# PARTNERSHIPS TO ACCELERATE ADVANCEMENT OF PRIORITY S&T

# What Is the Issue?

The United States stands at the convergence of multiple inflection points within science and technology (S&T) advancement:

- We're in the beginning stages of having a handful of technologies fundamentally change what is possible and thus significantly influence our national security and economic prosperity for the next few decades.
- New programs, with significant financial resources, are being established to increase the federal government's investments in translational or use-inspired research (while maintaining its historical focus on basic research).
- There is a growing understanding that the United States must operate in a different, more collaborative manner on critical topics than we have in the past if we're to be successful within the modern international S&T competition.

This convergence of inflection points provides a unique opportunity, provided we approach them strategically and collectively. Providing additional resources to a technology community doesn't magically meet the nation's objectives. Neither does creating and nurturing an unprioritized variety of innovation-centric partnerships. But providing additional resources and enabling specific public-private collaboration at the right time and with the right focus within the technology lifecycle can rapidly accelerate S&T development and its application across a variety of use cases.

# What Did MITRE Do?

The paper *Partnerships to Accelerate Advancement of Priority* S&T brings together the authors' varied insights (managing federal research and development [R&D] programs, establishing national S&T strategies, investing as part of the venture capital community, and leading a variety of public-private partnerships [PPPs]) to provide guidance on how the nation can accelerate advancement of critical S&T. It provides (1) foundational insights on how technology normally evolves and potential acceleration points and (2) basics on establishing and managing successful partnerships. The final section brings the two fields together, providing actionable recommendations for partnerships and PPPs at specific points in the technological lifecycle that would significantly accelerate S&T advancement.

# What Did We Learn?

There are a handful of emerging technologies, leadership of which in the global marketplace will greatly define a nation's future security and economic prosperity. The United States, as well as its international partners and competitors, are actively trying to become the global leaders in each technology by increasing research expenditures and creating new bureaucratic entities to specifically focus on this issue. While these "a rising tide lifts all boats" approaches will be beneficial, our analysis identified four points within the normal technological evolutionary process where dedicated attention can greatly accelerate advancement and transition into application (see Figure 1).



Public-private collaboration at the right time and with the right focus within the technology lifecycle can rapidly accelerate S&T development.

MITRE's mission-driven teams are dedicated to solving problems for a safer world. Through our public-private partnerships and federally funded R&D centers, we work across government and in partnership with industry to tackle challenges to the safety, stability, and well-being of our nation.





Figure 1. Focused Attention on Four Levers Earlier in a Technology's Evolution Can Accelerate Its Adoption and Market Growth

A variety of partnerships could be leveraged at each point. MITRE's prior partnership activities have revealed that the most successful collaboratives typically have the following characteristics: multidimensional thinking, shared vision, mutual trust, mutual benefit, co-created model, transparency, shared resourcing, co-decision making, appropriate safeguards, and a collaborative environment. We also know that participating entities in each endeavor will have different levels of investment and likely require a great range of value propositions to entice their participation.

The novelty within this paper is the cross-analysis of S&T advancement with partnership practices. We identified levers that could accelerate advancement at each of the four points identified. For each, we identified the best types of partnerships, the value propositions required for key communities to participate, and metrics on how to assess progress and impact.

**Stimulating Research and Creating Interest.** Deep tech investment, collaboration-building forums, non-dilutable grants, and community challenge problems are the primary partnership approaches to move this lever. This lever is about bringing potentially interested parties together to increase situational awareness.

**Mobilizing a Network.** This lever is the critical transition phase from fundamental research to applied research. It is most notably characterized by academic engagement, deep tech startups, joint R&D ventures, angel investment, and the first-market predictions. Example partnership approaches include workshops, specialty conferences, collaboration accelerators with a technology focus, and initiating silo markets.

**Demonstrating Impactful Solutions**. This lever occurs when the market is emerging, and product companies are looking for key features they can acquire to complete solution sets or new and enhanced features based on technology enablement or market needs. It is in this time frame when standards and frameworks emerge that enable faster adoption of innovative solutions spanning multiple markets.

**Increasing Business/Industry Engagement.** The final lever of acceleration and adoption occurs when markets become stable or enter transition. Public policy is punctuated, and standards are established leading to consistent industry models, large-scale

integration, and interoperability of technology—all of which enable more complex operational capabilities to emerge. Partnerships can support government and commercial opportunities to accelerate key standards, address major challenges, scale solutions, and establish new policies.

#### What Does It Mean?

The United States needs a new model to foster voluntary, strategic collaboration across a range of public and private sectors to holistically address the nation's most-critical S&T priorities. While initiatives recently undertaken to support this path will be helpful, we can significantly enhance acceleration by strategically and precisely targeting collaborative activities at the four key points in the evolutionary process.

# Link to the Technical Paper

Partnerships to Accelerate Advancement of Priority S&T is available for download here at mitre.org.

# About the Author

**Duane Blackburn** helped establish and serves as the science & technology lead for MITRE's Center for Data-Driven Policy, which brings objective, nonpartisan insights to government policymaking. Prior to joining MITRE, Mr. Blackburn was an Assistant Director of the White House Office of Science and Technology Policy (OSTP), where he was responsible for the homeland security, law enforcement, and identity S&T portfolios for both the Bush and Obama administrations. He led the development and implementation of government-wide S&T strategies on a variety of subjects through the National Science and Technology Council and influenced the conceptualization and oversight of national policies and federal systems throughout the formative stages of the nation's homeland security enterprise.

# **Center for Data-Driven Policy**

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