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The Global Quantum 2.0 Market 2026-2036

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Abstracts

The term "Quantum 2.0" denotes the second quantum revolution — a transformation from passively exploiting quantum effects (as in lasers and semiconductors) to actively engineering, controlling, and measuring individual quantum systems. Where the first quantum revolution gave the world transistors and MRI machines, the second harnesses phenomena such as superposition, entanglement, quantum coherence, and quantum tunnelling as deliberate engineering tools, enabling a new generation of technologies with capabilities that are fundamentally unreachable by any classical means.

The Quantum 2.0 market encompasses five primary technology pillars. Quantum computing encodes information in qubits that can exist in superpositions of 0 and 1 simultaneously, enabling exponential parallelism for optimisation, simulation, and machine learning problems intractable to the fastest classical supercomputers. Hardware platforms currently in commercial development include superconducting, trapped ion, silicon spin, photonic, neutral atom, and topological qubit architectures, each with distinct fidelity, coherence, and scalability trade-offs. Quantum communications — spanning quantum key distribution, quantum random number generation, and post-quantum cryptography — exploits entanglement and the no-cloning theorem to deliver provably secure cryptographic protocols. Quantum sensing produces precision instruments — atomic clocks, gravimeters, magnetometers, gyroscopes, and RF field sensors — whose sensitivity surpasses classical limits by harnessing squeezed states and quantum interference. Quantum simulation uses controllable quantum systems to model molecular and materials dynamics that overwhelm classical computers, with high-value applications in pharmaceutical drug discovery, materials science, and catalyst design. Quantum machine learning combines quantum algorithms with classical neural networks to identify quantum advantages in optimisation and pattern recognition.

Commercially, 2025 proved the decisive inflection point. Full-year quantum financings approached $10 billion globally — more than five times the 2023 trough — with fifteen companies each raising over $100 million. Cumulative global investment from 2012 through early 2026 exceeded $60 billion, with government commitments representing roughly half. North America holds approximately 47% of global investment share, followed by Asia-Pacific at 29% and Europe at 15–16%. National quantum strategies — from the US National Quantum Initiative and the EU Quantum Flagship to programmes in China, the UK, Germany, France, Australia, and India — reflect a strategic global race that spans both civilian commerce and national security.

The Global Quantum 2.0 Market 2026–2036, published by Future Markets, Inc. is the most comprehensive commercial intelligence report available on the second quantum revolution. At 608 pages and spanning 17 chapters, 185 data tables, and company profiles of more than 320 organisations, it constitutes an authoritative reference for investors, technology developers, corporate strategists, and government policymakers navigating the rapidly expanding quantum technology landscape.

The report opens with an exceptionally detailed Executive Summary that documents the historic investment surge of 2025 — a year in which total global quantum financings approached $10 billion, more than double any prior year. It traces cumulative investment trajectories from 2012 through early 2026 (exceeding $60 billion globally), maps the investment landscape by technology segment, company, application, and region, and provides a granular account of the most significant deals, acquisitions, and government commitments of the 2024–2025 period. Key milestones documented include IonQ's $1.075 billion acquisition of Oxford Ionics, PsiQuantum's $1 billion Series E led by BlackRock and Temasek, Quantinuum's $600 million raise at a $10 billion valuation, and Microsoft's unveiling of its Majorana 1 topological qubit chip. The Executive Summary also presents a high-level Quantum 2.0 Market Map, SWOT analysis, value chain overview, and consolidated market forecasts to 2036.

The main body of the report provides deep technical and commercial analysis across all six Quantum 2.0 technology domains. The quantum computing chapter covers all major qubit hardware architectures — superconducting, trapped ion, silicon spin, topological, photonic, neutral atom, and diamond-defect qubits — with technology descriptions, materials analysis, hardware roadmaps, SWOT analyses, market player profiles, and competitive benchmarking against classical, quantum-inspired, and neuromorphic computing approaches. It also addresses quantum software, cloud-based quantum computing as a service (QCaaS), error correction and fault tolerance, quantum data centres, and end-use applications across pharmaceuticals, chemicals, transportation,

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and financial services. A dedicated chapter on Quantum Chemistry and Artificial Intelligence examines the convergence of quantum simulation with AI-driven materials discovery and drug design.

Quantum machine learning and quantum simulation each receive standalone chapters covering their technical foundations, algorithmic approaches, phase evolution, application landscapes, and market forecasts to 2036. The quantum communications chapter is particularly extensive, addressing quantum random number generation (QRNG), quantum key distribution (QKD) across fibre, free-space, and satellite modalities, post-quantum cryptography following the NIST 2024 standardisation outcomes, quantum networks and the quantum internet, quantum teleportation, and quantum memory. Quantum sensing covers the full spectrum of sensor types including atomic clocks, magnetometers, gravimeters, gyroscopes, image sensors, quantum radar, quantum RF sensors, and quantum NEMS/MEMS, with per-sensor forecasts by volume, price band, and end-use industry. Quantum batteries — an emerging segment covering quantum-coherence-enhanced energy storage — are also comprehensively examined.

The materials chapter addresses superconductors, silicon photonics, photonic integrated circuits, nanomaterials, and artificial diamond as enabling material platforms, with supply chain analysis and materials market forecasts. A regional analysis chapter covers North America, Europe (including the EU, UK, Germany, France, and Netherlands individually), Asia-Pacific (China, Japan, South Korea, Australia, Singapore), and the rest of the world. The global market analysis chapter consolidates revenue forecasts across all segments from 2018 to 2046. The report concludes with an extensive company profiles chapter and a comprehensive references section.

