

QUANTUM for National Security Act of 2021

Background

The Quantum for Universal Advancement in Nationwide Technology Use and Modernization (QUANTUM) for National Security Act aims to bolster the efforts of the Department of Defense (DoD) to conduct innovative research in quantum information sciences (QIS) and technology. The bill includes provisions that will improve workforce development in quantum-related fields, increase the pipeline of students graduating with quantum-related degrees, and recognize the importance of prioritizing funding for quantum research in light of the economic and national security threats posed by China's own investments in quantum technology. The bill also builds on the progress of the National Quantum Initiative by incorporating DoD research efforts within the framework of the *National Quantum Initiative Act* (NQIA) (PL 115-368).

Investing in QIS and computing technology research is critically important to U.S. national security. We are in a race against our adversaries to gain supremacy of this technology and maintain our military advantage over these nations. The Chinese government has invested extensively in quantum technology research and development in recent years, funding a multi-billion dollar mega-project focused on quantum computing, in addition to the billions committed to a Chinese National Laboratory for QIS. Although the United States government has recently increased its investment in QIS research, these efforts still lag far behind China and the private sector. In order to stay ahead of the curve and be able to collaborate effectively with our allies, who are also investing in quantum, we must increase the commitment from the federal government. A large portion of this commitment must go toward projects in the DoD because QIS and computing technology will become increasingly important to staying on the cutting edge of military applications.

Key Provisions

Public-Private Talent Exchange: Encourages use of the DoD Public-Private Talent Exchange to exchange DoD research personnel with private sector entities working on QIS and computing technology research.

SMART Program: Establishes a pilot program within the Science, Mathematics, and Research for Transformation (SMART) Defense Education Program that is focused on increasing the pool of participants in the SMART program through partnerships with minority-serving institutions and other student populations who are underrepresented in STEM fields, including women.

Fellowship Program: Encourages graduate-level fellows in quantum information science and technology research and development to work with the Defense QIS and Technology Research Program. The fellowship program focuses on increasing minority and economically disadvantaged student participation, and fellows will pass on knowledge gained in order to help improve quantum education coursework development.

Defense QIS and Technology Research Program: Expresses the sense of Congress that QIS and technology is a priority area that should receive increased funding for research, development, and deployment. Encourages university partnerships that encourage multidisciplinary courses of study. Requires a GAO assessment of the Program and a DoD assessment of the feasibility of incorporating JROTC programs.

DOD & the National Quantum Initiative: Re-designates the DoD QIS and Technology Research Program as part of the National Quantum Initiative by adding a Title V to cover DoD activities. Further incorporates DoD by ensuring all agencies involved in the Initiative integrate DoD representatives into standing committees and other activities. Requires GAO to assess the effectiveness of the Initiative.