# NON-PAPER BY THE NETHERLANDS
# PRIORITIES FOR AN AMBITIOUS EU QUANTUM ACT

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*The Netherlands acknowledges the immense strategic and foundational potential of quantum technologies, recognising them as a fundamental enabler for a wide range of emerging and future technologies and innovations. The Netherlands would like to highlight in particular the potential of quantum technologies as a key driver of economic growth and competitiveness.*

*Building on the Quantum Europe Strategy, the Netherlands advocates for an EU Quantum Act that accelerates innovation, investment, and market uptake and helps secure a leading role for the EU in the quantum value chain. With a unique position in the international quantum ecosystem, the Netherlands remains deeply engaged in European and international policymaking and implementation and is committed to driving forward the EU's global leadership and open strategic autonomy in quantum technologies.*

In this non-paper, the Netherlands sets out the elements that should be incorporated into the upcoming EU Quantum Act.

**Strategic objectives of an EU Quantum Act**

For the EU Quantum Act to contribute substantially to strengthening the EU's quantum ecosystem, the Netherlands proposes the following three strategic objectives:

A. Prosperity: enabling a competitive quantum ecosystem as a driver of the EU's economic and broad welfare, competitiveness, and value creation across end-markets;
B. Indispensability: maintain and further develop the EU's technological leadership to create and strengthen control points in the global quantum value chain;
C. Resilience: secure a stable and reliable (future) supply of trustworthy quantum capabilities for the EU, particularly in times of disruption or uncertainty.

These strategic objectives should be supported by (i) effective and efficient governance at European level to implement the EU Quantum Act; (ii) measurable targets, periodically reviewed by the European Commission in consultation with Member States and relevant stakeholders in the quantum ecosystem and end markets; and (iii) adequate and well-coordinated financial resources that match the scale of ambition.

**Policy priorities for achieving the strategic objectives of an EU Quantum Act**

The following policy priorities are essential elements of the Quantum Act for the EU to deliver on the strategic objectives of the EU Quantum Strategy.

1. Prepare future industrial scaling for quantum technologies

The quantum race will be defined by future industrial scaling. To prepare the shift from pilots to industrial production, the Netherlands advocates for industry access to pilot lines and facilities, the creation of quantum production hubs, coordinated investments, manufacturing support, and supply chain integration. This further underlines the critical role of developing system integrators and providers to drive the successful development and (market) adoption of quantum technologies. Regarding quantum pilot lines and infrastructures, the Netherlands emphasizes the importance of shared, scalable facilities such as testing facilities and simulation environments for quantum computers, quantum networks, and quantum sensors. Adequate access for industry to such infrastructures is crucial, especially for start- and scale-ups developing innovative technologies. The Netherlands also emphasizes the need for standardization and certification capacity within the

Member States, to ensure European and international standards for quantum technologies that enable industrialization.

2. Stimulate the European demand for European quantum technologies

Despite having one of the world's largest, most prosperous and innovative internal markets, the EU's limited adoption of homegrown technology hinders the development of European quantum technologies. To counter this, the Netherlands advocates for demand-side "pull" alongside traditional supply-side and R&D support. Such an approach can start with the EU and Member States acting as launching customers through innovative procurement, de-risking early adoption in defence, security, and critical sectors identified by the NIS2 and CER Directives. When appropriately substantiated, respecting the EU's international commitments, and clearly limited in scope and duration, procurement measures can support the market uptake of quantum technologies. Qualitative requirements could also improve European uptake of European technology. Public procurement can also contribute to strengthening the Union's resilience and stimulating strategic markets that are essential for the EU's technological sovereignty.

3. Mobilize private investments in quantum technologies

In the EU, private investment in (emerging) technologies remains relatively limited, which constrains their development. Greater private investment in quantum technologies can be mobilized through targeted public support. To achieve this, the Netherlands proposes to better align national funding, cross-border national funding, and EU funding, particularly for start-ups and scale-ups, to achieve greater scale, coherence and impact. This requires a coordinated approach between the European Investment Bank Group and national investment agencies, and the development of an integrated ad deep European Capital Markets Union. Furthermore, EU funding instruments, such as Horizon Europe and the European Competitiveness Fund, should support the development and scaling-up of quantum technologies, without prejudice to the ongoing MFF negotiations.

4. Accelerate scientific excellence and innovation in quantum technology

The EU currently holds a leading position in quantum science and talent, yet this advantage is eroding and requires active reinforcement. To address this, the Netherlands supports targeted talent development and scientific collaboration frameworks to attract and retain high-potential researchers and skilled professionals. Furthermore, R&D remains fundamental to accelerating the development and valorisation of quantum technologies. Therefore, the Netherlands supports targeted funding for research and innovation by fostering EU public-private-knowledge partnerships. The Netherlands supports the establishment of EU Quantum Hubs across Member States to create a concentrated focus on key domains that attract talent by building top programs to develop a strong EU Quantum workforce.

