

# Solicitation NSF 19-506



September 25, 2019



# NSF Mission and Vision

## Mission

“to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”

“Partnerships with other federal agencies, nonprofits, private-sector collaborators, industry partners and the public will help advance these research areas.”

Dr. France Córdoba  
Director, National Science Foundation

## Vision

“A Nation that is the global leader in research and innovation.”

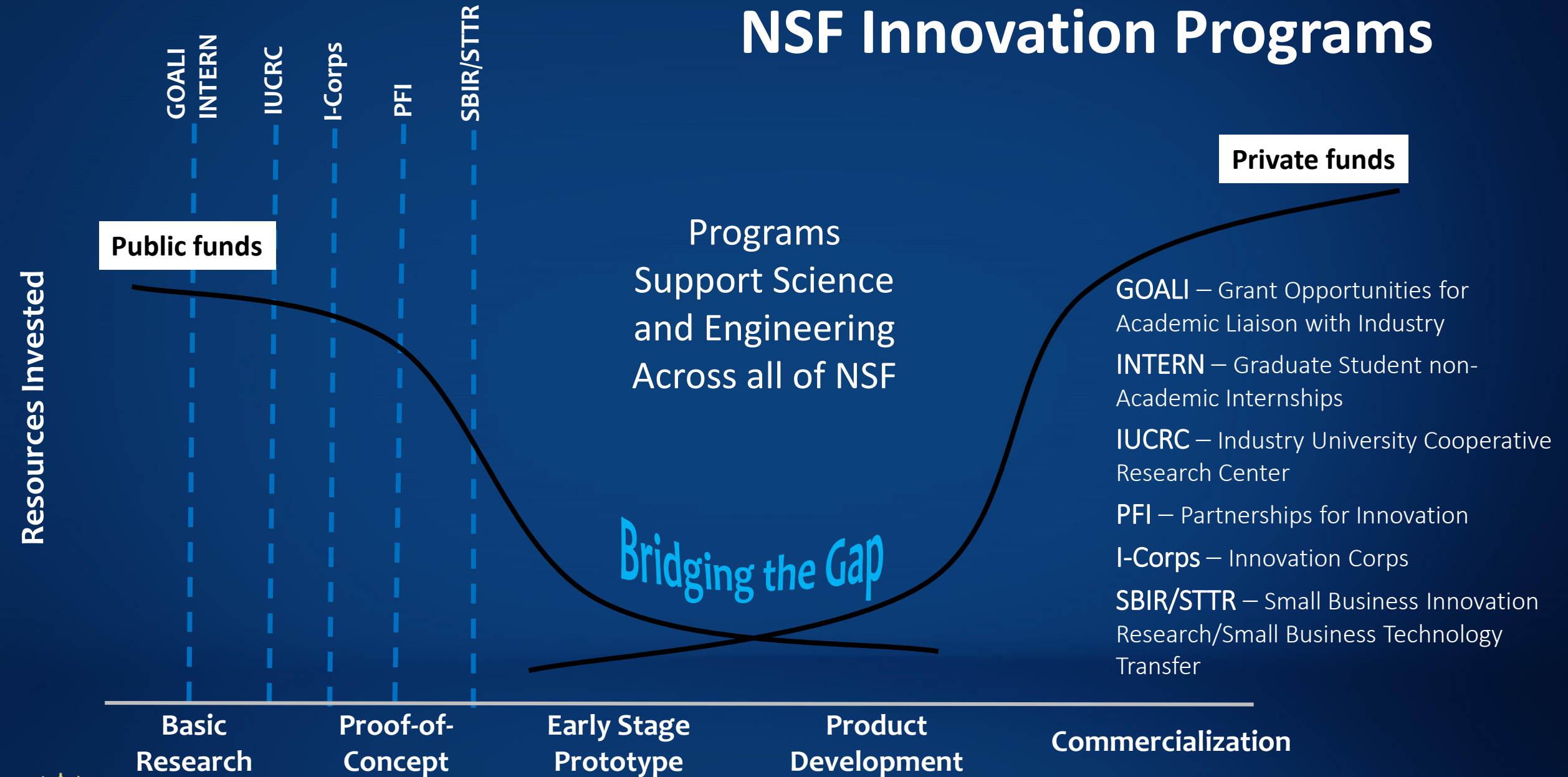


NSF's Core Values: Excellence, Public Service, Learning, Inclusion, Collaboration, Integrity, Transparency





