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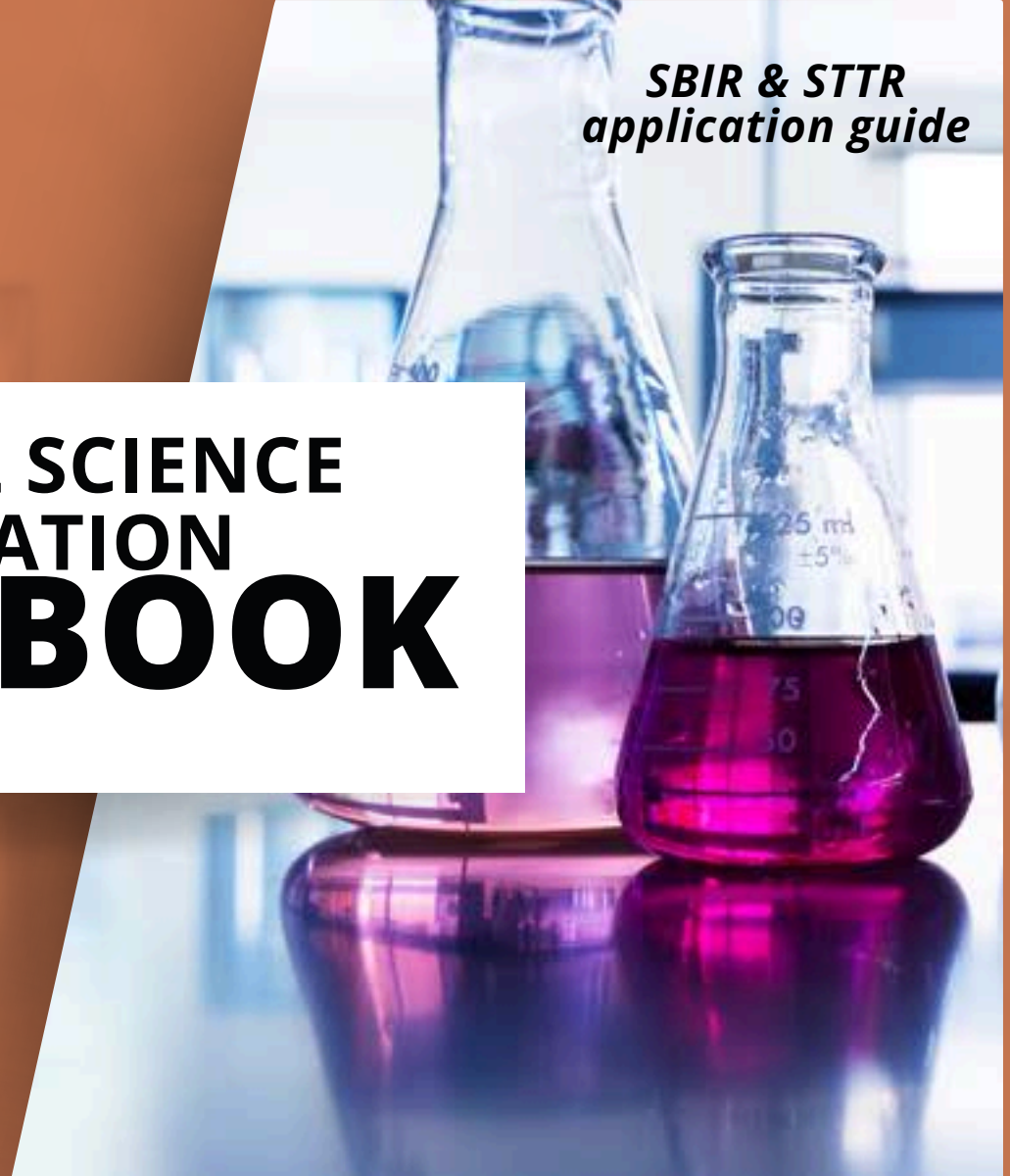
SBIR & STTR application guide

