ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

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COMMENTS OF ITIF

Before the

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In the Matter of: The newly-established Technology, Innovation, and Partnerships (TIP) Directorate	)	FR Doc. 2023-08995

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RESPONSES

1. *Prioritization. What evidence exists that should guide NSF in determining priorities across the technologies listed above in advancing or maintaining U.S. competitiveness? Within each technology area, are there critical use-inspired and translational research topics that should be prioritized for NSF investment in a 1- to 3-year time frame to advance U.S. competitiveness, and if so, why? Which research topics within each of the technology areas can be reasonably expected to be funded by others, making them less critical for TIP funding?*

This is not the optimal way of framing this question. First, the overarching goal of the TIP program should be to ensure that the United States does not lose the techno-economic battle with China, for if that happens it will be extremely difficult for the U.S. to achieve other goals, such as a robust increase in living standards.

Second, the best way for TIP to help support the battle with China is to ensure that virtually all TIP funding be contingent on at least some funding by industry. This is important for two reasons. Without industry buy-in there is a strong likelihood that only a modest share of the benefits of the TIP-supported research will be commercialized, much less commercialized in the United States. The scholarly evidence shows that the earlier research is on the TRL scale, the more the benefits spill over to other nations. NSF is a good agency for adding to the global pool of scientific knowledge, but if TIP is to be effective with its new mission it will need to do things differently. And the easiest way to ensure that happens is to require industry match of virtually all TIP funding. If principal investigators and university centers cannot get at least some money from industry for their work, TIP should not fund them.

With that caveat in mind the most important areas to fund to beat China at the technological race are: 1) Artificial intelligence, machine learning, autonomy, and related advances; 2) High performance computing, semiconductors, and advanced computer hardware and software; 3) Quantum information science and technology; 4) Robotics, automation, and advanced manufacturing; 5) Biotechnology, medical technology, genomics, and synthetic biology, and 6) advanced materials science.

2. *Suitability. Which technologies, or topics within the technologies listed above, are well-suited for the type of use-inspired and translational research that TIP has the mandate to support? What kind of investment approaches or funding vehicles would have the greatest impact in maturing said technology?*

Rather than NSF or PI's decide which topics are best, the best method is for universities to work with industry in the United States to identify which technologies and topics are ideal for funding. Within these areas a key question should be production. It's not enough to develop ideas and technologies if they are to be produced overseas, especially by Chinese firms. TIP should focus extensively on manufacturability issues and automation and other production innovation systems that make it more likely for production to be done domestically.

3. *Workforce. Which of the technologies listed above will have the greatest workforce needs in the next 1 to 5 years, understanding that investments in workforce initiatives often have longer time horizons to produce*

results? To meet this growing demand, how could TIP programs be structured to best supply these workforce needs, including pathways to the state and local levels, considering education and training at every level?

This is not the right way of looking at this issue. The U.S. unemployment rate is at near all-time lows. The challenge is not job creation. The challenge is losing our technology and production lead to China. Technologies should not be chosen based on job creation potential. They should be chosen based on the extent they help America beat China economically.

a. *How could TIP collaborate with other government and private organizations to ensure workforce development activities address industry priorities across the key technology focus areas and societal, national, and geostrategic challenges while broadening the talent base through diversity, equity, inclusion, and accessibility?*

TIP should not operate any regional innovation programs without very close operational collaboration with the Department of Commerce. It makes no sense to have separate programs that are not aligned in their funding.

b. *How could the directorate inform state, local, and tribal government of the knowledge, skills, and abilities needed to build pathways to prepare future workers and reskill current workers for entry into the key technology focus areas?*

Certainly most, if not all, states are well aware of skill needs for their economy. And the BLS does a good job of forecasting future employment. TIP should focus its core mission of expanding US technology competitiveness and leave workforce development (except for the production of scientists and engineers) to others.

4. *Addressing societal challenges. Considering the ways each of the key technology focus areas will impact each of the societal, national, and geostrategic challenges, which of the technology areas should receive investment priority and why? This includes investments in use-inspired and translational research, education, training, as well as general literacy on a given topic. On what specific challenge problems related to the societal, national, and geostrategic challenges could TIP focus that would, in turn, drive technological development in the key technology areas?*

As noted above the most important societal challenge facing America is the techno-economic battle with China. As ITIF has written, China is seeking to become the world's dominant economy when it comes to advanced industry production. This should be the sole focus of TIP.

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