# NSF Innovation Programs



# Partnerships for Innovation (PFI)

## Intended Outcomes

- Commercialization of intellectual property derived from NSF-funded research and education.
- Licensing of NSF-funded research outputs to third-party corporations or start-up companies funded by PFI teams.
- Foster collaborations with industry.
- Training future innovation and entrepreneurship leaders.
- Increased participation of women, minorities, and persons with disabilities in innovation & entrepreneurship.



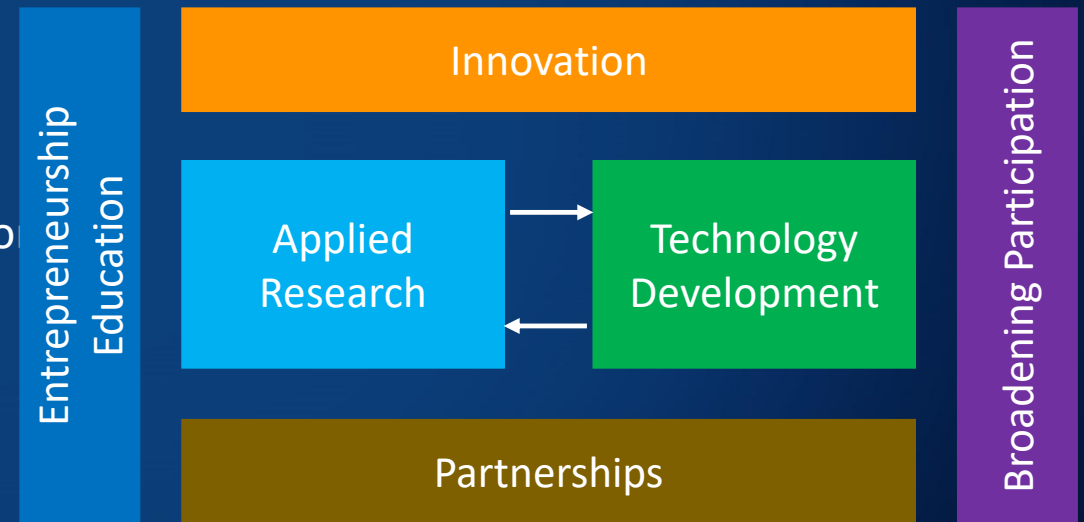
# What PFI Does Not Fund

- **Basic research** with no technology development.
- Pre-clinical / clinical efficacy or safety studies, drug development, regulatory work.
- **Non-R&D work**: Market research, corporate or business development, sales, fundraising, intellectual property.
- Commercial development of **existing products** or proven concepts.
- **Low-risk**, straightforward engineering design, **incremental improvements** of existing product or process.



