

Technology Transfer

Maximizing the Benefits of Federal Research

The U.S. government invests approximately \$135B in public funds each year to advance science and technology (S&T) that improves security, creates jobs and higher standards of living, and unlocks new discoveries that will serve as the foundation for future innovations. Despite an abundant array of success stories, more can be done to reap the benefits of this investment. Research performed within a federal agency all too often stays within that agency. The knowledge gained and intellectual property (IP) developed are often brought to bear on that agency's mission, but less emphasis is given to how they could be leveraged by other agencies or the private sector. The incoming Trump administration has the opportunity to achieve a greater return on the taxpayer's investment by creating an environment in which federal research managers are expected to maximize technology transfer opportunities.

A Case for Action

Federally funded research is a national investment whose benefits need to be maximized. While there are many legitimate cases where IP should remain with the funded originator, there are also many cases where everyone would benefit if that IP were shared with other parties via technology transfer (either by making it freely available as open source or by entering into a formal licensing agreement). Doing so would allow the knowledge and/or capability gained through the federal investment to be leveraged in other applications and combined with other new discoveries in a future generation of innovation. This is a hallmark of scientific progress—and also helps entrepreneurs grow their businesses, thus creating new jobs and a boost to the U.S. economy.

An illustrative example comes from the Federal Aviation Administration (FAA), which, through its federally funded research and development center at MITRE, sponsored the development of a prototype system that provided small aircraft with the same level of situational awareness in the air that larger

planes with costly and sophisticated systems enjoyed. MITRE developed a Universal Access Transceiver Beacon Radio (UBR) that affordably incorporates the community's standard Automatic Dependent Surveillance–Broadcast Technology, thus meeting the needs of the FAA and small aircraft operators. It has since licensed the technology to 14 companies, which are now commercially offering a variety of UBRs. Transferring results from this federally funded research has created a new market, revolutionized private aviation, and increased safety in the skies.

“ We use open source releases to move technology from the lab to the marketplace, making state-of-the-art technology more widely available and aiming to accelerate U.S. economic growth.”

—LINDA L. BURGER, DIRECTOR OF NSA'S TECHNOLOGY TRANSFER PROGRAM

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In practice, technology transfer is not typically a high priority within federal research programs. Many federal employees have a limited understanding of technology transfer, it's not required by most agency leadership, and there hasn't been a sustained push by prior administrations.

This doesn't have to be the case. The incoming Trump administration can unlock these discoveries and make them available to our nation's innovators with a relatively small investment in training and by communicating the benefits publicly in order to attract greater private industry demand. Doing so can result in measurably improved returns on taxpayer investments within the President's first term.

Understanding the Problem

Perhaps the single biggest challenge is that most federal R&D program managers haven't been trained in technology transfer, so they don't understand their opportunities to maximize the benefits of the research they manage. Instead, they focus on the more traditional aspects of their role, such as ensuring that their inventions serve the needs of their agency and that their funding and contractual obligations are in order. The end result is that innovations that could be impactful in a variety of contexts remain, in effect, sitting on the shelf.

Assessment of technology transfer is rarely, if ever, a major factor in agency oversight or budget development processes. As a result, there is little incentive for agency managers, who are very focused on their agency's core missions, to focus attention on technology transfer.

Areas of Opportunity for the New Administration and Agency Leaders

An enhanced focus on technology transfer would be an opportunity for the incoming Trump administration to provide significant benefits to the nation within its first term at modest additional cost. A successful approach would combine top-down instructions and oversight attention that would drive agencies to focus on this priority, with training and incentives at the individual program manager level that would compel managers to take individual action. Recommended high-level actions include:

Tasking the Office of Science and Technology Policy and the Office of Management and Budget to:

- Ensure that technology transfer is a priority within federal research programs.
- Initiate an interagency process to identify and publicly highlight successful technology transfer activities throughout the federal government.

Instructing the Office of Personnel Management to:

- Develop and deliver training programs on technology transfer approaches and management, using the Federal Laboratory Consortium for Technology Transfer's *Green Book* as a starting point.
- Work with other entities within the executive and legislative branches to create personal incentives for federal program managers to successfully transition research advancements beyond their agency (inside and outside government).

Providing training and highlighting success stories within and across agencies

For further ideas about applying the guidance in this paper to your agency's particular needs, contact federaltransition@mitre.org.