

# A Pivotal Year for National Quantum Policy

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(April 13, 2023) It has been some time since I last wrote a director's letter. The eve of World Quantum Day is a great time to reflect on a pivotal year for national quantum policy. During this past year, the President signed [two directives on quantum](#), and the White House Subcommittee on Quantum Information Science (QIS) augmented the national strategy with additional reports on the [quantum workforce](#) and for [bringing quantum sensors](#) out of the lab to the market. In addition, the United States signed six new bilateral quantum cooperation statements and launched a multilateral dialogue with twelve countries. The first major deliverable from the multilateral dialogue, the [Entanglement Exchange](#), was released just a few months later. Congress passed major quantum-relevant legislation, like the CHIPS and Science Act of 2022, and Federal Agencies continued to work together and engage with the U.S. QIS community. Additional highlights can be found below and in this year's [Annual Report of the NQI Program](#).

Perhaps the most amazing accomplishment of the National Quantum Coordination Office (NQCO) are the other five quantum physicists who have staffed the NQCO in the White House this past year. This is the largest number of NQCO staff to date, and may never happen again. NQCO staff include:

- Dr. **Gretchen Campbell**, who joined NQCO/OSTP this year from NIST/JQI as the Deputy Director of the NQCO;
- Dr. **Tanner Crowder**, on detail from DOD/NRL;
- Dr. **Thomas Wong**, on detail from DOE and on loan from Creighton University;

and, last but not least, we said very reluctant goodbyes two staff members who did so much for the NQCO and the NQI

- Dr. **Corey Stambaugh**, who led quantum industry engagement, quantum education, and OSTP/microelectronics and returned to NIST in the new year; and
- Dr. **Alex Cronin**, who previously held the position of Deputy Director and returned to NSF late last year.

Of course, our work would not be possible without the co-chairs of our quantum subcommittees who oversee the NQI, subcommittee members, and representatives from the agencies who implement the National Quantum Initiative programs, as well as our colleagues in OSTP, NSC, and OMB. Plus, everyone in the quantum ecosystem, both in the United States and our colleagues abroad. A big thank you for being genuinely awesome.

## Two Presidential Directives on Quantum Technology

In May of 2022, President Biden signed two major directives that set the tone for the United States' commitment to quantum information science and technology (QIST):

- **The National Security Memorandum for Quantum Computing** promotes research and development, grows the workforce, and expands education opportunities in quantum technology, while also protecting investments in QIST.
- **The Executive Order on Enhancing the National Quantum Initiative Advisory Committee** relaunched the NQIAC as a Presidential advisory committee and recommitted the United States to the QIS and the NQI as a “substantial and sustained national priority.”
- A **fact sheet** about the two directives as available on whitehouse.gov [here](#), and a transcript of a **background press call** is available on whitehouse.gov [here](#).

## Augmenting the National Quantum Strategy

Another key accomplishment this year was the release of Strategic Plans for quantum sensing and workforce development, both based on significant interagency collaborations:

- **The Strategic Plan for Bringing Quantum Sensors to Fruition** has policy recommendations to bring quantum sensors from lab to market and mission.
- **The QIST Workforce Development National Strategic Plan** has policy recommendations for QIST education, inspiration, experiences, and careers in the quantum workforce.

## Increasing International Cooperation

International cooperation in the field of quantum information science and technology (QIST) has been a key focus of the U.S. Government this past year. Over the last year, the United States signed joint statements with Denmark, Finland, France, the Netherlands, Sweden, and Switzerland to enhance and strengthen collaboration on quantum. The White House also hosted an international roundtable on pursuing quantum information together with multiple nations participating. Together, we launched the Entanglement Exchange to share exchange opportunities in QIST. More information about these activities is available below:

