

Technology Innovation

# A Change-Enabler and Foundation for America's Future

Each incoming administration faces a plethora of campaign promises and still-unknown challenges in national and homeland security, law enforcement, healthcare, and benefits management. While refocusing and executive action will address some challenges, most will require a more sustained effort that mixes new policies, capabilities, and cultural changes. Stimulating and coordinating the nation's technological innovation community is likely a critical component of the Trump administration's plan. This series highlights key science and technology (S&T) ecosystem opportunities that will help incoming appointees succeed.

## A Case for Action

The United States is an innovative nation. American ingenuity birthed airplanes, the assembly line, mobile phones, microwave ovens, air conditioning—even masking tape. Thousands of innovations such as these are the foundation for our nation's economic growth, provide safety and security to our citizens, and help address our global priorities.

The federal government is the primary sponsor of basic research, which provides the groundwork for future innovation. Over the past fifty years, every U.S. president has invested considerable time and effort shepherding our complex yet incredibly fruitful "innovation nation." Vannevar Bush's seminal 1945 report to President Truman, *Science: The Endless Frontier*, identifies principles that the federal government must advance and respect for our S&T communities to meet the nation's future needs. These principles include the stability of long-term funding, research grants to independent institutions, and pursuit of projects consistent with agency missions. Now, the United States' dominance in innovation is at risk as other countries recognize innovation's role in creating and maintaining our global preeminence. China and Japan have aggressively raised their

standing through investments and pro-innovation policies, and are now innovating at roughly the same order of magnitude as the United States. And America's narrowing pipeline of science, technology, engineering, and math students is constricting our future innovation.

**“ More than four dozen countries have now created national innovation strategies and/or launched national innovation foundations.”**

—INFORMATION TECHNOLOGY & INNOVATION FOUNDATION,  
NOVEMBER 2016

## Understanding the Problem

Given the importance of technological innovation to the nation's future, and its role in meeting President-elect Trump's priorities, the incoming administration will need its own S&T innovation strategy. The strategy must balance multiple aspects, such as:

- Encouraging current innovation while also strengthening the foundation for future innovation

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- Addressing big-picture issues while also focusing on specific strategically important opportunities
- Accelerating innovation as much as possible while also enacting policies that protect and encourage implementation of concepts that haven't yet been imagined

The federal S&T budget is sizeable and generates many positive advancements. More can be done to maximize national benefits from these investments, however, and the incoming administration will also be able to refocus these activities to support their priorities. At the same time, federal S&T investments are but a small percentage of the overall national innovation ecosystem. The Trump administration may want to better leverage and shape the investments that address these issues and more rapidly integrate their successful outcomes into federal applications.

### **Areas of Opportunity for the New Administration and Agency Leaders**

A presidential administration has a variety of means to support technological innovation. These include allocating funds, developing policies and/or challenge competitions that drive private-sector activities in a strategic direction, representing U.S. interests on the world stage, and serving as a champion for critically important functional areas and S&T topics. Following are additional papers within this technology innovation series:

- **Leveraging and Shaping Private Sector Innovation:** Given that federal S&T investments are a small part of the national "innovation ecosystem,"

how can the government better leverage what it doesn't control?

- **Interagency S&T Collaboration:** Interagency collaboration is the Trump administration's best chance of meeting its technological innovation goals, even though such collaboration is not the normal practice of the federal government.
- **Defensible Research Development Test & Evaluation Programs:** The federal process for developing programs and budgets doesn't guarantee that the programs will be successful. By instituting a "defensible" culture, the Trump administration can achieve more from its investments.
- **Managing Research Efforts:** Moving beyond cost and schedule to a multi-dimensional framework can help ensure both innovation and transition.
- **Planning Challenge-Based Acquisitions:** Even well-executed acquisition programs can produce a single product that doesn't meet mission needs. An alternative approach exists to better incentivize innovation and deliver successful outcomes rather than polished proposals.
- **Technology Transfer:** The U.S. government invests a significant amount of funding toward innovation, too much of which ends up sitting on the shelf. An increased emphasis on technology transfer can rapidly stimulate innovation throughout the nation, thus supporting a number of administration priorities.

*For further ideas about applying the guidance in this paper to your agency's particular needs, contact [federaltransition@mitre.org](mailto:federaltransition@mitre.org).*