NATIONAL SCIENCE FOUNDATION WORKBOOK



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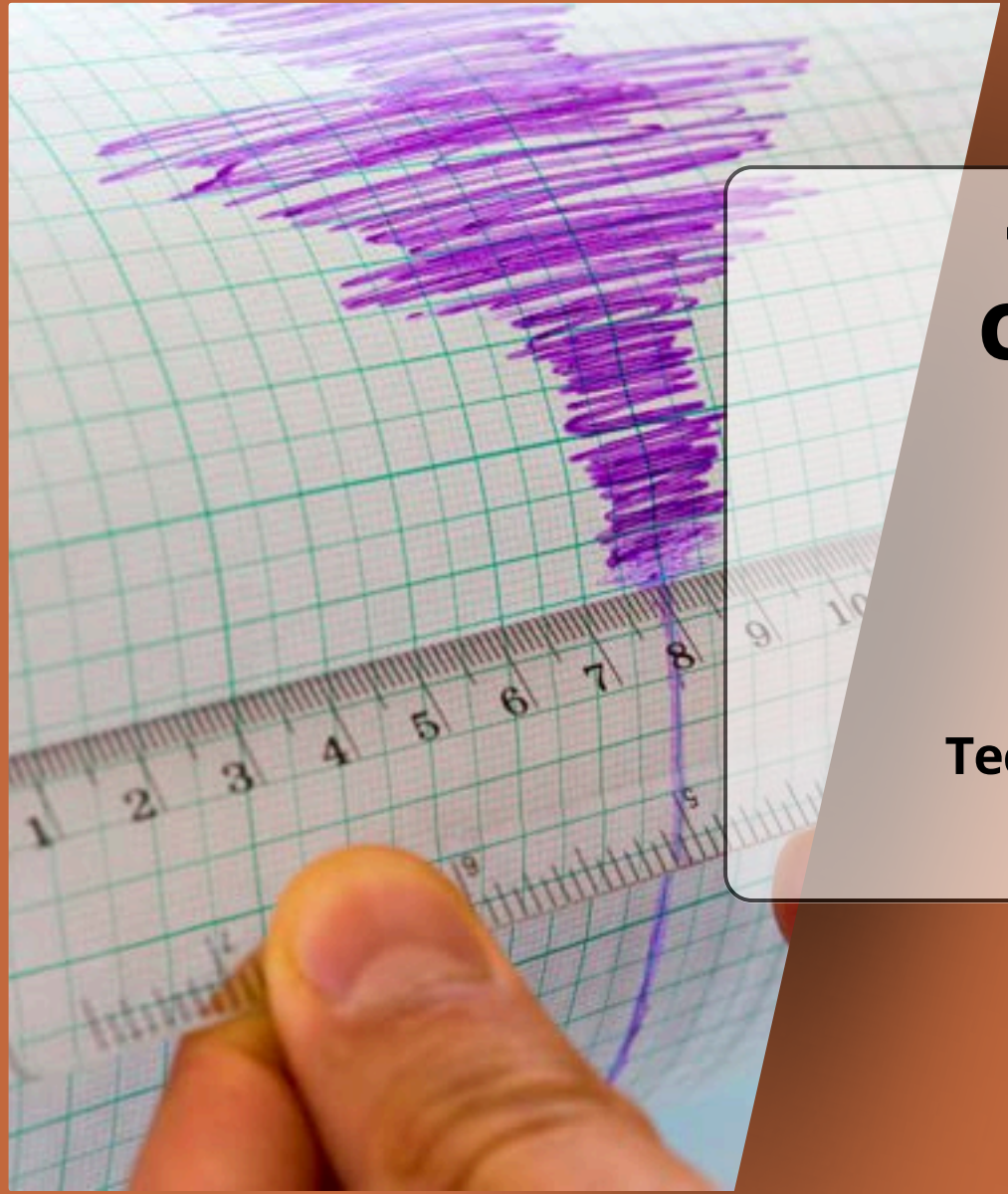

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If you see this button

OR

If you see yellow text

Click it to open the link

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Eligibility

SBIR

- Small business can work alone or with others
- Small Business has a larger R&D role. Partner may only perform up to 33% of the work in Phase I and up to 50% of the work in Phase II
- Primary investigator (PI) must be a >51% employee of the small business

STTR

- Small business must work with a nonprofit research institution
- Partner may only perform between 30-60% of the work in each Phase
- Primary investigator (PI) may be an employee of the small business OR the research institution
- PI must be a >51% employee of the small business
- The company must complete at least 40% of work.

