

A NATIONAL SCIENCE AND TECHNOLOGY COUNCIL FOR THE 21ST CENTURY

By Duane Blackburn and Michael Garris



The United States is at an inflection point in how we tackle our most critical science and technology (S&T) issues. Implementing a 21st-Century American S&T strategy will require updated models for federal leadership, including an enhancement of the National Science and Technology Council.

The nation's response over the past year, as we addressed COVID-19, highlights how innovative collaboration and steadfast national focus on priority issues can lead to advancements on scales previously unimaginable. Leaders from our executive and legislative branches of government are seeking to similarly remodel the nation's overall S&T approach to better ensure the future of our national and economic security.

To do this effectively, a national-level partnership will be needed: a synergy between government and non-governmental entities (NGEs)—academia, the commercial sector, contract research organizations, and federally funded research and development centers/national labs—to holistically address our nation's most critical S&T priorities.¹ Better collaboration between the federal government and NGEs requires enhanced federal government coordination, setting new expectations for federal S&T programs, and creating a framework to speed delivery of new discoveries and technological advances into the hands of American consumers, enterprises, and state, local, and national leadership. One of the more influential mechanisms in meeting these new needs will be the National Science and Technology Council (NSTC), whose focus and approach will need to be enhanced.

Strengthening the National Science and Technology Council

The NSTC has been the President's mechanism to coordinate the federal government's S&T enterprise since 1993. Its primary function has been to bring together federal agencies to develop and implement whole-of-government research and development (R&D) strategies on each administration's priority topics. Much like the more well-known National Security Council (NSC), staff from the Executive Office of the President (EOP)² lead interagency bodies for each

selected topic to develop and implement these strategies, working in collaboration with budget examiners from the Office of Management and Budget (OMB).³

The NSTC has been quite influential in coordinating the federal government's R&D efforts on priority topics, yet an expanded focus is needed for the federal government to meet national competitiveness needs within a 21st-century model of a national S&T strategy. While some enhancements are needed on R&D coordination, additional activities will also be needed to coordinate broader S&T issues. Each is discussed in the following subsections.

Enhancing R&D Coordination

The NSTC's predominant focus since its inception has been developing whole-of-government R&D strategies on each administration's priority topics. These strategies are prescriptive as the administration develops the President's Budget Request and later influences how agencies spend their appropriated funds.

Federal R&D investments tend to focus on endeavors that are nationally important but lack anticipated near-term profits and are therefore not often prioritized by NGEs. Thus, to properly develop plans for these federal investments, there is an inherent requirement to assess and understand the nation's R&D gaps. There is no consistent, formal mechanism used to gain this knowledge, however.

NSTC entities should actively seek insights, not only from federal agencies, but also from a variety of NGEs so that they can properly identify and prioritize federal R&D investments. Seeking such external input, through means such as collaborative workshops and formal Requests for Information, has been a growing trend throughout the EOP and should become a normal practice for NSTC entities.

Non-government entities also need to understand the federal government's R&D investment priorities and strategies so that they can plan their own activities accordingly. While the annual White House Office of Science and Technology Policy (OSTP)/OMB budget guidance memorandum provides a high-level overview of these priorities, more detailed information on individual topics is also required. In the past, NSTC entities regularly published such information; one example is The National Biometrics Challenge from 2006.⁴ That document served not only as a policy document which guided federal investments, but also as a tool to facilitate discussions between federal employees and their non-government counterparts in the biometrics research community. The document, and the many discussions that it generated, played a key role in the rapid advancement of associated technologies to meet critical national needs. However, the NSTC has not regularly produced such documents, nor publicized the membership of its interagency bodies, over the past several years; this has resulted in lost communication and coordination opportunities.⁵ Taking a page from the past and returning to these practices would be an easy and positive step in strengthening the NSTC and its ability to support R&D advancement at a national level.

Expanding S&T Coordination

To meet national S&T objectives we need to not only develop new S&T capabilities but also ensure the nation can leverage them—and to do so in ways both optimal and appropriate. Fortunately, the Executive Order (EO)⁶ that created the NSTC enables it to also coordinate federal S&T activities beyond R&D.

