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European Commission

CALL FOR EVIDENCE FOR AN IMPACT ASSESSMENT

TITLE OF THE INITIATIVE	EU Quantum Act
LEAD DG (RESPONSIBLE UNIT)	Directorate-General for Communications Networks, Content and Technology / Unit C2 – Quantum Technologies
LIKELY TYPE OF INITIATIVE	EU regulation
INDICATIVE TIMETABLE	H2-2026
ADDITIONAL INFORMATION	The EU's plan to become a global leader in quantum by 2030 - European Commission

A. Political context, problem definition and subsidiarity check

Political context

The Quantum Act initiative was announced in the Competitiveness Compass. It aims to deliver on key priorities of the Quantum Europe Strategy, which sets out Europe's ambition to become a global leader in quantum. The Quantum Act will serve as the main legislative follow-up to the Strategy, facilitating the implementation of its key objectives and actions, with a focus on research and innovation, industrialisation, and the security and resilience of quantum supply chains. The Act will build on work carried out under the Quantum Declaration and on consultations with stakeholders and Member States. The EU has identified quantum as a critical technology in its Economic Security Strategy and in the White Paper for European Defence – Readiness 2030. The initiative complements existing instruments such as the Chips Act, IRIS² (EuroQCI) and the EuroHPC Joint Undertaking, and contributes to strengthening the EU's economic security, open strategic autonomy and technological and industrial sovereignty in quantum technologies. The Act will introduce strategic projects in quantum research and production, enabling combined EU and national financing. It will also consider demand-side measures (e.g. coordinated EU procurement and 'buy European quantum' where appropriate, in line with the EU's international commitments) and speeding up permitting procedures for critical quantum facilities.

Problem the initiative aims to tackle

Below are the three structural problems that the initiative aims to tackle.

Pillar 1 – Fragmented research & innovation

- Scattered national/EU actions cause duplication and missed synergies, delaying roadmap delivery and industrial uptake.
- Weak technology transfer from research to industrialisation/standards; limited shared roadmaps / test beds.
- Uneven access and skills across regions; small to medium-sized enterprises (SMEs) struggle to navigate infrastructures.

Pillar 2 – Industrial capacity & investment gap ('Made in Europe')

- Insufficient EU pilot lines, fabrication capabilities and design capabilities for quantum chips and hardware.
- High dependencies on non-EU enabling technologies (cryogenics, lasers, electronics, optics, etc.).
- Shallow late-stage private capital; fragmented and insufficient public tools to de-risk industrialisation; high scale-up costs and poor SME access.
- Weak demand signals and fragmented procurement: in certain strategic domains (notably space and dual-use technologies), there is a lack of coordinated EU demand that could help create predictable markets, while for civilian quantum applications, the focus should be on supporting industrial investments through State-aid cleared schemes and strategic projects, while honouring international commitments.
- Lack of EU-wide coordination on Member-State support for measures for quantum design, manufacturing and infrastructure projects prevents large-scale industrialisation; without a coherent framework enabling investments comparable to those in competing regions, the EU risks falling behind in global quantum industrial capacity.
- Lengthy and unpredictable permitting for labs, pilot lines and production facilities (e.g. clean rooms, cryogenics, lasers) delaying time-to-market.

Pillar 3 – Supply-chain vulnerabilities & governance gaps

- No systematic monitoring of critical inputs / intellectual property (IP) / risks of shortages; exposure to choke points and risks of technology leakage due to insufficient consistency under existing EU frameworks on foreign direct investment (FDI) screening (inward and outward) and export control (although, for FDI screening, the proposed new FDI regulation aims to achieve further alignment by including quantum technologies in the common minimum scope).
- Fragmented governance: weak coordination between national authorities, industry, and EU institutions on risk assessment, resilience and industrial security.
- No EU framework for strategic projects in quantum to align public support and de-risk industrial investments across Member States / the EU.

Basis for EU action (legal basis and subsidiarity check)

Legal basis

The proposed regulation is based on Article 173(3), Article 180 and Article 184 of the Treaty on the Functioning of the European Union (TFEU):

- Article 173(3) TFEU empowers the EU to support and complement national industrial policy measures to strengthen competitiveness, foster industrial innovation and ensure strategic autonomy in critical technologies;
- Article 180 TFEU sets up the EU framework for research, technological development and demonstration, which underpins quantum research and innovation; and
- Article 184 TFEU enables the measures necessary to implement research and innovation actions, including governance structures and coordination with Member States and EU programmes.

Practical need for EU action

Quantum technologies are critical and central to Europe's innovation, competitiveness and economic security. They enable secure communications, advanced computing, precision sensing, and dual-use applications. Their dual-use nature means that fragmented national efforts and insufficient industrial scale put Europe at risk of losing its technological leadership, indispensability and strategic autonomy.

The US and Asia are investing massively in quantum ecosystems, combining large public subsidies with strong private capital. In Europe, however, quantum start-ups rely heavily on non-EU investors for their largest funding rounds, with the risk of losing their independence and their EU ownership. This underlines Europe's structural weakness: increasingly, promising quantum start-ups depend on foreign financing, making them vulnerable to relocation or foreign control.

