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Analysis of today
Assessment of tomorrow

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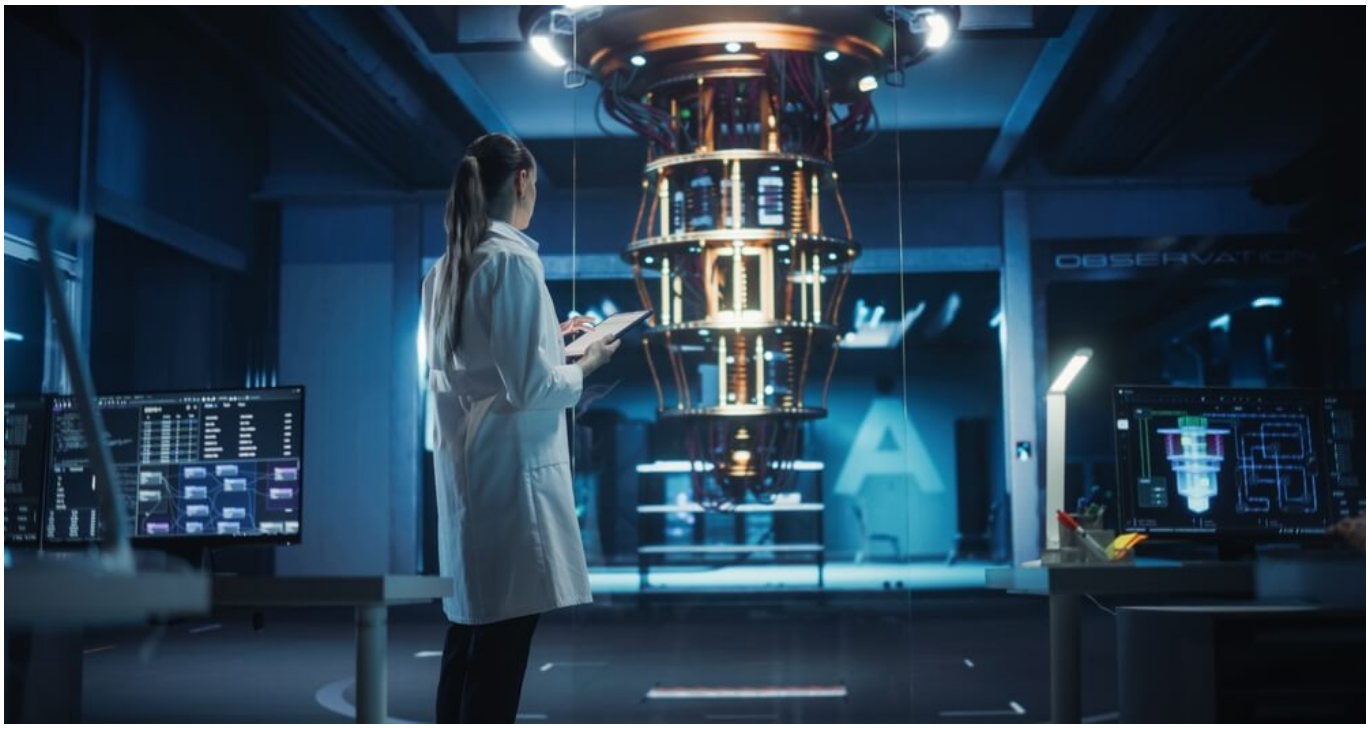
Europe has set a lofty target to dominate the world of quantum technology



Europe's second quantum computer, the VLQ, has officially gone live in Ostrava. Has a new scientific era begun? VLQ's inauguration marks a new milestone as quantum computing moves from lab ambition to real-world infrastructure. And Europe is aiming to lead that transition.

Science doesn't always make headlines, but TV shows and movies with fictional and real-life-inspired characters have sparked interest in these careers among younger generations.

Who doesn't remember characters like Sheldon Cooper from The Big Bang Theory, Dr Emmett Brown from Back to the Future, or Bruce Banner from The Hulk?

Famous scientists who have been depicted in films include John Nash, Marie Curie, Stephen Hawking, and Alan Turing.

According to the European Commission, the quantum sector is expected to create thousands of jobs and exceed a global value of €155 billion by 2040.

The Rise of VLQ in Ostrava

On September 23, 2025, the EuroHPC Joint Undertaking unveiled its latest quantum system, the VLQ, at the IT4Innovations National Supercomputing Center in Ostrava, Czechia.

VLQ features 24 superconducting qubits arranged in a star-shaped topology, designed to reduce the number of swap operations and improve computational efficiency.

> VLQ is technically the second European quantum computer deployed under EuroHPC

It is part of the pan-European LUMI-Q consortium, integrating resources across countries including Finland, Sweden, Denmark, Belgium, Poland, and Norway.

VLQ is linked with EuroHPC supercomputing infrastructures, notably the Karolina supercomputer, enabling hybrid classical-quantum workflows.

