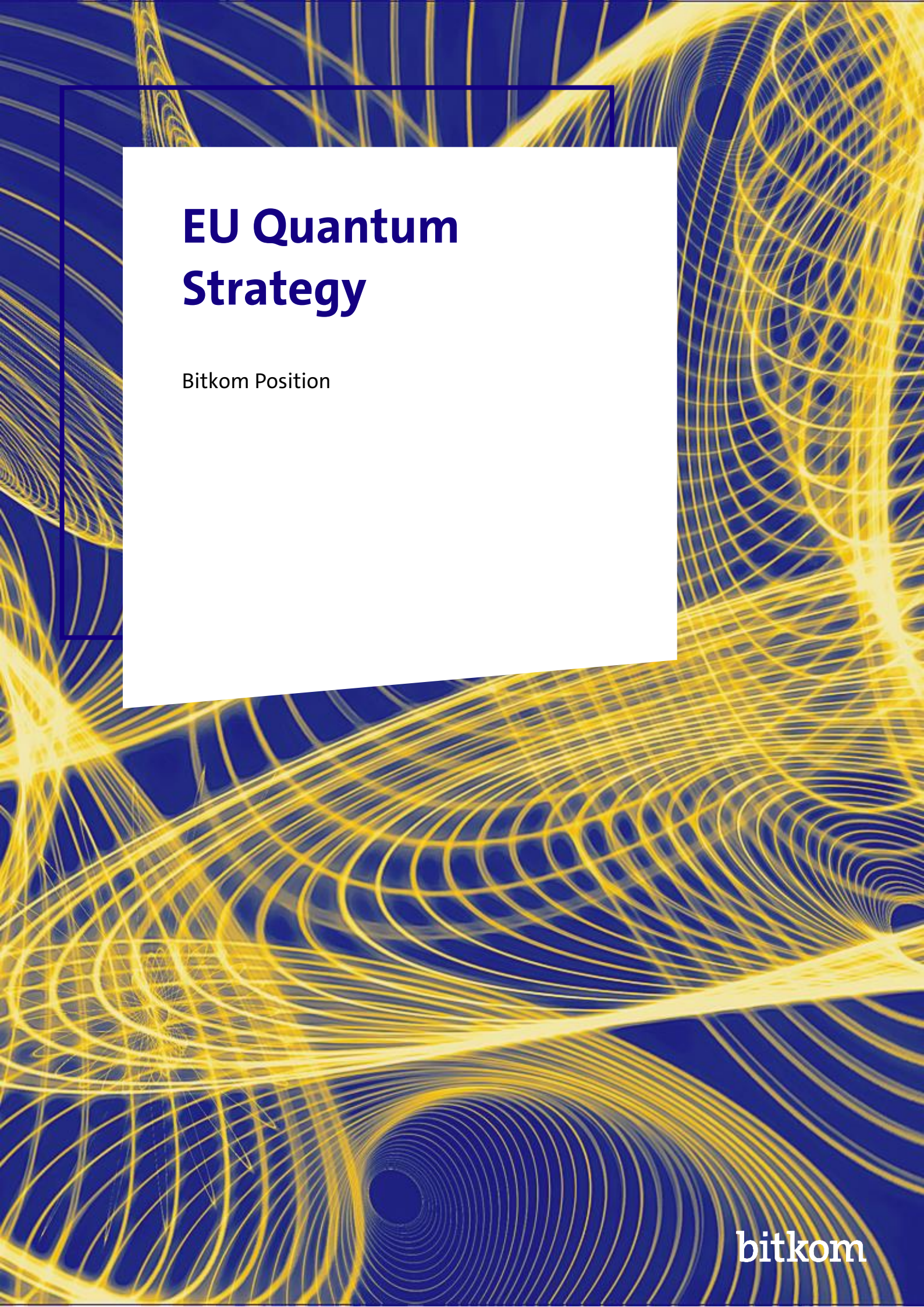

EU Quantum Strategy

Bitkom Position

bitkom

At a glance

EU Quantum Strategy

Bitkom Rating

In May 2025, the European Commission launched the Call for Evidence to inform its upcoming EU Quantum Strategy. The aim is to position Europe as a global leader by aligning research, infrastructure, and industrial policy across quantum computing, communication, and sensing. The consultation concludes on 3 June, with the strategy expected in July, followed by the EU Quantum Act by the end of 2025.

Bitkom welcomes the Commission's ambition and supports a coordinated, future-oriented approach. To succeed, the strategy must focus on **overcoming fragmentation**, **supporting commercial scaling**, and **ensuring global competitiveness**. Europe must move beyond isolated demonstrators to build a unified ecosystem that drives industrial adoption, safeguards technological sovereignty, and delivers economic and societal value.

