U.S. Chamber of Commerce

Quantum Policy Principles

Quantum technology, harnessing the natural and unique properties of atoms and subatomic particles, will radically change computing, sensing, and communication. Moreover, the anticipated leaps in quantum technologies will provide substantial benefits to the American economy and society. We believe the potential for quantum technologies to be a force for good in areas as diverse as transportation, life sciences, communications, and financial services. A policy environment that allows innovation, investment, security, and stability is crucial to unlocking the benefits of quantum technologies.

Accelerate the Pace of Quantum Technology Commercialization

Meaningful partnership between the private and public sectors is necessary for the commercialization and deployment of quantum technologies and to unlock its benefits.

- Governments at all levels should prioritize collaboration and coordination with the private sector to commercialize and deploy quantum technologies.
- Existing government programs and procurement tools should be leveraged to facilitate quantum deployment and commercialization, as well as utilize existing commercial technologies that would accelerate scientific discovery and enable commercial use, scaling, and ethical access.
- Policymakers should advance broader public policies to facilitate commercialization and deployment, such as efficient capital markets, a competitive tax system, and a reliable, low-cost energy grid.

Secure Against Quantum-Enabled Cyberattacks

Quantum computing will render many encryption methods obsolete. The time to address this threat is now. Accordingly, quantum-resistant encryption algorithms need to be developed to combat this threat to America's digital and critical infrastructure.

- The federal government must mitigate this risk by promoting NIST-recognized encryption algorithms domestically and among key allies, accelerating the government's migration of its informational technology systems, sharing tools to provide incentives for early adopters, and investing the funds necessary to conduct the transition.
- The U.S. government should prioritize partnerships with the private sector and academia that enable research, development, and deployment of post-quantum cryptographic (PQC) solutions. These solutions must be implemented well before a large-scale quantum computer is successfully built to protect against "harvest now, decrypt later" threats.
- The private sector must consider how to accomplish a migration to quantum secure encryption methods as seamlessly as possible. This should include inventorying of systems as well as implementation and interoperability testing.

Enable R&D Through Public and Private Investments

Public- and private-sector research and development is crucial to advancing quantum technologies.

- The federal government and the private sector should create and sustain basic and applied R&D programs to ensure the prioritization and coordination of the means needed to develop a comprehensive quantum ecosystem.
- Sound policies can enable private sector quantum R&D efforts through R&D expensing, infrastructure access, industry-driven public-private partnerships, and robust workforce development.
- Threats to "march in" under the Bayh-Dole Act and seize innovators' ideas will upend these government and private sector partnerships, creating a risk that the potential in quantum technology innovation will remain unrealized.

Promote International Cooperation and Strategic Partnerships

Quantum innovation is inherently global, and the U.S. should lead in partnership with trusted key allies by cooperating and reducing barriers to collaboration.

- Governments must establish strategic partnerships to further R&D, commercialization, deployment, and the promotion of interoperable approaches to governance to enable best practices and minimize the risk of unnecessary regulatory divergences and trade restrictive practices emerging in the digital economy.
- The U.S. government should strengthen and build upon existing international partnerships and agreements to deepen quantum cooperation with key allies, including through the creation of a free trade zone with key allies for quantum technologies that can be used to scale quantum systems. Foundational to this collaboration is protecting U.S. national security and foreign policy interests as well as our values.
- Policymakers should negotiate plurilateral agreements with like-minded allies on quantum technology to cover areas such as future export controls and related restrictions on quantum technologies to prevent technology leakage to countries of strategic concern. Any restrictions should provide clear rules of the road and be appropriate for the entire quantum ecosystem.

Pursue a Measured Regulatory Approach to Address Quantum Risks

The novelty and impact of quantum technology has the potential to be disruptive and may raise new and unforeseen risks. Governments should work to understand these risks and focus on constructive and collaborative solutions rather than default to regulation.

- Governments should focus on industry-led consensus-based standards through recognized international standards bodies and consortia and similar tools.
- If regulation is necessary, any regulations should be risk based and targeted to address concrete harms stemming from the deployment of quantum technologies and opt to leverage existing regulatory framework.

Foster Redundant and Resilient Quantum Supply Chains

The current challenges for classical semiconductor supply chains highlight the need for robustand resilient global supply chains for emerging technologies. The emerging quantum ecosystem is global, and we must identify ways to avoid similar supply chain challenges in the quantum supply chain. Building a sustainable and resilient quantum ecosystem will ensure long-term national security and economic innovation.

- The U.S. government should promote resilient domestic and allied supply chains and manufacturing.
- Policymakers must ensure that the U.S. maintains a business environment that attracts talent and capital investment and prioritizes key components in the supply chain, including critical minerals.

Develop a Quantum-Ready Workforce

A well-prepared workforce is crucial for the widespread adoption and innovation of quantum technology.

- Governments should invest in educational and training initiatives, particularly at the postsecondary level, and partner with the private sector to build and enhance (i.e., upskill and reskill existing workers) a skilled and competitive workforce for quantum technologies. Educational resources and funding should be devoted to applications and getting the quantum technology into the hands of users.
- Employers critical to the growth of quantum technologies should be positioned to lead the development of talent supply chains and should be supported in producing critical information related to job roles, their projected level of demand and in what locations, and the skills, competencies, and credential requirements for those opportunities.
- Policymakers should take steps to attract and retain global talent through an effective immigration system.

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