VLQ is technically the second European quantum computer deployed under EuroHPC. PIAST-Q, its predecessor, was installed earlier in 2025 at the Poznan Supercomputing and Networking Center in Poland.

Why Pay Attention to Quantum

Quantum technologies promise breakthroughs in areas that classical computers cannot handle efficiently, such as cryptography, materials science, optimisation, and drug discovery.

Due to their ability to represent complicated states and execute concurrent operations, quantum systems have the potential to address issues that would take traditional computers millennia to resolve.

> Europe has set a lofty target to dominate the world of quantum technology by 2030

The race is on. Whoever masters quantum first may gain enormous advantages in national security, technological sovereignty, and innovation leadership.

For this reason, Europe has set a lofty target to dominate the world of quantum technology by 2030. Research and innovation, quantum infrastructures, ecosystem strengthening, dual-use and space applications, and developing a quantum skills base are the five pillars that this plan focuses on.

The goal is to attain durability, economic competitiveness, scientific renown, and the ability to support the growth of future industries.

Who's Leading the Quantum

Race?

Currently, the United States, China, and Europe are the primary drivers of quantum technology, each advancing through distinct approaches.

The United States leads with a strong private sector ecosystem where companies like IBM, Google, and Rigetti have developed functioning quantum computers and cloud-accessible platforms.

China has invested heavily at the national level, establishing large-scale labs and state-backed programmes that focus on both hardware and quantum communication networks.

> Countries such as Canada, Australia, and Japan have also developed vibrant quantum communities

Despite its greater fragmentation, Europe has established the Quantum Flagship initiative to bring together universities, research institutes, and businesses to coordinate funding and research across member states, which, in turn, accelerates progress.

In parallel, countries such as Canada, Australia, and Japan have also developed vibrant quantum communities, showing that leadership in this field is becoming increasingly global and collaborative.

Will Europe Lead by 2030, or Is That Fiction?

I believe it can. But leadership is never guaranteed. The path is complex. The EU's quantum strategy is bold, but execution will require sustained funding, coordination across member states, and effective bridging of research with commercial deployment.

Europe's advantage lies in collaboration. VLQ is a product of eight countries working together. The quantum strategy ties national efforts into a shared roadmap, rather than fragmenting them. Europe's strength in scientific excellence and regulation may give it an edge in building trustworthy systems.

> Europe can become a quantum leader by 2030, but only if the strategy gets backed by urgency and ambition equal to the promise

The risk is falling behind. If Europe fails to commercialise quantum technology or cedes ground to U.S. or Asian firms, its role will be limited to that of a scientific contributor, not a market leader.

So yes, Europe can become a quantum leader by 2030, but only if the strategy gets backed by urgency and ambition equal to the promise.

What Europe Should Do

For Europe to lead in quantum technologies, it must scale up hardware production so that laboratory breakthroughs can become commercially manufactured systems. It includes building factories capable of producing quantum chips reliably and in large volumes.

Equally important is improving error correction, since noise and decoherence remain the greatest obstacles to usable quantum computing.

Europe should provide sovereign infrastructure so that its industries and institutions can access quantum systems without relying on foreign providers - Barcelona Supercomputing Center

The region also needs to bridge the gap between quantum and classical systems by developing hybrid architectures that combine quantum processors with classical supercomputers, thereby creating seamless workflows.

Another essential step is to develop talent and skills. Europe should train thousands of engineers, software developers, and system integrators with a deep understanding of quantum.

Alongside this, it should foster startups and commercialisation, enabling research outcomes to be translated into real-world applications in sectors such as pharmaceuticals, logistics, finance, climate, and materials.

Ultimately, Europe should provide sovereign infrastructure so that its industries and institutions can access quantum systems without relying on foreign providers.

Together, these actions form a roadmap for Europe to transform quantum research from an isolated endeavour into an engine of innovation and economic strength.

VLQ is the beginning. However, Europe must establish many more nodes, more diverse quantum modalities, and broader access across both business and government.

It's Time to Move Forward

We've heard about quantum for a long time. The past was theoretical, distant, and confined to physics labs. But now, with VLQ, we see quantum stepping into infrastructure. Hardware, collaboration, strategy, and resources are aligning.

The specs of VLQ are impressive. Quantum matters for real-world problems, including the development of better medicines, materials built at the molecular level, enhanced cybersecurity, and faster optimisations in energy, transportation, and climate change mitigation. It is where science, technology, and ambition converge.

Europe can lead the charge in quantum technology

In my opinion, Europe can lead the charge in quantum technology. VLQ is proof that vision is turning into reality. The strategy is ambitious. The talent is present. The technologies are advancing.

This decade, quantum will stop being a whisper and become the pulse of the next industrial revolution. But, if Europe is to lead, will it rise fast enough, and will we dare to build the quantum future together?