# Partnerships for Innovation (PFI)

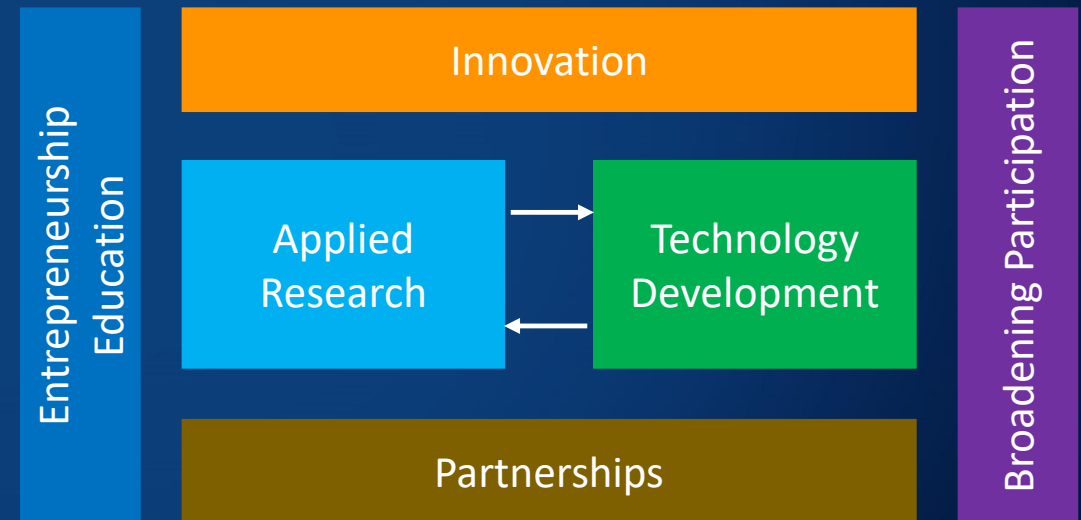
- Congressionally mandated\* goals:
  - Accelerate translation of research results to societal impact.
  - Promote a sustainable university-based innovation ecosystem.
  - Train faculty and students in technological innovation.
  - Engage women and other underrepresented groups in innovation.
- PFI welcomes ALL fields of science & engineering funded by NSF



\*American Innovation and Competitiveness Act ([S.3084— 114th Congress; Sec. 602. Translational Research Grants](#))

# Partnerships for Innovation (PFI)

- PFI-TT grants are up to \$250,000 over 18-24 months.
  - Applied research towards commercialization.
  - Proof-of-concept demonstrations, prototypes.
- PFI-RP grants are up to \$550,000 over 36 months.
  - Same goals than PFI-TT.
  - Focused on multidisciplinary, multi-organizational teams.
  - Requires an industry partner.



PFI-RP – Partnerships for Innovation-Research Partnerships  
PFI-TT – Partnerships for Innovation-Technology Translation

# PFI-TT: Technology Translation Track

- Required:
  - A **Technology Commercialization Expert** *in the targeted field of application or industry sector. (Serves as active Co-Principal Investigator (PI) or Sr. Personnel)*
  - At least 1 **letter of support** to validate market potential/broader impact.





# PFI-RP: Research Partnerships Track

- Same goals as the PFI-TT track.
- Complex projects
  - Require a multi-organizational, interdisciplinary collaboration.
- Requires **at least 1 Industrial Partner**.
  - Project must be industry-relevant.
  - An employee of Industrial Partner serves as co-PI (Tech. Commercialization Expert).
  - May support the educational objectives.
- Research Partners strongly encouraged



# Eligibility Requirements

Organization

NSF Lineage

Industrial  
Partner

Principal  
Investigator

Technology  
Commercialization  
Expert



Non-responsive  
Objectives

Read solicitation NSF 19-506 for a detailed description of eligibility requirements:

<https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>



# Eligible Organizations

- **Academic / Research US institutions**; includes universities and two- and four-year colleges (**including community colleges**) accredited in, and having a campus located in the US, acting on behalf of their faculty members.
-  ➤ Public or Non-profit, **Non-academic US organizations** located in the US that are directly associated with technology transfer activities.
-  ➤ **Non-profit US organizations** located in the US that partner with an institution of higher education.
-  ➤ A US **consortium of 2 or more** of the organizations described above



# NSF Lineage Requirement in PFI

Both PFI-TT & PFI-RP must meet at least one of these criteria:

➤ **NSF-funded research award**

- Technology development from PI or co-PI's prior NSF funded research completed within **last 7 years**

➤ **NSF I-Corps™ Teams award** (supported customer discovery).