Key Takeaways

- **Unify the Ecosystem: One Strategy, One Roadmap, One Scorecard**
  Fragmented national efforts and disconnected funding slow Europe's progress to commercial quantum technologies. The EU needs a shared roadmap, harmonised funding mechanisms, and coordinated governance. A public progress scorecard should track delivery and ensure accountability. Consolidating Member States' efforts around promising approaches will accelerate impact and reduce duplication.

- **Scale Quantum Value Chain Through Strategic Investment and Procurement**
  Europe must move beyond demonstrators and build a scalable quantum value chain—from research to industrial deployment. This requires targeted investment in infrastructure, including hardware, software, and enabling technologies. Public procurement must actively create early demand for solutions and provide market signals across quantum computing, communication, and sensing.

- **Enable Industrial Applications Through Access, Infrastructure & Use Cases**
  To unlock economic value, Europe must ensure broad and cost-effective access to quantum systems. Public infrastructure, vendor-neutral platforms, and hybrid system integration must support cross-sector application development. Flagship use cases, standardized APIs, and collaboration between research, startups, and industry are critical to drive adoption.

- **Modernize Funding to Leverage Private Capital and Accelerate Deployment**
  A unified EU Quantum Investment Fund should combine grants, equity, and guarantees. Public financing must be complemented by co-investment models, tax incentives, and funding instruments that crowd in private capital, reduce risk, and enable scale-up of market-ready quantum technologies.

Introduction

Quantum technologies are transforming computing, secure communication, and sensing, with the potential to disrupt entire industries and reinforce Europe's technological sovereignty and industrial competitiveness. Since the launch of the Quantum Flagship in 2018, the EU has made significant progress in research, infrastructure, and ecosystem building.

As the European Commission prepares its European Quantum Strategy in 2025, the focus **must shift from scientific leadership to commercialization, industrial implementation, and competitiveness**. The strategy should aim to establish a **globally competitive European quantum industry** spanning computing, communication, and sensing that serves strategic economic interests and societal needs.

This requires **coordinated action** that bridges early-stage experimentation with **industrial-scale deployment** and **market-ready** solutions. Bitkom welcomes the initiative and calls for a strategy that accelerates commercialization, promotes application development, and drives collaboration across sectors, member states, and international partners.

Ensure a cohesive and competitive European ecosystem

The EU must lead a coordinated effort to align national efforts around a harmonised strategy and a robust internal market. A **unified European quantum roadmap** is essential to align member states' funding lines, maximizing impact and minimizing redundancy. To ensure policy impact and strengthen accountability, the EU should establish a continuous public monitoring framework to track progress against the roadmap, funding effectiveness and alignment, and strategic goals.

To remain globally competitive, export rules must protect strategic interests without hindering the cross-border exchange of knowledge, services, and technology. Participation in international standardization is key to ensuring interoperability and integration with industrial systems.

To effectively drive real-world quantum applications and industry adoption, the EU should establish **a platform for stakeholder coordination**, to specifically address the unique needs of the quantum industry in upcoming acts and policies.

Build a scalable End-to-End European Quantum Value Chain

Europe must establish a fully integrated quantum value chain that scales from research to commercialization and meets industry needs. Hardware and software development must progress in tandem, ensuring interoperability and compatibility with industrial environments. National and EU demonstrators with commercial potential must evolve into scalable, full-stack infrastructure platforms.

In quantum computing, Europe should support long-term vision for **large-scale systems**, guided by performance criteria such as scalability and error rates. At the same

time, near-term technologies, such as quantum accelerators integrated in hybrid HPC systems or edge/IoT environments – can unlock earlier commercial applications and drive broader adoption. Fragmented efforts across promising QPUs must be consolidated into coordinated clusters, and Europe must lead in advancing error correction and mitigation techniques through dedicated consortia. Europe must prioritize **strategic investment in industrial-scale quantum manufacturing, testing facilities**, and **key enabling technologies**. Such measures must address Europe's core challenges: high upfront capital needs and the low initial yield of quantum fabrication. These capabilities will also support dual-use applications across civil, defence, and space domains, reinforcing strategic synergies envisioned in the EU's industrial and security policies. Synergies between quantum computing, communication, and sensing should be fostered through shared innovation hubs and cross-domain testbeds, enabling knowledge transfer and technology convergence.

It is essential to ensure that IP generated in publicly funded startup projects must remain with the startup to safeguard their global competitiveness and support production and process scaling.

At the same time, the EU should avoid overemphasis on self-sufficiency and must remain embedded in global value chains by leveraging international partnerships that bring in critical components, capabilities, and expertise.

