

The Technology of the Future: Securing U.S. Quantum Competitiveness

ACTION

Members of Congress should support the reauthorization of the National Quantum Initiative Act (S.3597 & S.579) to safeguard U.S. national security and competitiveness.

What Is Quantum Information Science?

Quantum information science (QIS) has the potential to revolutionize computing, communication, and sensing technologies by exploiting exotic quantum effects to circumvent “classical” physical limitations.

Quantum Sensing



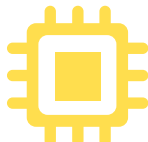
APPLICATIONS
Medical imaging; positioning and navigation; enhanced lidar and radar

Quantum Communication



APPLICATIONS
Secure communications and financial transactions; networking quantum devices

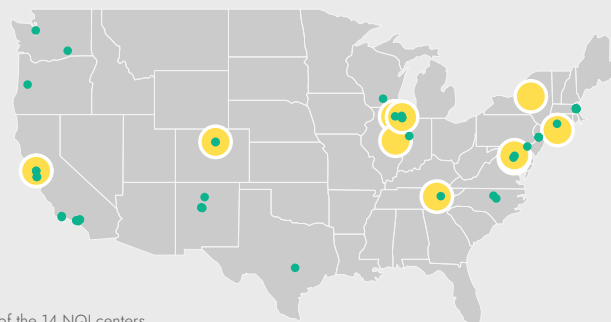
Quantum Computing



APPLICATIONS
Materials sciences; biomedicine; financial modeling; logistics; encryption-breaking

National Quantum Initiative Act (NQIA) Achievements Across the U.S.

The 2018 NQIA resulted in 14 multidisciplinary QIS centers, accelerating innovation across the science agencies and training the future Quantum Workforce. It also spurred a \$6 billion increase in private sector investment in the field.



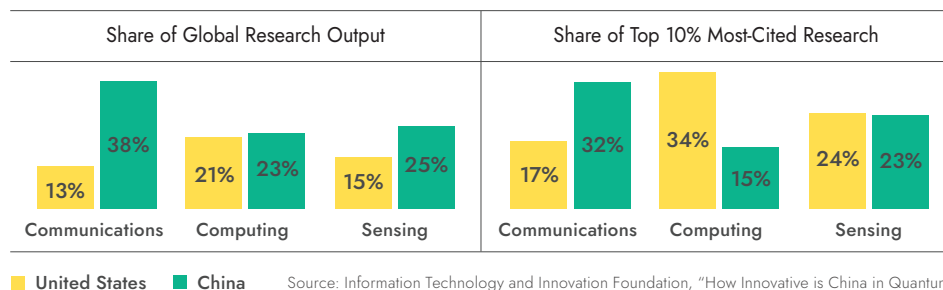
Map of the 14 NQIA centers and their partners, as of December 2023

Quantum Centers Quantum Partners

U.S. Quantum Leadership at Risk

The 2018 NQIA laid a strong foundation for the U.S. QIS ecosystem, but competitor nations' efforts and advances are outpacing us. Continuous robust investment is required to build the U.S. quantum workforce and improve U.S. leadership in this field.

Quantum Technologies



Source: Information Technology and Innovation Foundation, “How Innovative is China in Quantum”

Reauthorizing the NQIA Is Essential to Securing U.S. Quantum Competitiveness

The National Quantum Initiative Reauthorization Act builds on the 2018 NQIA, expanding its scope to include more technology development and to strengthen the domestic supply chain. The reauthorization:

- Renews and expands existing National QIS Research Centers from 5 to 10
- Creates a multidisciplinary hub focused on quantum curriculum and workforce development, as well as quantum technology R&D testbeds
- Establishes up to 3 NIST centers on quantum engineering, sensing, and measurement
- Establishes “Quantum Foundries” at DOE to meet the device and material needs of the quantum supply chain