- The product to be developed informed by an NSF I-Corps Teams award completed within **last 4 years**
- I-Corps Info: [https://www.nsf.gov/news/special\\_reports/i-corps/teams.jsp](https://www.nsf.gov/news/special_reports/i-corps/teams.jsp)

Exception: Resubmission of PFI-RPs submitted but not awarded under previous solicitation NSF 18-511





# The Industrial Partner (I)

- Mandatory in PFI-RP track, encouraged in PFI-TT.
- U.S.-based.
  - Foreign Public Entities (2 CFR § 200.46) or Foreign Organizations (2 CFR § 200.47) do not qualify.
- Established record of commercial revenue.
  - From sales or licensing.
  - Majority of revenues cannot be from grants and government contracts.
- Proven experience in bringing products or services to the proposed target market sector.



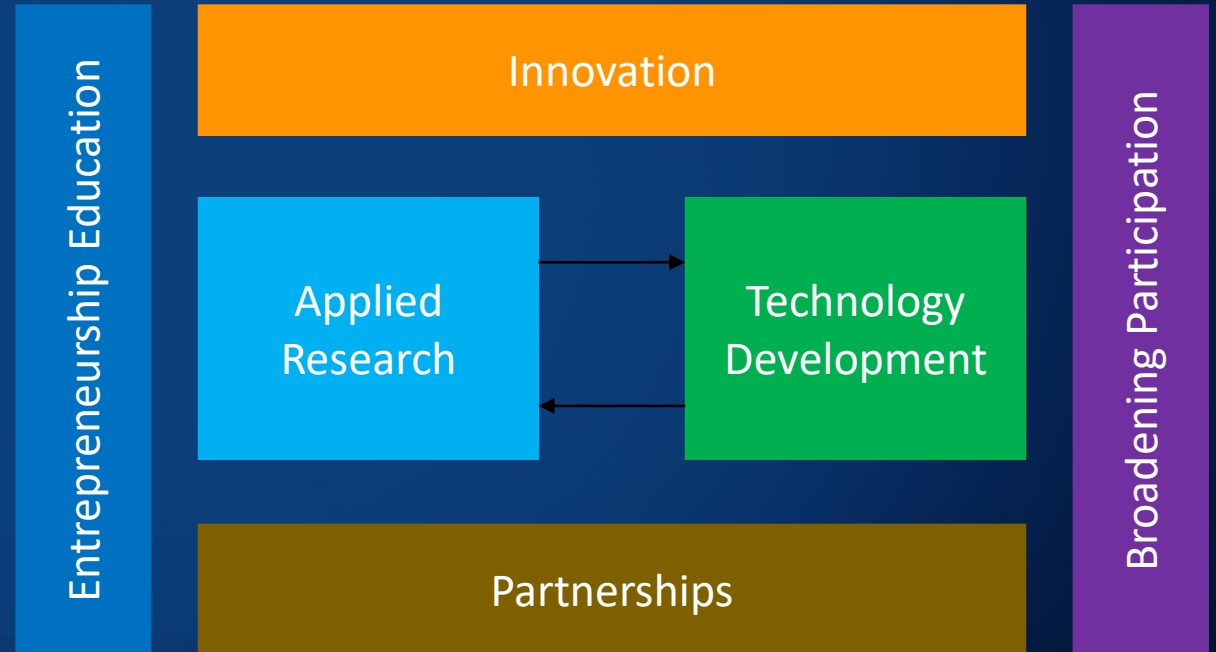
# The Industrial Partner (II)

- Demonstrates a strategic commercial interest in the PFI technology.
- Vendors/ service providers (included in the budget) are not Industrial Partners.
- For-profit or not-for-profit.
  - Non-profit, technology transfer organizations must meet revenues requirement.



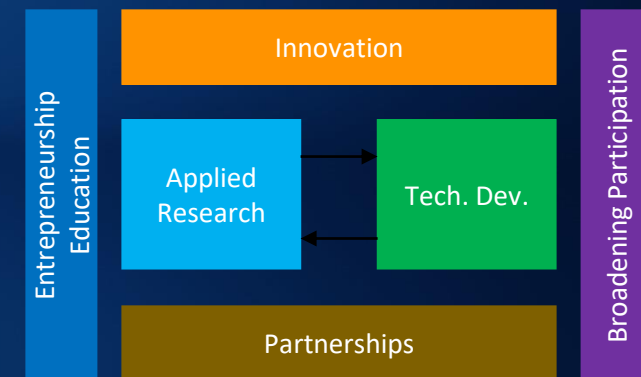
# Elements of a PFI Proposal

- Technology Development
- Demonstration of Commercialization Potential
- Partnerships
- Education and Leadership Development in Innovation & Entrepreneurship
- Broadening Participation



