European Commission

CALL FOR EVIDENCE
FOR AN INITIATIVE (without an impact assessment)

TITLE OF THE INITIATIVE	EU quantum strategy
LEAD DG – RESPONSIBLE UNIT	Directorate-General for Communications Networks, Content and Technology / Unit C2 – Quantum Technologies
LIKELY TYPE OF INITIATIVE	Commission communication
INDICATIVE TIMING	Q3-2025
ADDITIONAL INFORMATION	Quantum | Shaping Europe's digital future

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A. Political context, problem definition and subsidiarity check

Political context

The Draghi report describes quantum as 'the next trailblazing innovation in the computing field, [which] could open new opportunities for the EU's industrial competitiveness and technological sovereignty'. Building on the Competitiveness Compass, which includes 'quantum' among the key tech sectors that will matter in tomorrow's economy, this initiative presents a comprehensive strategy to ensure that the EU maintains a leading position in quantum technologies.

This strategy follows on from the mission letter to Executive Vice-President Virkkunen that underscores the importance of 'intensifying the EU efforts and investments concerning the next wave of frontier technologies', including quantum computing. It is also closely aligned with the 2023 European Declaration on Quantum Technologies, which commits to strengthened cooperation between the Member States and the Commission, and with the European economic security strategy and its Commission Recommendation of 3 October 2023.

Problem the initiative aims to tackle

Quantum computing, communication, sensing and metrology are all emerging fields of global importance that will bring about a change of paradigm in technological capacities. As underlined in the Draghi report, quantum computing will have a foundational role in next-generation digital frameworks, with major economic and security implications. It could contribute up to EUR 850 billion to the EU economy in the next 15-30 years.

Quantum computing platforms are still under development, and the EU must ensure timely access to the most effective solutions, making them made broadly accessible across sectors. This is crucial as future

quantum computers are expected to break current encryption methods, posing a risk to sensitive data and communications. Europe must therefore ensure its strategic autonomy by investing in quantum-safe cryptographic solutions and secure quantum communication technologies.

In the quantum race, the EU can rely on some of its key strengths, such as an advanced research landscape in foundational quantum science and considerable public funding programmes. However, these strengths are tempered by persistent weaknesses.

1. There is a widely recognised **shortage of digital and quantum-specific skills**, and there are concerns about retaining talent.
2. While the EU hosts strong academic research centres, there is **limited capacity to convert this research into market-ready technologies**. The EU is strong in early-stage research but often struggles with scaling up, commercialisation and global outreach.
3. While private investment in quantum R&D has risen from previous levels, it remains modest when compared to the efforts of other major global players. Available data indicate that **the EU continues to lag behind in attracting private sector funding**.
4. **EU efforts remain fragmented across national programmes and regulatory frameworks**, often leading to duplication of actions. There is a pressing need for a more integrated European approach.
5. T**he EU lacks industrial capacity in key areas**, such as the production of quantum processors and other hardware components. This technological dependence raises sovereignty concerns, particularly regarding supply chain vulnerabilities. Without a robust industrial base, the EU risks remaining dependent on non-EU providers for critical components.

The global quantum landscape is rapidly evolving. Countries worldwide are investing heavily in quantum R&D, building supply chains and offering attractive conditions to talent and investors. For the EU to maintain and strengthen its role, it must address its current limitations with targeted and decisive action. This includes: (i) scaling up both public and private funding; (ii) bridging the skills gap; (iii) fostering industrial capacity; (iv) supporting standardisation; and (v) creating a supportive ecosystem for start-ups and scale-ups to flourish in Europe.

Without such action, the EU risks falling behind in the quantum race, losing its edge in scientific leadership and missing out on the strategic and economic opportunities of quantum technologies.

Basis for EU action (legal basis and subsidiarity check)

Legal basis

The Communication is based on Article 114 of the Treaty on European Union.

Practical need for EU action

Quantum technologies are complex and require substantial, long-term investments in R&D, infrastructure and production capabilities. No Member State acting alone can find the resources and create the critical mass needed to compete globally. Building on initiatives such as the Quantum Manifesto of 2016 and the European Declaration on Quantum Technologies of 2023, EU-level action will add value by pooling resources, aligning national initiatives and coordinating investments, enabling the emergence of a thriving European quantum system.

The EU can integrate quantum priorities into broader initiatives (e.g. the Competitiveness Compass, the Clean Industrial Deal and its sectorial industrial strategies, the Digital Decade). It can also harness synergies with the AI factories initiative, the Chips Act and strategic areas such as defence and space. By doing so, the EU can ensure that Europe's collective strengths – scientific excellence, industrial capacity, a large single market, and a skilled workforce – translate into leadership in quantum.

