The National Science Foundation's SBIR and STTR programs fund disruptive technologies. Known as America's Seed Fund powered by the National Science Foundation, the SBIR and STTR programs launch startups that often have direct ties to fundamental research. With an annual budget of more than $8 billion, the National Science Foundation, also known as “NSF,” is the funding source for approximately 24% of all Federally supported basic research done in colleges and universities across the United States.

NSF does not have a specific technology focus and is interested in funding the most innovative, impactful technologies across all fields of science and engineering. The SBIR and STTR programs originated at NSF. The programs broad mandate allows startups to identify the problem or opportunity. You propose the technological solution. You devise your business strategy, but it MUST have a market and broad impact. At NSF commercialization is the cornerstone.

The NSF SBIR/STTR program’s annual budget of about two hundred million dollars funds roughly 400 projects a year. The agency’s sweet spot is early stage, high risk technology at the pre-seed level. The goal is to conduct research and development that overcomes significant technical hurdles to prove the feasibility of a new product, process, or service. Applicants are expected to think deeply about commercialization and develop solutions that could create significant commercial success and/or societal impact.

UNIQUE FEATURES OF THE NSF PROGRAM
NSF provides grants, not contracts. Phase I awards are about $260,000 to test feasibility and conduct proof of concept research over a six to twelve month period. Only Phase I awardees can apply for a one million dollar Phase II award that is used for prototype development, scale up and testing over a period of two years.

The NSF program is unique in many ways. The Program Directors have deep technical and business expertise in a wide variety of areas. This list provides an overview of the technology areas of interest to the NSF SBIR/STTR programs. However, it is important to keep in mind that NSF encourages proposals in all areas of science and engineering. An exact fit with one of these topic areas is not required.

Most of NSF’s awardees are very small companies. In fact, 85% of the Phase I awards made during the past five years were to companies that had five or less employees and 72% were founded within the past 3 years. In FY17, the average selection or award rate was 12% for phase I and 43% for Phase II.
Technology Topic Areas (2020)

- Advanced Manufacturing (M)
- Advanced Materials (AM)
- Artificial Intelligence (AI)
- Biological Technologies (BT)
- Biomedical Technologies (BM)
- Chemical Technologies (CT)
- Digital Health (DH)
- Distributed Ledger (DL)
- Energy Technologies (EN)
- Environmental Technologies (ET)
- Information Technologies (IT)
- Instrumentation and Hardware Systems (IH)
- Internet of Things (I)
- Medical Devices (MD)
- Nanotechnology (N)
- Other Topics (OT)
- Pharmaceutical Technologies (PT)
- Photonics (PH)
- Power Management (PM)
- Robotics (R)
- Semiconductors (S)
- Space (SP)
- Wireless Technologies (W)

FIGURE 1: Technology Topic Areas

NSF SBIR/STTR Innovation Model

Phase I
Feasibility Research
$256,000

Phase II
Prototype
$1,000,000

Phase IIB
Third-Party Investment + 1:2 NSF Matching (up to $500K)

Phase III
Continuous Development, Private Sector or non-SBIR

IS YOUR PROJECT RIGHT FOR NSF?

In trying to determine if the NSF SBIR and STTR programs provide a good opportunity for you and your company – it is recommended that you consider two things: First, is this a genuine innovation – an approach that is highly disruptive and technically risky? That is what NSF is looking for – not evolutionary technologies, but those that are revolutionary in nature; Second, is there a strong case that the product or service can meet an unmet market need? NSF requires commercialization.

NSF makes it easy to determine if your proposed project might be a good fit. You just need to submit a three-page “Project Pitch” via the NSF SBIR/STTR seedfund.nsf.gov website.
The cognizant Program Director uses the Project Pitch to determine whether or not the proposed project meets the objectives of the NSF SBIR/STTR program. If it is a fit, the small business will receive an official invitation via email from the cognizant NSF Project Director. You need this official invitation in order to submit a proposal. More details on the new application process are clearly described in the current solicitation. All interested parties are encouraged to read the Project Pitch guidelines carefully.

**NSF ENCOURAGES PARTNERSHIPS**

NSF believes strongly in the benefits of connecting with others and facilitates that connection via a number of Supplements designed to encourage partnerships and commercialization. At the Phase II level, there is a Phase IIB Supplement. At this stage of development NSF will provide a 1:2 match for up to $500K – meaning that if you secure a $1M investment, you can apply for an additional $500,000 from NSF. Another Phase II supplement is referred to as the TECP which stands for Technology Enhancement for Commercial Partnerships. This program provides a supplement of up to $200,000 to SBIR or STTR awardees in order to pave the way for partnerships with strategic corporate partners and investors. The intent of this supplement is to provide funding for additional research that goes beyond the Phase II project’s objectives to meet the technical specifications or additional proof-of-concept requirements of the potential commercialization partner. Recently NSF has also added a $50,000 Technical and Business Assistance (TABA) supplement to secure the services of one or more third-party service providers to assist you with a variety of commercialization activities.

There are other supplements available to help startups build their team. These include Educational Partnerships with high school students, teachers, undergraduate students, and US veterans and post-docs, as well as Institutional Partnerships. These can be explored at the Supplements site.

Another program developed by the National Science Foundation is the Innovation Corps or “I-Corps” program, a seven-week entrepreneurial education course designed to help researchers learn the art of customer discovery. NSF awardees can participate in an abbreviated version of the I-Corps program, called the Beat-The-Odds Boot Camp. To find out more about the NSF SBIR/STTR programs be sure to visit the agency’s website and listen to the tutorial regarding the NSF solicitation process.

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**FIGURE 3: NSF Supplements**

<table>
<thead>
<tr>
<th>Phase IIB</th>
<th>Executed 3rd party investment</th>
<th>$500,000</th>
<th>1</th>
<th>Initiated at least 30d prior to Ph II expiration</th>
<th>NSF will match 50% of qualified third-party funds</th>
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</thead>
<tbody>
<tr>
<td>TECP</td>
<td>Interested commercial/ strategic partner</td>
<td>20% of Ph II amount</td>
<td>1</td>
<td>6 mo. prior to Ph II expiration</td>
<td></td>
</tr>
<tr>
<td>RAHSS</td>
<td>High-School Student</td>
<td>$6,000</td>
<td>2 per year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RET</td>
<td>K-12 or community college teacher</td>
<td>$10,000</td>
<td></td>
<td>6 mo. prior to Ph II expiration</td>
<td></td>
</tr>
<tr>
<td>REU</td>
<td>Undergraduate Student</td>
<td>$8,000</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>VRS</td>
<td>U.S. Veteran</td>
<td>$10,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase IIA</td>
<td>CREST/HECU-RISE institution</td>
<td>20% of Ph II amount</td>
<td>1</td>
<td>At least 90d prior to Ph II expiration</td>
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</tr>
<tr>
<td>Phase ICC</td>
<td>Community College</td>
<td>$40,000</td>
<td>1 per year</td>
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<td></td>
</tr>
</tbody>
</table>

| I/UCRC | I/UCRC center in good standing | $67,500 | (2) 1-yr OR (1) 2-yr membership | Min. 90d prior to Ph II expiration | Small business pays 10% of membership cost (min $5,000) |

TO LEARN MORE ABOUT THIS TOPIC
SBIR.GOV/TUTORIALS
REVISED DECEMBER 2020