

A report to the Ranking Member of the Joint Economic Committee

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What GAO Found

The National Quantum Initiative Act requires a strategic plan to help direct federal efforts in quantum information science, including quantum computing. An entity known as the Subcommittee on Quantum Information Science (SCQIS), co-chaired by four federal organizations, is responsible for drafting this strategic plan. Among these organizations, the Office of Science and Technology Policy (OSTP) plays a central role.

GAO found that, with respect to quantum computing, the current national quantum strategy does not fully address GAO’s desirable characteristics intended to help ensure accountability and more effective results. For example, the relevant planning and reporting documents do not include performance measures to gauge progress on quantum computing. They also do not specify the level of resources, including infrastructure, needed for the National Quantum Initiative. In addition, they do not describe federal agencies’ specific roles and responsibilities, and they do not integrate agency-level plans to implement the strategy. Updating the strategy to address these characteristics could improve interagency planning and coordination. Further, the outcomes of such updates could include more efficient use of federal resources, faster progress in delivering the technology, and better management of quantum computing efforts.

Extent to Which the Quantum Computing Component of the National Quantum Strategy Addresses GAO’s Desirable Characteristics of a National Strategy

| Characteristic | GAO assessment |
|---|---|
| Purpose, scope, and methodology | Fully addresses |
| Problem definition and risk assessment | Fully addresses |
| Goals, subordinate objectives, and performance measures | Partially addresses: Includes goals but not subordinate objectives or performance measures. |
| Resources, investments, and risk management | Partially addresses: Includes current but not future budgets. No assessment of federal infrastructure needs. |
| Roles, responsibilities, and coordination | Partially addresses: Lists agencies but not their specific roles. |
| Integration and implementation | Partially addresses: Links to other strategies but does not integrate across agencies. |

Source: GAO. | GAO-26-107759

The National Quantum Initiative Act also requires SCQIS to develop and assess the U.S. quantum workforce. During its initial assessment, SCQIS noted challenges such as a lack of (1) comprehensive data on the many occupational fields covered by the quantum workforce and (2) metrics for assessing the effectiveness of training programs. An ongoing National Science Foundation-funded study analyzing needed knowledge, skills, and abilities could begin to address such challenges.

Why GAO Did This Study

Quantum computing leverages physics at the atomic scale to potentially solve certain problems that today’s computers cannot. A future quantum computer may enable advances in drug development, materials, and scientific discoveries. But it also could pose risks. For example, adversaries might use it for cyberattacks or to decode encrypted financial transactions and military communications.

In 2018, the President signed the National Quantum Initiative Act into law to help ensure the continued leadership of the U.S. in quantum information science and its technology applications. Multiple federal agencies are working to advance quantum computing, collectively spending about \$200 million per year.

GAO was asked to review federal efforts regarding quantum computing and cryptography. This report addresses (1) the extent to which the quantum computing component of the national quantum strategy addresses GAO’s desirable characteristics of a national strategy and (2) the status of federal efforts to develop and assess the U.S. quantum information science workforce. GAO analyzed key strategy documents, interviewed agency officials with leadership roles in advancing quantum computing, and interviewed nonfederal stakeholders.

What GAO Recommends

GAO recommends that OSTP, in coordination with the SCQIS agencies, augment and update the national quantum strategy, which includes quantum computing, to address the desirable characteristics of a national strategy. OSTP neither agreed nor disagreed with GAO’s recommendation.