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Quantum Photonics Market Forecasts to 2032 – Global Analysis By Offering (Systems and Services), Application (Quantum Communication, Quantum Computing and Quantum Sensing & Metrology), End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Quantum Photonics Market is accounted for $0.66 billion in 2025 and is expected to reach $4.20 billion by 2032 growing at a CAGR of 30.2% during the forecast period. The study of light particles, or photons, and their behavior at the quantum level is known as quantum photonics. It creates cutting-edge technologies like quantum computing, quantum communication, and ultra-sensitive quantum sensors by fusing photonics and quantum mechanics. Moreover, quantum photonics opens up new possibilities in cryptography, telecommunications, and other fields by utilizing phenomena like superposition and entanglement to provide safe information transfer and unheard-of computational power.

According to the U.S. National Quantum Initiative Act allocated $1.2 billion for quantum research and development from 2019 to 2024, underscoring a strong governmental commitment to advancing quantum photonics technology.

Market Dynamics:

Driver:

Growing need for secure communication

Secure communication solutions are now essential due to the rise in cyberthreats and data breaches around the world. Quantum Key Distribution (QKD) is made possible by

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quantum photonics and employs the concepts of quantum mechanics to produce encryption keys that are nearly impenetrable. This makes it very appealing for sensitive communications in fields where data security is crucial, such as government, defense, banking, and healthcare. Additionally, the need for quantum photonics technologies is being driven largely by the increasing use of quantum-secured networks around the world.

Restraint:

Expensive price of quantum photonics equipment

The high cost of creating and implementing quantum photonic systems is one of the main obstacles preventing the broad use of quantum photonics. Single-photon sources, detectors, and integrated photonic circuits are examples of ultra-precise components that must be manufactured using complex fabrication techniques and specialized materials, which frequently results in costly production processes. The financial burden is further increased by the upkeep and running expenses of quantum systems, which in certain configurations require ultra-clean environments or cryogenic cooling.

Opportunity:

Growth in quantum communication systems

The development of quantum communication networks offers quantum photonics a great deal of potential due to the growing demand for secure data transfer. Photonic technologies enable Quantum Key Distribution (QKD) protocols, which detect eavesdropping attempts and offer unprecedented security. A vast market for quantum photonics solutions exists as a result of the global drive to replace traditional communication infrastructure with more secure quantum networks, particularly in the sectors of government, finance, and critical infrastructure. Furthermore, expanding this opportunity are ongoing projects to construct metropolitan quantum networks and satellite-based quantum communication links.

Threat:

Vigorous rivalry between quantum technologies

Topological qubits, trapped ions, and superconducting qubits are some of the other quantum technology platforms that compete with quantum photonics. Every platform

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has unique advantages and disadvantages, and quantum photonics may become marginalized if major investments and advancements in other technologies are made. In the field of quantum photonics, this competitive climate may result in dispersed funding, a smaller market share, and slower innovation.

Covid-19 Impact:

The COVID-19 pandemic had a mixed effect on the market for quantum photonics. At first, manufacturing delays and disruptions in global supply chains slowed down the development and application of quantum photonic systems and components. Restraints and lockdowns also slowed down joint research projects and postponed commercialization schedules. But because of the pandemic's acceleration of digital transformation and increased demand for secure communication networks, interest in and funding for quantum technologies—such as quantum photonics—for improved cyber security solutions has increased. Additionally, remote work and a rise in data traffic exposed weaknesses in traditional networks, prompting businesses and governments to accelerate quantum communication projects.

The quantum communication segment is expected to be the largest during the forecast period

The quantum communication segment is expected to account for the largest market share during the forecast period. The growing need for secure data transmission via quantum a key distribution (QKD) protocol—which use quantum photonics to guarantee unhackable communication channels—is what is driving this dominance. Cybersecurity is a top priority for businesses and governments, which encourages investments in quantum communication infrastructure. Moreover, the commercialization of quantum communication systems has also been accelerated by developments in photonic components, such as single-photon sources and detectors, making this market a vital engine for expansion and innovation in the larger quantum photonics sector.

The banking & finance segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the banking & finance segment is predicted to witness the highest growth rate. By improving real-time data processing capabilities and enabling ultra-secure communications through Quantum Key Distribution (QKD), quantum photonics is transforming the financial sector. Strong encryption techniques are becoming more and more necessary as financial institutions embrace digital platforms

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to protect sensitive transactions and client information. Additionally, this technological development gives a competitive edge in the quickly changing financial landscape by strengthening cyber security frameworks and speeding up data processing.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share. This dominance is fueled by the presence of top tech companies and research institutions, as well as significant government investments like the U.S. National Quantum Initiative. Furthermore, the region's leadership is further cemented by its robust infrastructure, highly qualified workforce, and emphasis on incorporating quantum technologies into industries like healthcare, finance, and defense.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. Significant government spending on quantum technology research and development in nations like China, Japan, South Korea, Singapore, and Australia is the main driver of this quick expansion. These countries are creating quantum research parks, encouraging public-private partnerships, and incorporating quantum technologies into a range of industries, such as healthcare, defense, and telecommunications. Moreover, the APAC region is a global leader in quantum photonics because of its dedication to developing talent and expanding quantum infrastructure.

Key players in the market

Some of the key players in Quantum Photonics Market include IBM Corporation, MagiQ Technologies, Inc., NEC Corporation, Quantum Computing Inc. (QCI), NTT Technologies (NTT Corporation), Thorlabs, Inc., Quandela, Orca Computing Ltd, Toshiba Corporation, Xanadu Quantum Technologies, Freedom Photonics, Quix Quantum BV, TundraSystems Global LTD, Hamamatsu Photonics, Photonic Inc., AegiQ, Qubitekk and PsiQuantum.

Key Developments:

In April 2025, NEC Corporation and SITA have signed an agreement to accelerate the adoption of digital identity technology in the travel industry. Through this collaboration, NEC joins SITA’s Digital Travel Ecosystem—an open, interoperable framework developed with Indicio—that eliminates the need for direct integrations between issuers

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and verifiers. The solution simplifies adoption for stakeholders across the travel ecosystem including airports, airlines, and governments.

In April 2025, Quantum Computing Inc. announced that the Company has been awarded a subcontract with a ceiling value of $406,478 to support the National Aeronautics and Space Administration's ('NASA') Langley Research Center through the development of an innovative quantum computing technique for removal of solar noise from space LIDAR data.

In October 2024, Nippon Telegraph and Telephone Corporation and Toyota Motor Corporation have agreed to a joint initiative in the field of mobility and AI/telecommunications with the aim of realizing a society with zero traffic accidents. Through their previous collaborations, the two companies have confirmed that they share common values, such as contributing to society through technological and industrial development, a people-centered approach, and global contributions that start in Japan.

Offerings Covered:

- Systems
- Services

Applications Covered:

- Quantum Communication
- Quantum Computing
- Quantum Sensing & Metrology

End Users Covered:

- Space & Defense
- Banking & Finance

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- Healthcare & Pharmaceutical
- Transportation & Logistics
- Government
- Agriculture & Environment
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan

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- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa
- Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032

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- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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