

# Market Intelligence Briefing

July 2025

**Quantum Europe  
Strategy**

**Communication  
from the EU  
Commission**

**July 2025**

# Quantum Europe Strategy

## Context

Europe has a longstanding legacy of scientific leadership in quantum physics, with foundational contributions by thinkers such as Planck, Bohr, and Schrödinger. In the 21st century, that legacy has evolved into a vibrant, pan-European ecosystem of quantum research, talent, and entrepreneurial initiative.

However, the global race for quantum supremacy is accelerating at a pace that demands more than tradition and potential: it requires **coordinated strategy, scale, and industrial deployment**.

With both the United States and China investing heavily through public and private channels, and translating research into real-world technological and geopolitical influence, Europe faces a strategic choice.

Until recently, Europe was leading in publications, basic research, and startup formation in quantum technologies, yet it remains behind in patent filings, large-scale industrial deployments, and market penetration. In short, **Europe is lagging behind in translating its innovation into real market opportunities**.

National fragmentation, uneven funding, talent shortages in applied quantum engineering, and a lack of scale-up mechanisms have hindered Europe's ability to turn scientific discoveries into sovereign capabilities.

In response, the European Commission has launched the [2025 Quantum Europe Strategy](#), based on the [2023 European Declaration on Quantum Technologies](#) and experts' findings. It aims to assert Europe's leadership in a rapidly changing global technology landscape by transforming its research assets into a competitive, secure, and resilient quantum economy.

Positioned within the broader goals of the [Economic Security Strategy](#), [Defence Readiness 2030](#), and the [Union of Skills](#), the Quantum Europe Strategy builds a bridge from scientific excellence to strategic autonomy.

# The 5 Areas of Europe's Ambition

The strategy is structured around **five core, mutually reinforcing areas**, together forming an integrated lifecycle approach that ensures Europe can transition from quantum discovery to industrial and strategic impact.



*Five strategic areas for quantum Europe*

## Area #1: Research & Innovation

Objective: deepening scientific excellence and industrial transition

The Commission proposes a **Quantum Europe Research and Innovation Initiative** is designed to unify efforts across EU and Member States to design a commonly agreed Research, Technology and Innovation agenda.

It shifts the EU from scattered funding schemes to a more centralised, results-driven model with three main phases: **foundational discovery** (“discover”), **infrastructure and industrialisation** (“from lab to the fab”), and **application development** (“apply and use”).

To achieve this, the Commission will propose a **"Quantum Act"** (expected in 2026) to establish a governance model that aligns Horizon Europe, Digital Europe, Space and Defence programmes under a single coordination body.

The EuroHPC Joint Undertaking will be expanded to cover all quantum technologies, enabling integrated planning and rapid mobilisation of resources (Q3 2025).

This institutional consolidation is crucial for de-risking innovation, eliminating duplications, and ensuring coherent technological progression.

# The 5 Areas of Europe's Ambition

## Aera #2: Quantum Infrastructures

Objective: laying the foundations of technological sovereignty

This is one of the most ambitious and capital-intensive components of the strategy. Quantum infrastructures are the enabling bedrock for Europe's sovereignty in computing, communication, and sensing.

In quantum computing, the EU aims to deploy fault-tolerant machines reaching 100 error-corrected qubits by 2030 and **thousands by 2035**. The early deployment of hybrid quantum-HPC platforms, already launched in Germany, France, and Finland, provides both immediate computational acceleration and a foundation for more scalable architectures. A dedicated **EU Quantum Computing and Simulation Roadmap** (to be published in 2026) will guide this process.

In quantum communication, the **EuroQCI** initiative, backed by [IRIS<sup>2</sup>](#), is constructing an ultra-secure, pan-European infrastructure combining terrestrial QKD networks and a satellite constellation. By 2030, the EU expects to establish the first fully interconnected experimental quantum-secure communication system as a first step towards a Quantum Internet, enabling encrypted services for public institutions and critical infrastructure. A **Quantum Communication Roadmap** is expected in 2026 to support technology evolution, certification, and standardisation.

For quantum sensing, the EU will deploy distributed gravimeter networks and launch [Q-MRI pilot](#) infrastructure starting in 2025. A **Quantum Sensing Roadmap** will follow in 2026, outlining Europe's strategic use of sensors in earth observation, medical diagnostics, and infrastructure resilience. Notably, Europe will also prepare a quantum [space gravimetry pathfinder](#) mission after 2030.

These infrastructure efforts are underpinned by key regulatory and investment tools, including amendments to the EuroHPC Joint Undertaking and the development of a dedicated governance framework under the forthcoming Quantum Act.

