



2022 PTIE Conference Abstract

Title: *Why PTIE is Essential to the Future of the Academy*

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Abstract:

The global academic community is at a powerful crossroad as it relates to perspectives, recognition and response to innovation and entrepreneurship achievements in the academic environment. Virtually every major institution is stressing the importance of innovation and transfer of technology to faculty, staff and students however the recognition and reward system of most institutions is not well aligned with attaining innovation related goals. The focus of this presentation is to clearly state the importance of a seismic-shift in the academy to formally consider innovation and entrepreneurial achievements in the promotion and tenure process. The tangible benefits associated with faculty members gaining and utilizing innovation and entrepreneurship competencies are evident in enhance classroom teaching, use-inspired research outcomes and broader impacts to societies. To further demonstrate the significance and relevance of I & E achievements, the National Science Foundation has established a new directorate, Technology, Innovation, and Partnerships (TIP), that is focused on funding user-inspired research. Additional factors that conclusively support the inclusion of I & E achievements in Promotion and Tenure include economic opportunities, a positive impact on students, and the use of outcomes to address urgent societal needs.



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Why PTIE is Essential to the Future of the Academy

The importance of PTIE for universities, faculty and students

Importance of the Academy listening...

A factual quote from PTIE Findings:

“Universities are under increasing pressure to demonstrate their continued relevance by:

- a) providing tangible benefits from government-supported research & education,
- b) addressing societal challenges to improve the lives of humankind and
- c) supporting the innovation economy to strengthen our Nation”

Tangible Benefits to NSF: About the National Science Foundation...

“NSF is vital because we support basic research and people to create knowledge that transforms the future.

This type of support:

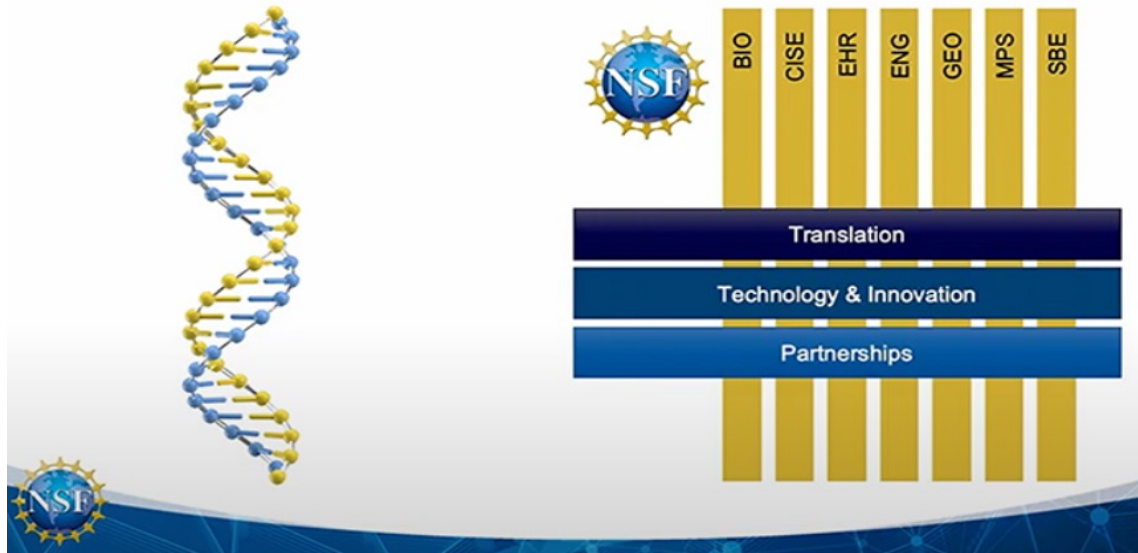
- Is a primary driver of the U.S. economy.
- Enhances the nation's security.
- Advances knowledge to sustain global leadership.”

Source: NSF website - <https://www.nsf.gov/about/>

NSF's Newest Directorate for Technology, Innovation, and Partnerships (TIP)

TIP which will focus on supporting “use-inspired” R&D

Designing for the Future: A New Horizontal



The Academy: Why are we here?

- North Carolina State University Mission

As a research-extensive land-grant university, North Carolina State University is dedicated to excellent teaching, ***the creation and application of knowledge***, and engagement with public and private partners.

By uniting our strength in science and technology with a commitment to excellence in a comprehensive range of disciplines, NC State promotes an integrated approach to ***problem solving that transforms lives*** and provides leadership for social, economic, and technological development across North Carolina and around the world.

How do faculty solve problems?

- Funded research
- Creation of knowledge
- Collaboration to use knowledge to solve problems
- Engage peers through scholarly publications
- Innovation

An expectation for Innovation is implied in university mission statements.

Achievement of university missions requires innovation!