Common activities that need better coordination, both within the government and between government and NGEs, include developing

consensus standards, training users and fostering communities of practice to share experiences to optimize integration and operationalization, assessing a technology's readiness, establishing best practices and oversight structures to ensure the technologies are used properly, and providing feedback to drive continued R&D advancements and refinements.

Such activities are clearly within the NSTC's existing EO mandate. There is also historical precedent of the NSTC tackling such issues, though it is limited. The same NSTC Subcommittee that produced the previously mentioned Challenge document, for instance, also:⁷

- Coordinated federal agency participation in national standards development bodies, and the United States' position in international standards bodies;
- Issued an NSTC policy that established a federal registry of standards,⁸ which federal agencies were required to use in their systems;
- Collaborated with federal Privacy Officers to refine the use of Privacy Impact Assessments as a means to assess and mitigate privacy impacts on planned and in-use federal identity systems;
- Coordinated interagency data sharing and interoperability policies among federal systems protecting the nation from known and suspected terrorists (note that this activity was later transferred to the NSC);
- Developed a Glossary of biometric and other identity terms,⁹ and mandated that agencies follow it, so that federal government communications on this new technology would be consistent;
- Hosted an annual conference to encourage open dialogue between federal and NGE biometric researchers and practitioners; and
- Published introductory-level documents that explained biometric technologies, issues, applications, and federal programs to the general public.¹⁰

Similar activities, tailored to the specific needs of each NSTC topic group, should become the norm for whole-of-government S&T coordination and accelerated emergent technology adoption. These activities will need to be tackled both within the federal government and between the government and NGEs.

Conclusion

The NSTC has been an influential coordination body within the EOP for nearly 28 years but will need to be reimagined to properly support the nation's future S&T strategies. The recommendations provided in this paper to enhance its R&D coordination activities, while also expanding to similarly coordinate broader S&T matters, are not only needed but are already permissible and have a (limited) track record of success. Implementing these recommendations will enable OSTP and the federal government to provide the necessary leadership and partnerships necessary for a 21st-century American S&T strategy that supports the nation's future security and prosperity.

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References

- 1 Christopher Ford, Charles Clancy, and Duane Blackburn. A "Horizon Strategy" Framework for Science and Technology Policy for the U.S. Innovation Economy and America's Competitive Success. 2021. MITRE, <https://www.mitre.org/sites/default/files/publications/pr-21-1440-horizon-strategy-framework-science-technology-policy.pdf>.
- 2 The NSTC is chaired by the Director of the Office of Science and Technology Policy (OSTP). Each hierarchical NSTC body (Committee, Subcommittee, Interagency Working Group, Task Force) is then co-chaired by an OSTP staffer and one or more representatives from federal agencies.
- 3 Some NSTC Subcommittees also have program offices at designated agencies to assist with budget planning and day-to-day coordination of implementation activities.
- 4 The National Biometrics Challenge. 2006, White House Office of Science and Technology Policy, available at https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/biometrics_challenge_document.pdf.
- 5 Federal Advisory Committee Act (FACA) regulations must of course be followed, but providing information in the public domain generates many needed conversations without crossing these restrictions.
- 6 Executive Order 12881— Establishment of the National Science and Technology Council. November 23, 1993. Available at <https://www.govinfo.gov/content/pkg/WCPD-1993-11-29/pdf/WCPD-1993-11-29-Pg2450.pdf>.
- 7 For additional insight on these prior NSTC-coordinated activities, see the 2008 NSTC document "BIOMETRICS in Government POST-9/11." Available at <https://www.hsdl.org/?view&did=235185>.
- 8 NSTC Policy for Enabling the Development, Adoption and Use of Biometric Standards. September 2007. White House Office of Science and Technology Policy, available at https://www.nist.gov/system/files/documents/2017/04/12/nstc_policy_bio_standards.pdf.
- 9 Biometrics Glossary. September 2006. White House Office of Science and Technology Policy, available at <https://web.archive.org/web/20161220230838/http://biometrics.gov/Documents/Glossary.pdf>.
- 10 Biometrics "Foundation Documents." September 2006. White House Office of Science and Technology Policy, available at <https://apps.dtic.mil/sti/pdfs/ADA505048.pdf>.

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