Critical parts of the quantum supply chain – including cryogenics, lasers, control electronics, and specialised materials – are largely dependent on non-EU suppliers, while several EU providers also face acquisition risks due to foreign investment pressures.

Without coordinated EU-level monitoring and resilience measures, Europe will face strategic dependencies in technologies impacting its security. The risks extend beyond hardware, with potential loss of IP or talent and leakage of critical industrial know-how to foreign ecosystems undermining Europe's future competitiveness.

As with semiconductors under the Chips Act, only EU-level action can pool resources and align industrial strategies across Member States. A common framework would: (i) reduce duplication while better exploiting synergies between EU and national actions; (ii) strengthen supply-chain resilience; and (iii) ensure that breakthroughs in Europe's world-class quantum research translate into industrial leadership and long-term security for the EU. The initiative will explore instruments for quantum (strategic projects, demand aggregation, and streamlined permitting) to avoid fragmentation and accelerate deployment while adhering to single-market and competition rules as well as our international commitments. Demand aggregation would be limited, and would only concern dual-use and space applications, if relevant.

B. Objectives and policy options

The Quantum Act will address three core challenges: fragmentation of efforts, lack of industrial capacity, and supply-chain vulnerabilities[1].

[1] Presentation by 'pillars' is a problem-structuring device only. Options are indicative, do not imply any preference, and the final legal architecture will be determined by the impact assessment.

Pillar 1 – Research & innovation framework

- Option 1: Baseline – national programmes, Horizon Europe calls, European Competitiveness Fund and European Defence Fund.
- Option 2: Integration into EuroHPC Joint Undertaking – transfer quantum research and innovation to a single EU framework with binding objectives; strategic projects could include designation of strategic projects (research) eligible for combined EU and national financing (incl. Horizon 'Seal of Excellence').

Pillar 2 – Industrial capacity & investment ('Made in the EU')

- Option 1: Baseline – investments left to private entities and markets.
- Option 2: National and ad hoc EU funding – limited scaling of pilot lines and design platforms.
- Option 3: Dedicated EU tools – strategic projects (research and production), eligible for combined EU and national financing (incl. European Competitiveness Fund 'seal'); coordinated support for pilot lines, design platforms, enabling technologies (cryogenics, lasers, electronics), and SME access, backed by public-private investment; could include industrial investments in quantum technologies and infrastructures as well as in design and production facilities in the EU, ensuring competition and a level playing field both within the single market and with other world regions; limited coordinated procurement could be envisaged for dual-use and space applications; buy-European clauses could be explored where compatible with EU law, including international commitments; permitting acceleration.

Pillar 3 – Supply-chain resilience & governance

- Option 1: Baseline – weak visibility of dependencies, lack of consistency between scope of FDI screening and of export controls.
- Option 2: EU-level monitoring and resilience framework – systematic supply chain analysis, identification of choke points, and related mitigating measures for diversification, stockpiles, standards, and IP/talent protection; implemented through structured cooperation with Member States (common methodology, shared datasets and joint risk assessments); could include some coordination with existing EU mechanisms on FDI screening, export controls and other targeted measures to increase transparency and diversification of supply, in accordance with applicable legal provisions.

Cross-cutting challenges: Skills & talent (non-legislative): European Degree in Quantum Technologies and accelerated mutual recognition of diplomas among participating Member States.

C. Likely impacts

At this stage, the initiative is expected to have the below effects.

Economically, it should strengthen the EU manufacturing base for quantum technologies and demand for the technology, improve competitiveness and resilience, and help attract investment. Socially, it is expected to support innovation, quality jobs and skills, and better access to critical technologies across Member States. Environmentally, it should encourage sustainable quantum infrastructures and more energy-efficient manufacturing. The final impacts will be assessed in the impact assessment.

D. Better regulation instruments

Impact assessment

An impact assessment will be conducted to support the preparation of this legislative act, complying with the better regulation requirements. This work will be carried out in parallel with the stakeholder consultation and the implementation of the Quantum Europe Strategy Communication. Findings from the targeted expert consultation and the supporting study will be used to inform the impact assessment regarding possible policy options and alternative ways of tackling the identified problems. An impact assessment will analyse the economic, social and environmental effects of the policy options, including on competitiveness, economic security and the development of sustainable production capacity.

Consultation strategy
In line with a derogation granted by the Secretariat-General and given the highly technical and pre-commercial nature of the initiative, the Commission will not run a general public consultation; instead, it will conduct a four-week targeted expert consultation. Participants will include Member-State authorities, EU agencies, EuroHPC/EuroQCI/infrastructure operators, industry (incl. SMEs/start-ups), researchers/academia, standardisation bodies, and cybersecurity/dual-use technologies experts. This approach reflects the current maturity of quantum technologies, and the limited number of specialised stakeholders directly affected. The consultation will feed into the impact assessment and will be complemented by evidence-gathering (desk research, case studies, preliminary cost-benefit and competitiveness analysis). A synopsis report will summarise the feedback received; a mailbox remains open for general remarks.
Why are we consulting?
Through this consultation, the Commission would like to gather feedback that will inform the drafting of the future Quantum Act and collect evidence on the feasibility, acceptability and potential impacts of the proposed measures.
Target audience
The consultation aims to gather the views of all relevant stakeholders.