Economic benefits of this Seismic shift

- Incorporating I & E achievements in P&T consideration will likely enhance the participation of faculty in I & E
- An example of the economic benefit of innovation and entrepreneurship is seen in the I-Corps Site Program Customer Discovery Project where I-Corps Sites self reported companies founded and funding attracted since the funding of their sites
 - This information was collected and summarized by I-Corps Regions

Economic Impact for NSF I-Corps Sites

	Active Companies	Funding Attracted (\$)
Northeastern Region I-Corps Sites	348	242,943,000
Mid-Atlantic Region I-Corps Sites	242	78,226,000
Southeastern Region I-Corps Sites	173	23,444,000
Southwestern Region I-Corps Sites	197	9,322,000
Mid-Country Region I-Corps Sites	329	179,500,000
Western Region I-Corps Sites	210	82,450,000

* This data was collected by former NSF I-Corps Program Director Pamela McCauley in 2019 as self reported data by NSF funded I-Corps Sites

Impact on Faculty

- I&E provides an avenue for faculty looking to maximize the societal impact from their work.
- Recruitment and retention tool for early and mid-career faculty.
- Faculty with industry connections are academically more productive and have more impact.
 - These faculty published in significantly more and in higher impact journals.
 - Papers published by university-industry collaborations are cited more than multi- or single university papers.

I & E interest among students

- Studies show that 72% of high school students and 64% of college students want to start a business someday.
- Studies show that 61% of high school students and 43% of college students would rather be an entrepreneur instead of an employee when they graduate college
- Quote regarding crisis and innovation:
 - “In March 2020, demand for entrepreneurship education was up 66 percent year-on-year—a strong indication that, during times of great crisis, students perceive new business creation as a catalyst for helping them find opportunities.”

Urgent Societal Needs Globally

- The COVID-19 pandemic is a glaring example of the need to accelerate innovation and translation of knowledge from the academy to useful and impactful solutions
- Engineering's Grand Challenges
- UN SDG's
- Global climate crisis

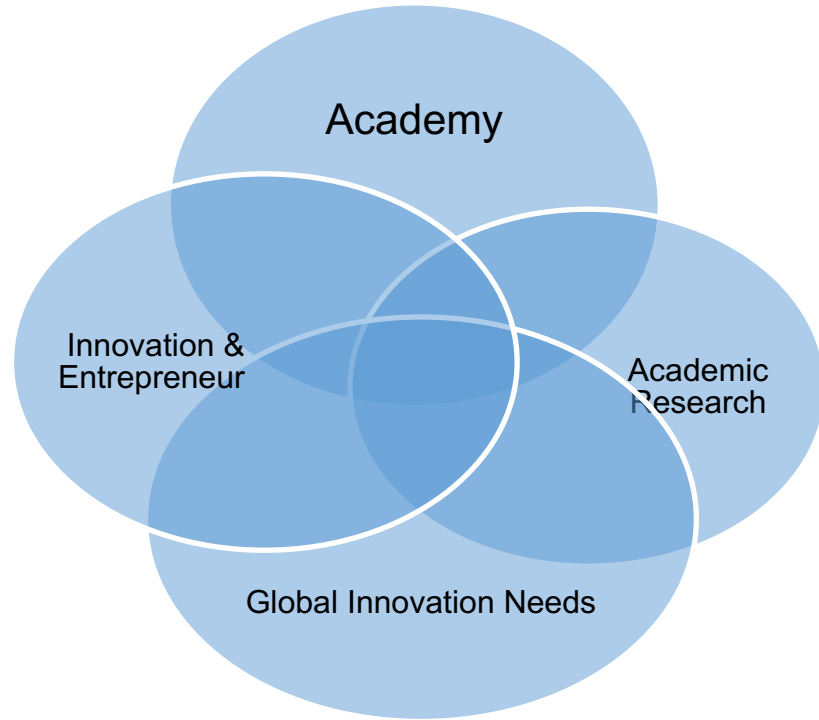
National and global challenges that require research, innovation and an entrepreneurial mindset!

Seismic Shift for Sustainability

- To be true to university mission and vision
- Attract innovative faculty
- Recruit and retain high quality students
- Positively impact society and the community
- Relevant engineering education for today's student
- Economic benefits for the university and the community

Why this is so important to ME

- Season of opportunities at the intersection of the academy, innovation, entrepreneurship and global needs
- Understanding the power of applied STEM education in innovation
- Experience as U.S. State Department Jefferson Science Fellow



How we respond will greatly impact the future of engineering education, society, and the urgent needs of the global community



It's time for a shift...



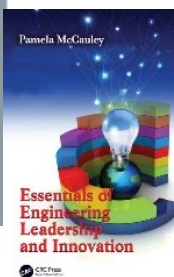
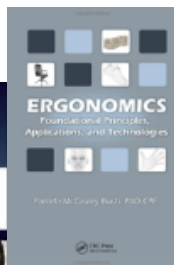
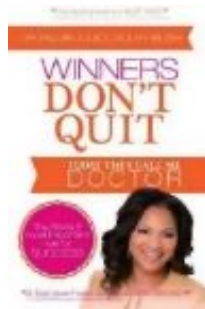
let's do this together!

Seismic
Shift Time!



Let's
Connect!!!

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