B. What does the initiative aim to achieve and how

The main objective of the quantum strategy is to strengthen capabilities across the entire quantum value chain (components, devices and systems) and tackle fragmentation between current EU and national initiatives in order to boost Europe's technological sovereignty and economic security.

The strategy will therefore propose a number of actions, which will pave the way for the adoption of a Quantum Act by the end of 2025. These actions aim to:

- mobilise Member State cooperation to fully implement the European Declaration on Quantum Technologies, align major R&D programmes and pool resources;
- collectively build pan-European quantum infrastructures, such as advanced pilot lines for quantum chip manufacturing and specialised platforms for computing, communication and sensing, and ensure a stable supply of critical components;
- accelerate the transition from the lab to the fab, filling the gaps in the European supply chain and facilitating the transformation of high-quality European quantum research into marketable devices and applications with substantial economic and societal value;
- foster a competitive environment that enables start-ups and scale-ups to remain in Europe and thrive globally thanks to easier access to capital and finance;
- prioritise skills and talent development, improving training and education measures to produce a new generation of professionals who can harness quantum's potential, strengthening Europe's long-term competitiveness and incentivising companies to stay and grow in the EU;
- explore and propose the most promising fields in which to apply quantum technologies and raise awareness in different areas about these technologies;
- recognising quantum's dual-use nature, propose opportunities for collaboration with strategic security and defence partners and further strengthen synergies between defence, space and related civil industries by improving the coordination of EU programmes and instruments and taking measures to facilitate access to finance;
- engage internationally with like-minded partners, setting global standards, ensuring secure access to key technologies, fostering global partnerships and maintaining Europe's influence in this rapidly evolving field;

- contribute to the EU's efforts to strengthen its strategic autonomy, reducing dependency on external suppliers and improving security of supply.

Likely impacts

The quantum strategy is likely to support the development of high-value skills and contribute to meeting the growing demand for quantum-competent professionals, thereby complementing Europe's broader innovation efforts. Some of its actions may also enable progress in selected public and research sectors, for example, in areas like climate modelling and drug discovery, which, in the longer term, could support digital and economic developments in the EU.

Looking ahead, the strategy may help strengthen Europe's industrial base in quantum technologies and encourage innovation in specific areas. As quantum capabilities gradually mature, they could play a role in supporting the EU's strategic interests, particularly in domains such as secure communications and advanced sensing. The potential dual-use of some technologies may also partially contribute to Europe's technological autonomy.

Future monitoring

The Commission will monitor progress against set milestones, funding deployment and technological developments. Where needed, follow-up initiatives, guidance and recommendations will be proposed to ensure that the EU's approach to quantum remains adaptive, forward-looking and closely aligned with economic, social and security objectives. More specifically, the Strategic Advisory Board (SAB), the academic and industry experts who provide advice on the Quantum Flagship strategic decisions, will play a key role in assessing the progress of the strategy. The insights and recommendations provided by the SAB will be systematically reviewed and discussed by the Quantum Technology Coordination Group, which brings together representatives from Member States. This ensures a continuous feedback loop between expert assessments and implementation at national level.

In addition, the Commission will explore the potential creation of a dedicated monitoring framework, which could include a future joint undertaking or another structured governance mechanism to provide ongoing oversight and alignment with economic, social and security objectives. A Quantum Act, following the quantum strategy at a later stage, is expected to further build on this initiative.

C. Better regulation

Impact assessment

An impact assessment is not required. The quantum strategy will take the form of a non-legislative Commission communication. Any initiatives with policy choices or significant impacts that will emerge from the strategy will be accompanied by impact assessments in line with the Better Regulation Guidelines and Toolbox.

Consultation strategy

The stakeholder consultation will have the two main streams described below.

1) This call for evidence aims to gather inclusive and broad feedback from various stakeholders, enriching the strategy with diverse perspectives. Additionally, broad feedback will be collected beyond conventional participants, capturing public opinion, end-user concerns and insights from related technological sectors. This ensures the strategy is balanced, ethically sound, publicly acceptable and supportive of competitive innovation and international collaboration.

2) The targeted consultations will engage key stakeholders, including Member State authorities, EU agencies, industry representatives, researchers, academia and relevant standardisation bodies. This ensures alignment with technical standards, scientific rigour and diverse industry perspectives.

Why we are consulting?

Through this consultation, the Commission would like to gather feedback that will inform the drafting of the future quantum strategy**.**

Target audience

The consultation aims to gather the views of all stakeholders.