# Key Sections in Project Description

1. Executive Summary
2. From NSF Basic Research to Addressing a Market Opportunity
3. Technical Challenges and Applied Research Plan
4. Achieving Societal Impact through the Realization of Commercial Potential
5. Project Team
6. Partnerships
7. Training Future Leaders in Innovation and Entrepreneurship
8. Broadening Participation



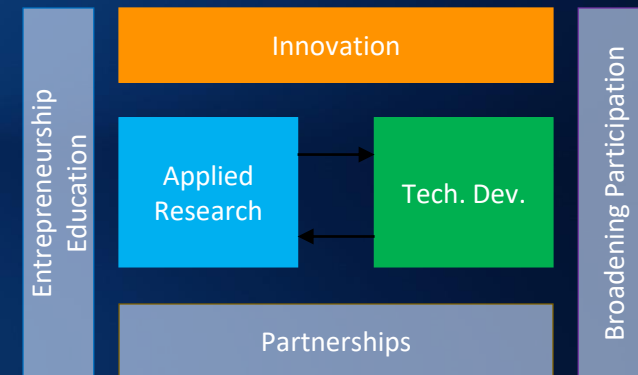
<https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>





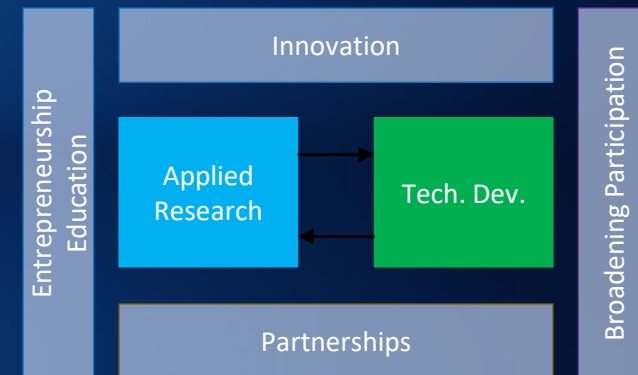
## 2. From NSF Basic Research to Addressing a Market Opportunity

- Document and describe the NSF Lineage.
- Why is the technology ready to move beyond the basic research?
- Intellectual Merit of the proposed product, process or service.
- Broader Impacts: societal, economic and commercial.
- What is the target market segment addressed by the proposed innovation? How is it informed by any preliminary market research or customer discovery?
- Competitive analysis & intellectual property.



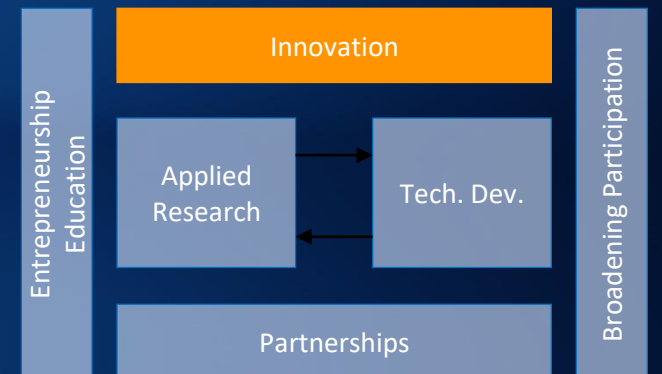
# 3. Technical Challenges & Applied Research Plan

- Knowledge gaps and technical barriers that you must overcome to translate the technology into a product, process or service.
- Describe the applied research plan to address those knowledge gaps and technical barriers.
- Who will do what in the project?
- Success metrics.
- Risk assessment and mitigation plan to address potential failures.
- Milestone chart.