5. Strengthen dual-use applications and secure capabilities in a coherent framework

The EU Quantum Act should make the EU a leader in trustworthy, dual-use quantum technologies for space, defence, and security. To this end, the Netherlands proposes integrating these into EU-wide strategies and aligning with NATO ambitions and like-minded international partners. The Netherlands recognises the importance of appropriate oversight and requirements from the defence domain, while underlining that such frameworks should remain proportionate and innovation-enabling, avoiding unnecessary complexity that could limit timely participation of companies in dual-use quantum initiatives.

6. Address economic and research security risks in a proportionate, targeted and risk-based manner

State actors are eager to dominate the development and control of quantum technologies developed in the EU, or to exploit high-risk strategic dependencies in quantum supply chains. Therefore, the

Netherlands aims to ensure that the EU is prepared for economic and research security risks and supply chain vulnerabilities across the various stages of the development and deployment of quantum technologies. Protective economic and research security tools should only be used to mitigate clearly defined national security risks in a proportionate, targeted, and risk-based manner. Likewise, when identifying, monitoring, and addressing these risks, due account should be taken of the opportunities for cooperation with like-minded third countries.

7. A balanced technological focus: computing, communication, sensing & simulation

Quantum computing rightfully receives significant attention and public support, even though all quantum domains are equally critical for our technological sovereignty. In that sense, the Netherlands aims to ensure adequate support for quantum communication, sensing (including metrology) and simulation alongside computing. This will ensure that the EU Quantum Act builds a complete European quantum value chain and leverage strengths of different Member States in all domains.

8. Ensure integration with strategic markets and technologies

Quantum technologies are only as relevant as their applications, their uptake in end markets and synergy with other technologies. To make this possible, the Netherlands advocates embedding quantum technology as a cross-cutting theme into strategic EU technology frameworks like the Chips Act 2.0, AI ((giga-)factories), the digital window of the European Competitiveness Fund (ECF), Horizon Europe, defence, and space. The Netherlands advocates for cross-cutting roadmaps and co-investments connecting quantum with HPC, AI, telecoms, and cybersecurity. Special emphasis should be placed on first-mover advantage and excellence in sectors such as telecommunications and cybersecurity, where speed is decisive in securing global market positions.

9. Towards an effective European innovation framework

Currently, European quantum technologies are mainly being organised and coordinated by Member States through the EuroHPC Joint Undertaking (JU) and the Chips JU. The Netherlands calls for a dedicated and focused innovation framework for quantum technologies, that is both balanced and equipped to implement the objectives of the Quantum Act in all domains of quantum technology. Such a framework should be able to exploit the synergies in all domains, but should also have the executive power to address quantum technologies in its own right, including an effective coordination mechanism between the EU Member States. This also includes the mandate to coordinate and exploit the synergies with other initiatives such as the Chips JU concerning Quantum chips and manufacturing capabilities, EuroQCI and IRIS2 on QKD and space deployment of Quantum Technologies, and Smart Networks and Services JU integrating quantum and AI and addressing security.

10. Foster a regulatory framework balancing innovation and safeguards

The regulatory framework for quantum technologies should strike the right balance between fostering innovation and ensuring appropriate safeguards. The Netherlands supports the development of a harmonised, future-proof regulatory framework that reduces unnecessary regulatory burdens for companies, particularly start- and scale-ups, while maintaining high standards for the responsible development and use of quantum technologies in line with human-centric and democratic values, including safety, (economic and research) security, and trust. Such a framework should provide legal clarity, facilitate cross-border collaboration, and ensure that Europe remains an attractive place for quantum innovation and investment. While achieving this, the Netherlands emphasizes that national and European regulatory initiatives should be harmonised as much as possible, in order to prevent fragmentation. The Netherlands also advocates state aid rules under the GBER that are fit for the purpose to assist start- and scale-ups in an effective way.

11. Ensuring effective international cooperation of the EU on quantum technologies

The Netherlands emphasizes that while aiming for technological sovereignty, the EU should not innovate in isolation. The Netherlands advocates a proactive international strategy that fosters deep collaboration with like-minded third countries. This cooperation should focus on establishing common standards, securing global supply chains, and facilitating reciprocal market access. By aligning with international partners on R&D roadmaps and security protocols, the EU can amplify its influence, ensure the interoperability of quantum systems, and uphold democratic values in the global governance of quantum technologies. Strengthening these global partnerships is essential to remain competitive and resilient.