



SUMMARY OF THE 2019 WHITE HOUSE ACADEMIC ROUNDTABLE ON ADVANCING AMERICAN LEADERSHIP IN QUANTUM INFORMATION SCIENCE

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Background

Quantum information science (QIS) is poised to create incredible new economic opportunities for Americans and improve our security and safety. As a result, our Nation's academic institutions must be prepared to enable competitive talent and reskilling while encouraging QIS innovation.

The United States is the current world leader in QIS research and development (R&D), but we must maintain and strengthen our leadership. President Donald J. Trump made significant strides to that end when he signed the [National Quantum Initiative Act](#) on December 21, 2018. In this effort, federal and academic stakeholders must collaborate to improve the quantum innovation ecosystem that will usher in the next generation of experts and technological advancements. This will empower American industries with the latest technology, advance our fundamental understanding of the universe, and support the Nation's broader science and research priorities.

On May 31, 2019, The White House convened a wide-ranging group of more than 25 key academic leaders and educators who prioritize QIS R&D for [The White House Academic Roundtable on Quantum Information Science](#). The group exemplified the diversity of the U.S. academic community, with representatives from women's colleges and Historically Black Colleges and Universities (HBCUs) joining representatives from state-wide systems and private institutions to discuss efficient, original ways to innovate and mutually support QIS efforts.

"The Industries of the Future, and QIS in particular, hold incredible promise to grow the economy, strengthen our national security, and yield great benefits for the American people. It is absolutely critical that the United States drive QIS discovery and innovation, underpinned by American values and powered by the American workforce," remarked Deputy Assistant to the President for Technology Policy Michael Kratsios.

Summit attendees participated in a set of dialogues focused on QIS academic programs currently offered around the country, best practices to establish Institutes and Centers to advance QIS, and identification of challenges and opportunities that experts foresee in connecting basic research to innovators and entrepreneurs. A panel of innovation experts worked with the group to examine parallels between their experiences creating, funding, and supporting innovation in emerging technologies, and the activities and approaches that are being developed now to foster innovation in QIS.

In his remarks, White House Office of Science and Technology Policy Director Dr. Kelvin K. Droegemeier applauded how the basic research and breakthroughs that happen at the college and university level drive our nation's leadership in science and technology. He also emphasized that involving many types of institutions, such as the diverse range represented at this event, can uplift Americans in every corner of the Nation.

Mr. Kratsios, Dr. Droegemeier, and White House Deputy Chief of Staff for Policy Coordination Chris Liddell, along with Interim Director of the National Quantum Coordination Office Dr. Jake Taylor, kicked off the event.

Top Federal R&D officials, including National Science Foundation (NSF) Director Dr. France Córdova, National Institute of Standards and Technology (NIST) Director Dr. Walt Copan, and Department of Energy (DOE) Under Secretary Paul Dabbar, led discussion sessions and encouraged conversation among academic participants.

Furthermore, the event marked the re-charter of the National Science and Technology Council's (NSTC) subcommittee on QIS to reflect its role in coordinating the National Quantum Initiative. Accordingly, Federal agency members of the subcommittee also attended, including representatives from the U.S. Food and Drug Administration, the National Security Agency, the National Aeronautics and Space Administration, as well as the Intelligence Advanced Research Projects Activity, and the Departments of Defense, State, and Homeland Security. Other parts of the White House were also in attendance, including representatives from the Office of Management and Budget and the National Security Council. Federal participants engaged in robust discussions with academic leaders about new QIS programs, degrees, institutes, and centers they are spearheading, and how such innovations could be utilized to support American students and workers.

Key Takeaways

The discussions focused on:

- **Developing Quantum academic programs nationwide to train America's high-tech workforce.** France Córdova, Director of NSF, fostered a dialogue about the benefits and challenges of establishing new research and training programs to advance quantum information science and technologies. Academic experts outlined new approaches at their institutions employing interdisciplinary methods for teaching and research that will prepare students to use QIS concepts in traditional STEM fields like engineering and computer science, and also convey potential benefits of QIS for a broader public audience. There was additional discussion of the ways to engage with industry to offer continuing education for the dynamic workforce that is needed for Industries of the Future such as QIS.
- **Supporting Institutes, Centers and Programs that advance QIS research and development (R&D).** Undersecretary for Science at DOE Paul Dabbar asked university representatives what practices, gleaned from the participants' established research centers and programs, will be effective for innovation-focused QIS institutes. They then discussed what existing university infrastructure could be leveraged for QIS R&D, and what university-level and national infrastructure components are needed. Participants highlighted how important it is to have a national vision for the way different agencies and universities can complement each other, and how partnerships can leverage existing infrastructure. It was also noted how important it is for students, researchers, and industries from across the country to have access to the resources of QIS institutes and centers.
- **Integrating Quantum research into public sector innovation and entrepreneurial endeavors.** Walt Copan, Under Secretary of Commerce for Standards and Technology and Director of NIST, engaged academic and federal stakeholders on challenges they have encountered in connecting basic research to the innovators, financiers, entrepreneurs and start-ups who will utilize it to bring innovations to the market. Participants discussed how to demystify QIS for investors and make the field more approachable for non-experts to encourage them to collaborate with researchers, engineers, and academics to propel laboratory work to the market. They also pointed out that test-bed infrastructure is critical for innovation. Finally, they discussed pathways for students and postdocs to collaborate with innovators within industry.

Agency Announcements

NSF Director France Córdoba, DOE Under Secretary for Science Paul Dabbar, and NIST Director Walt Copan made announcements regarding their respective agencies:

- NSF announced the June 3rd deadline for letters of intent for Quantum Leap Challenge Institutes proposals.
- DOE [announced](#) the notice of intent and request for information, posted on the Federal Register regarding “Quantum Information Science Centers.”
- NIST highlighted its cooperative research and development agreement with SRI International to lead a consortium of large and small companies focused on quantum information science and technologies.

NSF and the NTSC subcommittee on QIS [announced](#) the re-release of the Request for Information on the National Strategic Overview for Quantum Information Science.

Next Steps and Conclusion

President Trump advanced American leadership in QIS by signing the National Quantum Initiative Act in December 2018, and The White House Office of Science and Technology Policy (OSTP) reiterated this commitment in establishing the National Quantum Coordination Office (NQCO) in March 2019. Events such as this May 2019 Academic Roundtable, held in coordination with experts and innovators who offer uniquely qualified insight and advice, and the recent re-chartering of the NTSC subcommittee on QIS, exemplify the Trump Administration’s steadfast commitment to strategic QIS development and will greatly assist the Subcommittee on QIS in its development of a five-year National Strategic Plan for QIS.

As the Trump Administration continues to support innovations in QIS, OSTP is excited to see the ways in which academia and the federal government collaborate to optimize QIS and in so doing, foster success and prosperity for the American people.