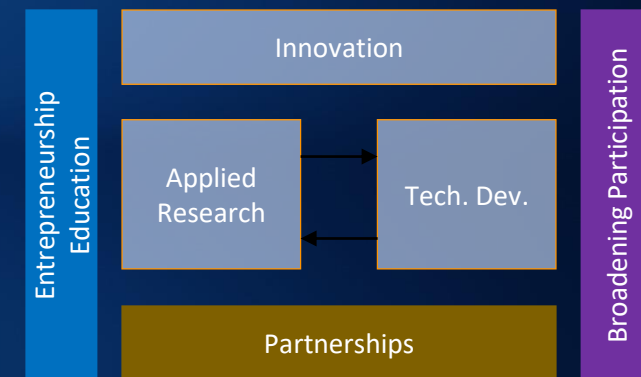
## 4. Achieving Societal Impact through Commercial Potential

- How will you achieve a societal benefit through commercialization?
- Your future commercialization **strategy and plans** beyond PFI.
- The strategic planning:
  - Ensures the **sustainability** of the commercialization efforts during and after your PFI project.
  - Aimed at identifying and securing strategic commercialization partners, investors, licensees, the creation and funding of spin-out companies, etc.
- Assessment plan of your partnership(s) and collaboration(s) performance in accelerating the transfer from lab-to-market.



# 5. The Team

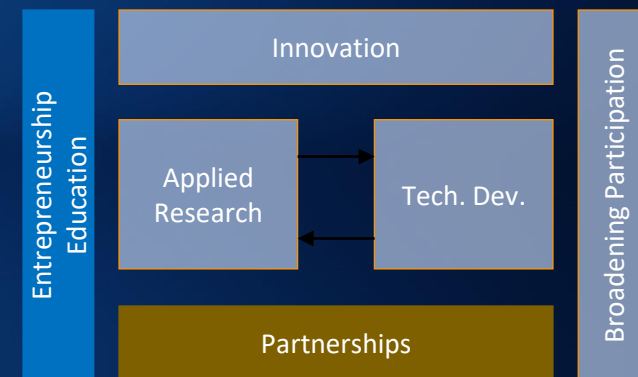
- Team members and their qualifications.
- Partners and/or collaborators: What are their **roles and value-added**?
- Masters, PhD student(s) or post-docs:
  - Their **qualifications and motivation**.
  - If you have not identified the student / post-doc, describe the selection process to recruit her/him.
- In PFI-TT: **Technology Commercialization Expert**
- In PFI-RP: the **Industrial Partner co-PI**  
(is an employee or member of the Partner)





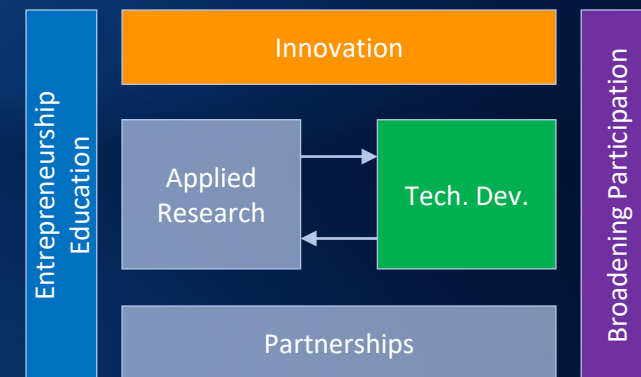
## 6. Partnerships

- Mandatory in PFI-RP; encouraged in PFI-TT.
- Describe the overall partnership being assembled, roles and capabilities of each partner.
- How will the partnership achieve the goals of PFI?
  - **Catalyze & accelerate** technology development towards commercialization
  - Support the educational goals?
- Assessment plan.
- If the Industrial Partner is a SBIR/STTR company, discuss the need and rationale.