TIPS

- Ensure your company is U.S. owned and operated.
- Begin SAM registration at least 2 months before submission, it takes time.
- Percentage of work is measured by budget.

What suits you best SBIR or STTR?

Watch eligibility video

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Eligibility

APPLICANTS MUST BE COMPETITIVE

FAQs

TEAMS

A competitive team has more than just a P.I., it requires key personnel that fulfill all areas of need for small company. Roles that should be filled:

- Skilled in science and research in area of project focus
- Skilled in business and/or entrepreneurship
- Skilled in grant writing

COLLABORATORS

The roles of your team's key personnel may be filled by contractors or consultants that work for a different company and complete research which you are unable to complete. Examples of these roles include:

- Software coding
- Animal studies

FACILITIES

Applicants must have legitimate labs or facilities to house research. If an applicant doesn't have their own facility, it's important to note that SBIR/STTR funding doesn't pay for expensive equipment. Partnering with a nonprofit research institution that has an established lab may be the best option. STTRs must be partnered with a university and can use their facility.

SBIR VS STTR

- SBIR allows 1/3 of funding can go outside the company.
- STTR allows 30% of funding to go outside of the company and requires at least 30% to go to a university partner.
- All funding must remain in the U.S.

READ REQUIREMENTS

- **U.S. Ownership & PI Eligibility**
- **Employee Count**
- **Establish Legal Business Entity**

Homework

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FILL IN YOUR INFORMATION BELOW

Provide a description of your current facility including it's capabilities and equipment. Include the location and estimated size of your facility.	
List the equipment and lab capabilities that are required for your project.	
List the gaps in your facilities capabilities and equipment and how you plan to make up for them. For example, if you don't have equipment where will you get it?	

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Homework

FILL IN YOUR INFORMATION BELOW

List your team members and key personnel. Include their role on the team, experience in research and area of science expertise.	
List your current collaborators, their areas of science expertise and the role and tasks they will complete.	
List collaborator roles in areas in which your team currently has gaps that will need to be filled.	

REQUIRED REGISTRATIONS

IRS.GOV

EIN number (10-15 mins)

SAM.GOV

Create account to apply for UEI and receive CAGE code to make an account.

RESEARCH.GOV

Required to view forms and submit grant application (24-48 hours, requires active UEI)

SBIR.GOV

Create company ID and gain access to SBIR.gov system and receive an Small Business Concern (SBC) Control ID

Videos

- EIN
- SAM.gov
- Research.gov

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Registration

Required to apply

Register ahead of time even if you don't have a topic yet. The registration process takes time and often prevents applicants from making deadlines.

SYSTEM FOR AWARD MANAGEMENT (SAM)

Required to do business with the U.S. government.

SAM will issue a 12-character unique entity identifier (UEI) used to complete your full SAM registration and which serves as the official organization identifier in other federal systems. 3-6 weeks.

RESEARCH.GOV

Required to do business with NSF and some agency partners.

SMALL BUSINESS ADMINISTRATION (SBA) COMPANY REGISTRY

Required to participate in SBIR and STTR federal funding programs.

registration tips

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HOMEWORK

FILL IN YOUR INFORMATION BELOW

UEI	
EIN	
CAGE Code	
Company ID	

Move on to topic fit

TOPIC FIT

On the NSF website, click on topics and subtopics or search by key words.

The NSF has one of the broadest agency statements of purpose.

The agency funds research primarily through grants, including SBIR/STTR. The NSF SBIR/STTR has 36 broad area topics plus one called “Other” as well as about 250 subtopics covering most areas of scientific & technical research. Approximately 400 companies are funded per year with the SBIR & STTR programs.

