making the new product, service, or process commercially viable and impactful. This section should also convey that the proposed work meets the definition of R&D, rather than straightforward engineering or incremental product development tasks.

3. The Market Opportunity. (Up to 250 words)

Describe the customer profile and pain point(s) that will be the near-term commercial focus related to this technical project.

4. The Company and Team. (Up to 250 words)

Describe the background and current status of the applicant small business, including key team members who will lead the technical and/or commercial efforts discussed in this Project Pitch.

Find the agency, solicitation, dates, contact

- Prepare for one-on-one call with specific program manager
- Find the agency
 - <https://www.sbir.gov/sbirsearch/award/all>
 - Search for your technology to find AGENCY who has funded
- Within each agency
 - Find the solicitation dates / deadlines
 - Find the OFFICIAL PDF SOLICITATION
 - Find the specific TOPIC for your technology
 - For that TOPIC, Find the one or two CONTACTS (names/emails)
- If in doubt, all agencies have general SBIR contacts you can ask.

Homework Due Wed – Prepare for 1-1 call

You should already be familiar with sbir / sttr basics

1. List relevant agencies with specific topics that match
 - Official solicitations for above.
 2. Research if they have funded your or similar technology in the past
 - sbir.gov award search.
 3. Completed Quad chart (especially DOD/NASA/NIH) but useful for all.
 - Optional: Complete NSF Project Pitch
 4. Prepare questions for your call.
 - You may want to ask detailed questions – timing, reviews, ensure match
- What to expect from a 1-1 call
 - General feedback on fit of your tech with their agency
 - Building a relationship with future funder
 - (ask questions) and find out others you should talk to
 - Tip: These people are likely on the review panel – but they cannot tell you that they are!

Questions?

MIT IAP SBIR Agenda -- Day 2

- **Wednesday Jan 29, Day 2: Winning Strategies**
- Timing and calendar management
 - Applying while in school
- Budget example
- Review process details or “what happens after I press submit?”
- Advanced tips to ensure success... including repeat future wins
- Generative AI enhancements
- Chat with Ben Schrag, NSF Program Manager, SBIR

MIT OpenCourseWare
<https://ocw.mit.edu/>

15.393 Nuts and Bolts of New Ventures
IAP 2025

For information about citing these materials or our Terms of Use, visit: <https://ocw.mit.edu/terms>.