- **The United States and Denmark Take Steps to Strengthen Quantum Cooperation** preceded by the Neils Bohr Centennial Symposium, which I had the great pleasure to attend.
- **The United States and Finland Move to Strengthen Cooperation in Quantum** building on more than two decades on robust bilateral ties.
- **The United States and France Sign Joint Statement to Enhance Cooperation on Quantum** signed during the state visit from President Macron to the U.S.
- **The United States and the Netherlands Sign Joint Statement to Enhance Cooperation on Quantum** in The Hague.
- **The United States and Sweden Sign Quantum Cooperation Statement** highlighting a friendship that dates back to 1783.
- **The United States and Switzerland Sign Joint Statement to Strengthen Collaboration on Quantum** followed by Swiss-US Quantum Days in Chicago.
- **International Roundtable on Pursuing Quantum Information Together:  $2^N$  vs  $2N$** , a multi-lateral meeting we had at the White House in May to discuss shared values in QIST. Readouts are available on [quantum.gov](https://quantum.gov) [here](#) and [whitehouse.gov](https://whitehouse.gov) [here](#).
- **Entanglement Exchange Links Quantum Researchers Across Twelve Nations.** A multi-nation clearinghouse for international exchange opportunities in QIST.

## Quantum-Relevant Legislation

Several quantum-relevant pieces of legislation were passed in 2022, including the Quantum Computing Cybersecurity Preparedness Act, Quantum in the CHIPS and Science Act of 2022, and the FY 2022 NDAA. These acts provide opportunities for investment in quantum infrastructure, authorize new programs for quantum networks, user access, and K-12 quantum education, and

codified the National Science and Technology Council Subcommittee on Economic and Security Implications of Quantum Science (ESIX), among other activities. The Quantum Computing Cybersecurity Preparedness Act, which is a close companion to NSM-10, was also passed. A document prepared by the NQCO, showing the National Quantum Initiative Act with recent amendments can be found [here](#).

## The NQIAC Gets Going

The National Quantum Initiative Advisory Committee (NQIAC) is now up and running with President Biden announcing its members in December 2022. In his [Executive Order on Enhancing the NQIAC](#), President Biden described the National Quantum Initiative as a “substantial and sustained national priority.” The NQIAC will play a crucial role in guiding the nation’s quantum strategy and advising the President and federal agencies on quantum technology policies and initiatives. Learn more about the NQIAC [here](#).

## Agency Programs and Activities



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### News

demonstrating the first step in incorporating quantum in the implementation of the CHIPS Act.

- [ExpandQISE program](#) and [ASCR-RENEW program](#), building on recommendations in the Workforce Strategy above.
- See all news at <https://www.quantum.gov/news/>.

## Events and Engagement

The White House hosted the National Quantum Initiative Centers Summit, as well as workshops on the cybersecurity of quantum computing and software-hardware co-design for quantum computing. The Office of Science and Technology Policy (OSTP) and NSF also hosted the “Quantum Workforce:

Q-12 Actions for Community Growth” and marked World Quantum Day by launching the QuanTime and Quantum To-Go programs, which brought quantum education to hundreds of schools.

- **White House Hosted National Quantum Initiative Centers Summit.** A quantum.gov blog post is available [here](#), and a whitehouse.gov readout is available [here](#).
- **Cybersecurity of Quantum Computing.** A summary of the OSTP/NSF workshop, hosted at the University of Pittsburgh, is available [here](#).
- **NSF Workshop on Software-Hardware Co-Design for Quantum Computing.**
- **White House Office of Science and Technology Policy (OSTP) Marks World Quantum Day** on [quantum.gov](#) and [whitehouse.gov](#). In 2022, we took our first step in making World Quantum Day a BIG DEAL through interagency activities and the Q-12 **QuanTime** program to get quantum activities into K-12 classrooms. It worked, because we seeing even greater community engagement for World Quantum Day 2023 tomorrow! We again supported QuanTime and also launched the new **Quantum To-Go** program to facilitate classroom visits with quantum scientists.
- **OSTP and NSF Hosted “Quantum Workforce: Q-12 Actions for Community Growth” Meeting.** The latest activities can be found at <https://q12education.org/>.
- **QIS Program Day**, an annual event where quantum leaders from across the US Government meet.

In conclusion, the past year has been a significant one for the U.S. in terms of progress in the field of QIST. With two Presidential directives, the augmentation of the national quantum strategy, increasing international cooperation, events and engagement, quantum-relevant legislation, and agency programs and activities, the U.S. is well on its way to becoming a leader in this important and rapidly-growing field. Stay tuned for more updates and developments on the National Quantum Initiative website.

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The seal of the National Quantum Initiative. Find out more at [www.quantum.gov](http://www.quantum.gov)

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