NSF will determine what area a product fits into from the subtopics after the pitch is complete. So it’s not required to know what topic to apply for, but it's good to have an idea to angle your pitch to a more specific topic.

NSF Portfollio

NSF topic areas

Technology Topic Areas
Advanced Manufacturing (M)
Advanced Materials (AM)
Advanced Systems for Scalable Analytics (AA)
Agricultural Technologies (AG)
Artificial Intelligence (AI)
Augmented and Virtual Reality (AV)
Biological Technologies (BT)
Biomedical Technologies (BM)
Chemical Technologies (CT)
Cloud and High-Performance Computing (CH)
Cybersecurity and Authentication (CA)
Digital Health (DH)
Distributed Ledger (DL)
Energy Technologies (EN)
Environmental Technologies (ET)
Human-Computer Interaction (HC)
Instrumentation and Hardware Systems (IH)
Internet of Things (I)
Learning and Cognition Technologies (LC)
Medical Devices (MD)
Mobility (MO)
Nanotechnology (N)
Other Topics (OT)
Pharmaceutical Technologies (PT)
Photonics (PH)
Power Management (PM)
Quantum Information Technologies (QT)
Robotics (R)
Semiconductors (S)
Space (SP)
Wireless Technologies (W)

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HOMEWORK

FILL IN YOUR INFORMATION BELOW

Topic Number	
Subtopic Number	

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NSF SBIR/STTR COMPATABILITY

The NSF looks for impact, technological innovation, market pull, and scale.

Impact **reflects how much of a difference your innovation could make.** ***Technological innovation*** **means the creation of wholly new products or services, and not incremental advances or pure engineering problems.** ***Market pull*** **is evidence that your product will succeed in the market.** ***Scale*** **means that your business could be scalable in size and have a large impact on the marketplace.**

Grants are graded on the quality of research (intellectual/technical merit), potential impact on society (broader impacts), and commercial potential (commercial impact).

Peer Review

The NSF program director assembles a panel of reviewers to review the following three criteria for each proposal: Intellectual Merit, Broader Impact, and Commercial Impact.

INTELLECTUAL MERIT:

How will your product advance knowledge or advance a field of study?
Think of this section as the place to describe the contribution of your "good science" and the "good scientist" team.

BROADER IMPACT:

How would the tech benefit society?
Design broader impacts for success based on best practices that are substantiated by peer-reviewed literature, with clear rationale, methods, measurement of success, and mechanisms for accountability.

COMMERCIAL IMPACT:

Is there a significant market opportunity that could be addressed by the proposed product, process, or service?
Describe who will buy the final creation and provide proof via letter or interview.

Proposals that lack good science won't get funded. However, weak broader impacts can bring a proposal with great science down — and not just a little bit, but potentially a lot.

NSF Portfollio

Review Criteria

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Feasibility

Determine the most difficult aspect of the proposed technology that must be overcome to show that it's technologically feasible. Proving feasibility is the point of Phase I. If there is only enough time and money to answer one question for Phase I, focus on feasibility.

Determine Technical Objectives by:

Working backwards

- What is your final product?
- What do you have to do in Phase II to have a prototype?
- What needs to be done in Phase I to enable Phase II?

Working forwards

- What are 2-3 research questions to reduce technical risk?
- What are the shortfalls in the state of the art?
- What do you do to address these shortfalls?

Check out related videos

- What's the point?
- What do you want to accomplish?
- List the objectives in bold type.
- What do you need to achieve?
- Make your milestones market-relevant.
- Proposal Roadmap and Pitfalls.

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What is your product?

IT'S IMPORTANT TO THINK ABOUT YOUR PROJECT AS A PRODUCT

You need to know:
The client (who is going to pay for this product?)
The end user (who is going to ultimately use this product?)
The competition (If you haven't already, research and get an understanding of your competition and take note of the ways that you're superior)

FEASIBILITY

What research do you need to do and what goals to you need to reach to show that your idea is feasible?