# The 5 Areas of Europe's Ambition

## Aera #3: Strengthening the EU Quantum Ecosystem

Objective: laying the foundations of technological sovereignty

A robust ecosystem is essential to turn quantum R&D into industrial capability. The EU strategy addresses the fragility of Europe's quantum economy through targeted support for startups, scaleups, supply chains, and industrial capacity building.

A major step will be the launch of **six industrial quantum pilot lines** through the **Chips Joint Undertaking**, aimed at scaling prototyping into manufacturing. These lines, each funded with EUR 40–50 million, will mature processes ahead of full quantum foundry deployment. Moreover, to support industrialisation, the EU will release a **Quantum Chips Industrialisation Roadmap** in 2026.

To facilitate design interoperability and speed up chip innovation, a **Quantum Design Facility** will be established and integrated with existing semiconductor platforms. This will be complemented by the **European Quantum Standards Roadmap** (due 2026), ensuring harmonised certification and interoperability.

A Europe-wide network of open-access **Quantum Testbeds** will support SMEs and researchers with access to expensive cryogenics and measurement infrastructure. In parallel, **Quantum Competence Clusters** will expand geographically, linking regions without current clusters to the pan-European network and strengthening distributed capabilities.

To drive demand, **public procurement mechanisms** will be expanded, encouraging Member States to become first institutional buyers of quantum-enabled solutions. Strategic co-development calls will connect startups with anchor corporates in strategic verticals (automotive, aerospace, pharma), accelerating the validation and commercialisation of technologies.

On the financing front, the EU will scale up quantum investments through the **Scaleup Europe Fund**, the **EIC Fund**, and the **European Tech Champions Initiative**. These efforts will be reinforced by **InvestEU** guarantees and initiatives under the **Savings and Investments Union** to enable greater cross-border private capital flows.

Finally, the EU will conduct a **Quantum Technology Risk Assessment** by 2026 as part of the Economic Security Strategy and the Observatory of Critical Technologies. This will identify supply chain vulnerabilities and inform targeted diversification, strategic reserves, and resilience-building actions.

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## Aera #4: Space & Dual-Use Potential Quantum Technologies

Objective: developing quantum as a strategic pillar of countries' autonomy

Quantum technologies are now central to Europe's defence and space policy. Secure satellite communications, gravimetry, quantum clocks, and GNSS-independent navigation systems are being embedded into IRIS2, Galileo and future Earth observation missions.

Through enhanced cooperation with ESA and the European Defence Agency, the Commission will publish a **Quantum Sensing, Space and Defence Roadmap by 2026**. This will synchronise civilian and military R&D, ensuring that Europe can not only respond to external threats but also shape global standards in quantum-enabled warfare, surveillance, and intelligence.

A dedicated stream of "spin-in" initiatives will allow civilian quantum startups and research groups to integrate technologies into military-grade applications. This dual-use approach ensures economic viability while enhancing Europe's operational independence.

## Aera #5: Quantum Skills

Objective: building the quantum workforce of the future

Talent is the cornerstone of Europe's quantum ambition. Although the EU has a strong academic base, shortages persist in applied areas like system integration, quantum software, and cybersecurity.

To respond, the Commission will launch the virtual **European Quantum Skills Academy** in 2026. This virtual hub will centralise training programmes, fellowships, and interdisciplinary Master and PhD tracks.

The Commission will also support a **Quantum Apprenticeship Programme**, a **Pilot for Researchers-in-Residence (2025)**, and the **Quantum Talent Mobility Programme (2026)** to attract, upskill and retain high-potential individuals. It will also drive gender diversity and awareness-building through its outreach and education programmes.

Finally, the Commission will develop **European Advanced Digital Skills Competitions** from 2026 to create further connections between research and industries.

# Quantum Europe Strategy

## Conclusion

The 2025 Quantum Europe Strategy is more than a science or industry roadmap. It is a geopolitical and economic project, aimed at ensuring Europe's role as a technological leader in a rapidly bifurcating world. It recognises that quantum capabilities will be central to future digital infrastructure, economic growth, strategic defence, and societal resilience.

To fulfil this promise, Europe must implement the strategy with the same ambition and unity that it brings to its climate and digital goals. The EU has the talent, the science, and the values.

The next decade will decide whether Europe can lead in this foundational technology. If successfully enacted, the Quantum Europe Strategy could mark the birth of a globally competitive, sovereign European quantum industry—serving citizens, markets, and democratic principles alike.

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