Throughout, the report maintains strict methodological rigour, drawing on primary interviews with manufacturers and end users, supplemented by secondary research. Its market forecasts are independently derived and segmented by technology type, end-use industry, and geography, providing a multi-dimensional view of commercial opportunity across the entire Quantum 2.0 value chain.

Report Contents include:

- Executive Summary — 2025 investment surge analysis; $10 billion in quantum financings; Technology Readiness Level (TRL) assessment; market map, SWOT, value chain, and consolidated 2026–2036 forecast

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Introduction to Quantum 2.0 Technologies — First and second quantum revolutions; quantum mechanics principles (superposition, entanglement, coherence, tunnelling); enabling technologies and standards development

Quantum Computing — All qubit hardware platforms (superconducting, trapped ion, silicon spin, topological, photonic, neutral atom, diamond-defect, quantum annealers); benchmarking metrics; quantum volume; algorithms; software stack; QCaaS; error correction; fault tolerance; data centres; end-use applications in pharma, chemicals, transportation, and financial services; market forecasts

Quantum Chemistry & Artificial Intelligence — Technology description; applications; SWOT; market challenges; market players; opportunity analysis; technology roadmap

Quantum Machine Learning — Classical vs quantum ML paradigms; QML phases (NISQ-era and fault-tolerant); quantum neural networks; variational quantum classifiers; quantum kernel methods; advantages; challenges; applications; market forecasts 2026–2036

Quantum Simulation — Analog vs digital simulation; platforms (neutral atom, trapped ion, superconducting, photonic); applications (molecular simulation, materials discovery, high-energy physics, condensed matter, drug discovery); market forecasts 2026–2036

Quantum Communications — QRNG (technology, entropy sources, standards, applications); QKD (fibre, free-space, satellite, MDI-QKD, DV/CV protocols); post-quantum cryptography (NIST standards, migration implications); quantum networks; quantum teleportation; quantum memory; quantum internet; global deployments by region; market forecasts

Quantum Sensors — Atomic clocks; quantum magnetometers (SQUIDs, OPMs, TMR sensors, NV centres); quantum gravimeters; quantum gyroscopes; quantum image sensors; quantum radar; quantum chemical sensors; quantum RF sensors (Rydberg-atom and NV-centre); quantum NEMS/MEMS; market forecasts by sensor type, volume, price band, and end-use industry; technology roadmap

Quantum Batteries — Technology description; types; applications; SWOT; market challenges; market players; opportunity analysis; technology roadmap

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End-Use Markets & Applications — Pharmaceuticals & drug discovery; financial services (portfolio optimisation, risk assessment, algorithmic trading, fraud detection); aerospace & defence; energy & utilities; healthcare & medical; telecommunications; government & public sector

Materials for Quantum Technologies — Superconductors (types, properties, critical temperatures, supply chain, SQUIDs, SNSPDs); photonics, silicon photonics, and PICs; nanomaterials; artificial diamond; materials market forecasts

Regional Market Analysis — North America (US, Canada); Europe (EU, UK, Germany, France, Netherlands); Asia-Pacific (China, Japan, South Korea, Australia, Singapore); Rest of World; government initiatives comparison

Global Market Analysis — Market map; key industry players (start-ups, tech giants, national initiatives); global market revenues 2018–2046 across all segments; consolidated Quantum 2.0 total forecast

Company Profiles — 320+ companies across all Quantum 2.0 domains

Research Methodology, Terms & Definitions, References

The report profiles more than 320 companies spanning all Quantum 2.0 technology segments, including hardware manufacturers, software developers, communications specialists, sensing companies, materials suppliers, and quantum-enabled application providers. Companies profiled include 1QBit, A* Quantum, AbaQus, Absolut System, Adaptive Finance Technologies, Aegiq, Agnostiq GmbH, Airbus, Alea Quantum, Alice & Bob, Aliro Quantum, Algorithmiq Oy, Alpine Quantum Technologies GmbH (AQT), Anametric Inc., Anyon Systems Inc., Aqarios GmbH, Aquark Technologies, Archer Materials, Arclight Quantum, Arctic Instruments, Arqit Quantum Inc., ARQUE Systems GmbH, Artificial Brain, Artilux, Atlantic Quantum, Atom Computing, Atom Quantum Labs, Atomionics, Atos Quantum, Baidu Inc., BEIT, Beyond Blood Diagnostics, Bifrost Electronics, Bleximo, BlueFors, BlueQubit, Bohr Quantum Technology, Bosch Quantum Sensing, BosonQ Ps, C12 Quantum Electronics, Cambridge Quantum Computing (CQC), CAS Cold Atom, CEW Systems Canada Inc., Cerca Magnetics, Chipiron, Chiral Nano AG, Classiq Technologies, ColibriTD, Commutator Studios GmbH, Covesion, Crypta Labs Ltd., CryptoNext Security, Crystal Quantum Computing, D-Wave Systems, Delft Circuits, Delta g, DeteQt, Diatope GmbH, Dirac, Diraq, Duality Quantum Photonics, EeroQ, eleQtron, Element Six, Elyah, Entropica Labs, Ephos, Equal1.labs, EuQlid, EvolutionQ, Exail Quantum Sensors, EYL, First Quantum Inc., Fujitsu, Genesis Quantum Technology, GenMat, Good Chemistry, Google Quantum AI, Groove Quantum, g2-Zero, Haiqu, Hefei Wanzheng Quantum Technology Co. Ltd., High Q Technologies Inc., Horizon Quantum Computing, HQS Quantum Simulations, HRL, Huayi Quantum, IBM, Icarus Quantum, Iceberg Quantum, Icosa Computing, ID Quantique and more...

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