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FILL IN YOUR INFORMATION BELOW

Describe your product.	
What is the issue that your product solves and explain how it's currently resolved.	
List measurable ways in which your product is better than current competition.	

No competition is NOT an answer. There is always competition.

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Significance

WHY IS YOUR PRODUCT IMPORTANT?

Your SBIR proposal must communicate strong significance, but many proposals fall short in this area.

Your technology must solve a problem – Just studying or optimizing something is not interesting to NSF SBIR Reviewers unless it is solving a serious problem that someone, and preferably a lot of somebodies care about.

What problem does this solve, and who cares, and why?
SBIR projects may advance science but that is not the primary objective.

Demonstrate:
- Significant science
- Significant need in the market
- Avoid the golden hammer problem

Keep in mind:
The objective of the SBIR/STTR program is to solve a problem in a way that is commercially and societally significant.

Watch video

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Market Gaps & Problems

A magazine is a periodical publication, which can either be printed or published electronically. It is issued regularly, usually every week or every month, and it contains a variety of content.

Think about:

- Size of the Problem
- Size of the Opportunity
  - how much of the Problem can your technology impact?
- Advantages of your approach
  - how you overcome the shortfalls of the alternatives
  - benefits to the users of your technology
- Not just the features that you think make it special
- Aggregate impact
  - To economy, public health, society, etc.
- Commercial Merit
  - Show a reasonable path to commercialization

Questions to consider:

- Current market solutions: What existing products are in market? Who sells them? Why are those not meeting the need?
- Stating that there is no competition is not realistic.
- Current 'Good Enough' solutions: Customers may use their own 'duct tape' solutions or do nothing. What are these approaches? Why are existing approaches poor?
- Investment and Research: What emerging solutions via startups and research attempt to address need? Why might yours be better?

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HOMEWORK

BRAINSTORM MARKET GAPS (SBIR PROBLEM) AND CURRENT SOLUTIONS

Current market solutions: What existing products are in market? Who sells them? Why are those not meeting the need?	
Current 'Good Enough' solutions: Customers may use their own 'duct tape' solutions or do nothing. What are these approaches? Why are existing approaches poor?	
Investment and Research: What emerging solutions via startups and research attempt to address need? Why might yours be better?	

HOMEWORK

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FILL IN YOUR INFORMATION BELOW

Problem to be solved	
Gap in current solutions	
Prelim studies	

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FILL IN YOUR INFORMATION BELOW

How important is your problem?	
How many people are concerned or affected by this problem?	
What is the current cost of the problem?	
What are the barriers to addressing this problem?	

Include evidence for each answer in the form of links or pdfs

NSF APPLICATION

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Read ALL of the solicitation and write down the requirements. If an application is missing something it will be declined.

Treat submission windows like application deadlines:
~ Early March
~ Early July
~ Early January
Don't wait until the last minute to submit! There are ALWAYS challenges.

PAGE LIMITS

Project Summary - 1 Page
Project Description - 10-15 pages
- Elevator Pitch - no more than 1 page
- The Commercial Opportunity - 1-3 pages
- The Technical Solution - 2-4 pages
- The Company/Team - 1-3 pages
- Intellectual Merits: Technical Discussion and R&D plan - 5-6 pages
- Broader Impacts - 1-2 pages

Application Tutorial

Proposal Guidelines

Preview Solicitation

Follow the link below to find and review the omnibus solicitation.

Solicitations

HOMEWORK

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PREPARE 2-3 IDEAS FOR MEASURABLE MILESTONES. INCLUDE EVIDENCE OF PAST OR CURRENT FUNDING FROM AGENCY.

Include evidence for each answer in the form of links or pdfs

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Prepare Project Pitch Approach

The submitted project pitch is required to be accepted before applying. Put together the information that you found researching funded topics to begin thinking about possible technical objectives. Be sure that your technical objectives have measurable outcomes and milestones.

Project Pitch video

What are Technical Objectives?

