



# Using the Tools We Have: Innovation and the Obama Administration

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## THE NEW INNOVATION CHALLENGE

### Growing Global Commitments to R&D

Governments in Asia and Europe are committing both high-level policy attention and significant resources to the challenge of knowledge-based competition and growth. Recognizing that innovation is the key to international competitiveness in the twenty-first century, they are seeking ways to translate scientific and technological knowledge more effectively into new products, processes, and businesses. To this end, major nations are initiating new research consortia, research parks, and innovation awards, often inspired by U.S. models—but backed by significant resources and high-level support—to attract, nurture, and support innovation and high-technology industries within their national economies.

### Our Innovation Imperative

The United States must address these new global realities if we are to compete successfully in the twenty-first century, and ensure that the United States remains a major locus of research and development and for services and manufacturing. To leverage the \$143 billion that the U.S. invests annually in science and technology more effectively, we must renew and reinvest in our own proven innovation programs and policies.

### A New Urgency

“This nation must prepare with great urgency to preserve its strategic and economic security. Because other nations have, and probably will continue to have the competitive advantage of low-wage structure, the United States must compete by optimizing its knowledge-based resources, particularly in science and technology, and by sustaining the most fertile environment for new and revitalized industries and the well-paying jobs they bring.”

*Rising Above the Gathering Storm*  
A report of the National Academies

### Tax Credits and People

Expanding significantly and making permanent R&D tax credits to encourage and sustain innovation are essential steps. Similarly, we need to modify immigration policies to attract and retain well-trained researchers and potential entrepreneurs. Training bright and resourceful foreign students and then asking them to leave the country makes no sense.

## THE ROLE OF INNOVATION PARTNERSHIPS

We should also not lose sight of the need for close cooperation between government, industry, and university to bring technology out of the laboratory and into the market.

### A Tool to Improve Competitiveness

Innovation partnerships are a practical way for small and large businesses, universities, and government agencies collaborate to bring new products to the market. The United States has a number of proven partnership programs, many of which are now being emulated widely abroad. These programs could be expanded to encourage innovation at home and, thus, enhance the competitiveness of the U.S., while meeting pressing national needs in health, security, and energy

### Proven, ‘Off-the-shelf’ Programs

The United States partnerships programs can be scaled up to address the challenges the nation faces today. Programs like the Small Business Innovation Research Program (SBIR) and the Technology Innovation Program (TIP) have the leadership and implementation structures in place to address current challenges. New programs will take a great deal of time to put in place and even more time to produce results.

### Addressing Critical National Needs—Now

TIP’s mission is to address critical national needs, including those in energy, environment, infrastructure, and health. TIP has a proven track record (as the ATP program) and would be able to spend additional resources promptly and effectively. SBIR is designed to address the mission needs of the agencies through open source competitions and has been proven to be extremely responsive in times of crisis. Following the anthrax attacks of 2001, NIH was able to attract proposals to detect and counter bio-threats. Likewise, DOD was rapidly able to develop and procure lightweight armor to protect soldiers in Iraq.

### Gets Funds into the Hands of Technology Entrepreneurs

In the current environment when financial institutions are hesitant to lend and venture capitalists are reluctant to invest, innovation awards from SBIR and TIP offer a critical lifeline for innovative small businesses that are trying to develop and nurture new technologies for the market.



## THE TECHNOLOGY INNOVATION PROGRAM

### What is TIP?

NIST's Technology Innovation Program is aimed at speeding the development of high-risk, transformative research targeted to address key societal challenges. Funding is provided to small and medium-sized businesses, universities, and consortia for research on potentially revolutionary technologies for meeting critical national needs that present high technical risks. The primary mechanism for this support is cost-shared research grants, cooperative agreements, or contracts awarded on the basis of merit competitions.

"Assisting United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions, to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need."

America COMPETES Act (PL 110-69)  
August 9, 2007

### Addressing Critical National Needs

TIP's mission is to address critical national needs—that is, those areas where government attention is necessary given the magnitude of the problem and technological challenges that need to be overcome. Current challenges include new technological investments in:

- Civil Infrastructure
- Energy
- Manufacturing
- Water
- Communications and Complex Networks
- Personalized Medicine

### TIP is the Successor to ATP

Established in 1988, ATP was created to fund government-industry partnerships to support the development of new technologies with potential applications across the U.S. economy. In its assessment, the National Academies found ATP to be an effective program with an exceptionally good evaluation effort. The America COMPETES Act of 2007 abolished the Advanced Technology Program and replaced it with TIP; a major difference is the elimination of awards to large businesses. At \$80 million, the program is underfunded, but has a proven track record, established procedures, and capacity to expand rapidly.

## The SBIR PROGRAM

### What is SBIR?

SBIR is a \$2.3 billion national program that offers competition-based awards to small high-technology firms with technically sound but commercially unproven ideas. The goal is to develop these ideas and bring them to market. In doing so, the awards advance the missions of the 11 federal agencies that administer SBIR.

### Why do we need SBIR?

Because new ideas are by definition unproven, the knowledge that an entrepreneur has about his or her innovation and its commercial potential is normally not available to prospective investors. This means that new ideas with commercial potential often cannot attract initial stage private investment, creating a Valley of Death where good ideas and firms perish. SBIR awards provide this seed capital and, moreover, act as a signal to private markets, helping entrepreneurs secure the funds needed to bring the fruits of federal R&D to market.

### "Sound in Concept"/ "Effective in Practice"

A committee of the National Academies has just concluded the first comprehensive assessment of the program. They find that the program is effective in stimulating technological innovation and increasing private sector commercialization of innovation. The Committee has also recommended that some program processes be improved, including more funds for management and evaluation.

### Expanding and Reauthorizing SBIR

"In summary, the program is proving effective in meeting Congressional objectives. It is increasing innovation, encouraging participation by small companies in federal R&D, providing support for small firms owned by minorities and women, and resolving research questions for mission agencies in a cost-effective manner. Should the Congress wish to provide additional funds for the program in support of these objectives, those funds could be employed effectively by the nation's SBIR program."

NRC: *An Assessment of the SBIR Program, 2007*

Begun in 1982, SBIR has been reauthorized and in 1992 and 2000. The program expires in March 2009. Reauthorization efforts in 2008 were unsuccessful.

Both these programs are well-established and, with additional funds, could be expanded quickly and effectively to provide a short term fiscal stimulus that invests in the nation's long term competitiveness.