# 7. Training Future Leaders in Innovation and Entrepreneurship

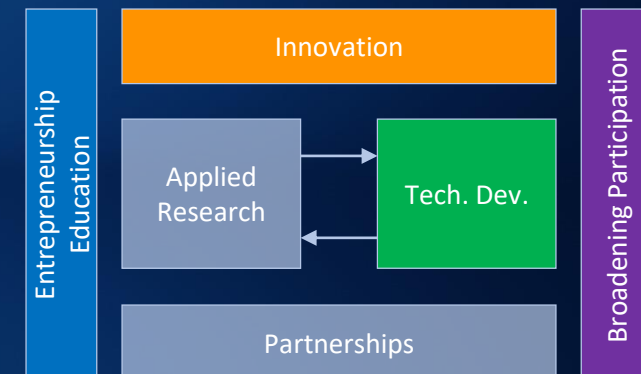
- PFI is a **platform for education and leadership development** of promising young innovators –masters, PhD students and postdocs.
- Provide learning **objectives**, expected learning **outcomes** and **assessment plan**.
- Discuss intellectual merit and broader impacts of the educational plan:
  - How will the proposed project activities enhance the knowledge and readiness of the student/postdoc for innovation beyond the usual research experience?



See instructions in solicitation: <https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>

# 7. Training Future Leaders in Innovation and Entrepreneurship

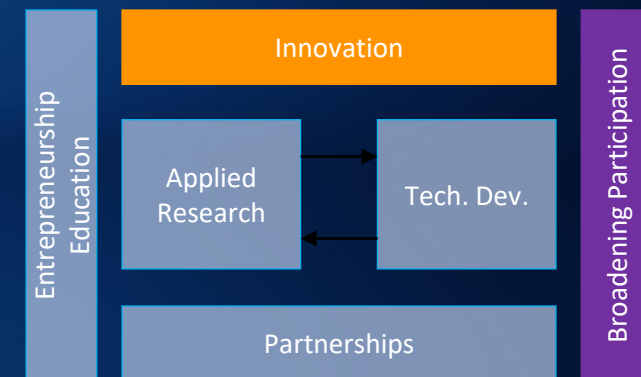
- We seek commitment:
  - Masters and PhD students: 100% of research effort must be dedicated to PFI.
  - Postdocs: must dedicate at least 50% of non-teaching time to PFI.
  - Allocate personnel expenses for students /postdocs accordingly\*.
- Teams without NSF I-Corps Teams Lineage must integrate the mandatory I-Corps training\*.
- Leverage your Industrial Partnership
- Mentorship:
  - Industrial Partner's co-PI (in PFI-RP)
  - Tech. commercialization expert (in PFI-TT)



See budget instructions in solicitation: <https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>

## 8. Broadening Participation

- Congressionally mandated: American Innovation and Competitiveness Act (Public Law No: 114-329).
  - *“expanding the participation of women and individuals from underrepresented groups in innovation, technology translation, and entrepreneurship”*
- Your PFI project must contain a plan to broaden the participation of women, minorities, and persons with disabilities.





# Questions? Send your executive summary

After you visit <https://www.nsf.gov/PFI> and read the solicitation, email the Program Director ([pfi@nsf.gov](mailto:pfi@nsf.gov)) a short summary with:

- Your proposed innovation.
- The NSF Lineage of your project.
- The societal need/market opportunity you are addressing.
- Key technological hurdles you must overcome to translate the technology into a product or service.
- Your envisioned pathway to commercialization.
- Your team and partners.



# Important Resources for Academic Innovators

- Visit our website PFI: <https://www.nsf.gov/PFI>.
- Read the current solicitation NSF 19-506  
<https://www.nsf.gov/pubs/2019/nsf19506/nsf19506.htm>
- Contact Program Director Jesus Soriano –[jsoriano@nsf.gov](mailto:jsoriano@nsf.gov) or [pfi@nsf.gov](mailto:pfi@nsf.gov)



# Questions and Contact

Jesus Soriano, MD, PhD, MBA

Program Director

Division of Industrial Innovation and Partnerships

Directorate for Engineering

National Science Foundation

Email: [jSORIANO@NSF.gov](mailto:jSORIANO@NSF.gov)

[pfi@NSF.gov](mailto:pfi@NSF.gov)