These are the goals that you want to achieve, and essentially, why you need the funding. They are “What you want to achieve;” rather than “What you want to do.” Probably the most common error seen in proposals overall, is that the objectives are weak and don’t have quantitatively measurable endpoints.

Think of the technical objectives page as an abbreviated version of the full grant. By having this page well written and well-thought out, the remainder of the grant application will be easier to write. Put strategic thought into every sentence on the project pitch page.

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TECHNICAL OBJECTIVES

Aim to have 2-4 objectives.

Each must have quantifiable (measurable) milestones.

Together they answer 1-2 gnarly technical questions.

Result in showing technical and commercial feasibility for the innovation.

May or may not be interdependent.

TECHNICAL OBJECTIVES EXAMPLES

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OBJECTIVE

Construct a system to measure substance X in plasma to improve data simulations. We plan to use tool Y to measure because it has been shown to be most accurate.

MILESTONE

The future product must have a minimum sensitivity of X picomoles/mL, and have an accuracy of XY%. These specifications have been determined to be necessary by [insert market reason or standard benchmark justification].

TIPS

Try to make a simple statement with 1 or 2 sentences. Include quantifiable criteria in your milestones that demonstrates when you are done with this phase of Product Development. Objectives demonstrate product feasibility. These MUST BE successful to advance to Phase II.

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TECHNICAL OBJECTIVES HOMEWORK

PROVIDE THREE TECHNICAL RESEARCH QUESTIONS BELOW

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APPLICATION
PROJECT PITCH

Must begin the process with this

- Short (3-4 pages) document
- Submitted before application
- Must receive invitation to apply prior to applying
- If rejected, must wait until after the next deadline to resubmit
- May only have one active project pitch at a time
- Invitation to apply lasts for one year
- Must include invitation email (PDF) with your application

Four sections (overviews)

- Technology Innovation (500 words)
- Tech Objectives & Challenges (500 words)
- Market Opportunity (250 words)
- Company & Team (250 words)

How it works

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PROJECT PITCH TEMPLATE

Use the project pitch template to complete your initial daft.

How to write a great project pitch

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Review

Get feedback from as many people as you can. Have several people review your page including CTC. Remember, this is a page that should clearly outline your plan to reviewers. After reviewers chime in and you are satisfied with your page, submit your project pitch to NSF and wait for a response.

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CHECKLIST OF ATTACHMENTS *APPLICATION*

- Project Summary
- Project Description (10-15 page limit)
- References
- Budget(s) & Budget Justification(s)
- Facilities, Equipment, and Other Resources
- Senior personnel records
  - Biosketches
  - Current & Pending Support
  - Collaborators & Other Affiliation Information
- Data Management Plan
- Letters of Support (3)
- Letters of Commitment (if using consultants or subawardees)

CHECKLIST OF ATTACHMENTS *PROJECT DESCRIPTION*

- Elevator Pitch (1 page) (Abstract)
  - About the business Motivation, Customer, Value Proposition, & Innovation
- Commercial Opportunity (1-3 pages)
  - Overview of the market, the customer, and how you validated it all
- Technical Solution (2-4 pages)
  - High level overview of the technology
- Company/Team (1-3 pages)
- Intellectual Merits: Technical Discussion & R&D Plan (5-6 pages)
  - Contains Technical Objectives & milestones
  - Details the technology (can be marked as proprietary)
  - Complete R&D plan with timeline
- Broader impacts (1-2 pages)

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CHECKLIST

At the end of this workbook you should have to following checklist completed. Don't move on until this checklist is complete.

- **Online registrations**
- **Select topics with shared focus and evidence of funding**
- **Eligibility confirmed including PI and collaborators**
- **2-3 technical objectives**
- **Decide on STTR or SBIR strategy**
- **Project pitch template**

HAVE QUESTIONS?

Reach out to the CTC with questions or concerns here.

FINISHED WITH SESSION ONE?

It's time to reach out and check in with your CTC consultant to discuss your project pitch.

Todd Strother

Rob Baranowski