Drive Real-World Quantum Applications and Industry Adoption

Quantum technologies must deliver measurable economic value. The EU should accelerate application development and foster deployment across sectors. Companies, especially SMEs, need support to identify and evaluate relevant use cases and gain experience with quantum technology. Promising industrial flagship projects should serve as reference applications to build trust and momentum. Large corporates acting as early users, strategic investors, and system integrators should be actively involved in pilot projects, procurement frameworks and industry consortia to accelerate uptake and anchor quantum innovation in industrial value chains. Startups should be enabled to translate industry use cases into innovative solutions, unlocking new commercial opportunities.

A **shared European infrastructure** integrating quantum and high-performance computing is essential to support deployment. Public and private computing capacities should be linked via **a secure, vendor-neutral cloud platform based in Europe**. This infrastructure should ensure straightforward, cost-effective access to diverse quantum systems for both research and industry.

For use case development, collaboration between research, startups, and industry must be actively supported. Developers must have **access** to **vendor-diversified top-tier quantum hardware** and open-source tools to accelerate application development. Reusing existing open-source software should be encouraged to accelerate progress and reduce duplication. Europe should promote **standardized, interoperable APIs** to decouple applications from specific hardware and support seamless integration into enterprise IT systems.

The strategy must also accelerate the **adoption of quantum communication and sensing technologies**. This includes scaling quantum-safe networks, and deploying advanced quantum sensors in areas like healthcare, mobility, manufacturing, and climate monitoring.

The European Commission should establish a **Quantum Benchmarking Initiative** - from component level benchmarks to application benchmarks - to assess and compare quantum applications and platforms, assuring Europe's leadership in defining global performance standards.

Optimize Quantum Investment and Public Procurement

To drive Europe's quantum innovation, funding and procurement models must be outcome-oriented and tailored to industry needs. **Milestone-based funding models** can enable continued support for projects demonstrating tangible results at mid-term evaluation.

A **unified European quantum investment fund** should consolidate public-first initiatives and empower public investors to lead funding rounds. Flexible public investment instruments such as grants and equity should be complemented by incentives that attract private capital, including co-investment models, innovation tax credits, and access to growth financing.

Procurement must play a catalytic role. EU institutions and Member States should scale quantum-related tenders and implement a «commit-to-consume» model to send clear signals to the market and drive early adoption. Dedicated co-financing mechanisms should support business uptake by offsetting procurement costs and reducing risk, particularly in areas like quantum communication infrastructure, where commercial deployment requires procurement frameworks beyond traditional R&D funding.

To enable large-scale quantum manufacturing, targeted incentives should encourage private investment from established manufacturers of e.g. semiconductors and specialized equipment willing to adapt to quantum supply chain requirements.

Finally, a regulatory and funding environment that enables rapid experimentation, iterative development and learning from use-case driven projects is crucial to accelerate market readiness.

Expand Europe's Global Leadership in Quantum Technologies

To secure global quantum leadership, Europe must strengthen structured international cooperation and remain open to technological exchange with like-minded countries that bring in essential components, infrastructure, and expertise.

Europe must retain access to the most advanced technologies while building its own capabilities. Quantum capabilities must underpin Europe's broader economic security and strategic autonomy objectives by reducing dependency on external providers, especially in critical areas like secure communications, cryptography, and supply chains components.

Strategic alliances should serve to diversify supply chains, accelerate quantum advantage, support cross-border commercialization, and strengthen Europe's influence in international standard-setting bodies.

Conclusion

Europe must convert quantum research excellence into industrial strength. The EU Quantum Strategy should scale infrastructure, align national efforts, and bridge the gap between experimentation and deployment.

With a coordinated, industry-focused approach, anchored in strategic investment, public procurement, and international partnerships, the EU can lead in the development and adoption of globally competitive quantum technologies.

Bitkom represents more than 2,200 companies from the digital economy. They generate an annual turnover of 200 billion euros in Germany and employ more than 2 million people. Among the members are 1,000 small and medium-sized businesses, over 500 start-ups and almost all global players. These companies provide services in software, IT, telecommunications or the internet, produce hardware and consumer electronics, work in digital media, create content, operate platforms or are in other ways affiliated with the digital economy. 82 percent of the members' headquarters are in Germany, 8 percent in the rest of the EU and 7 percent in the US. 3 percent are from other regions of the world. Bitkom promotes and drives the digital transformation of the German economy and advocates for citizens to participate in and benefit from digitalisation. At the heart of Bitkom's concerns are ensuring a strong European digital policy and a fully integrated digital single market, as well as making Germany a key driver of digital change in Europe and the world.

Published by
Bitkom e.V.
Albrechtstr. 10 | 10117 Berlin

Contact person
Dr. Natalia Stolyarchuk | Head of Future Computing & Microelectronics
P +49 30 27576-187 | n.stolyarchuk@bitkom.org

Responsible Bitkom Committee
WG High Performance Computing and Quantum Computing