# Glass and Light: The Infrastructure Layer of the Quantum Market Is Missing

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## Key Takeaways

- Nvidia's multibillion-dollar investments in Lumentum, Coherent and Corning to scale AI photonics infrastructure may also be accelerating the manufacturing base needed for future quantum computing, creating a potential long-term tailwind that the market has yet to fully price in.
- While quantum revenue remains immaterial today, companies such as Lumentum, Corning and Cisco occupy critical positions in lasers, fiber optics and networking systems that could become indispensable as quantum computers scale from isolated machines to connected, distributed architectures.
- For investors considering the WisdomTree Quantum Computing Fund (WQTM), the convergence of AI-driven infrastructure spending and emerging quantum networking requirements highlights a five-to-ten-year opportunity where today's photonics leaders could become tomorrow's quantum infrastructure providers.

In April 2026, Nvidia invested $4 billion in photonics firms Lumentum and Coherent through nonexclusive supply agreements aimed at securing capacity for AI interconnects. The market read this as an AI infrastructure story, and it is.1

Co-packaged optics, the technology of integrating lasers and optical components directly into network switches rather than using pluggable modules, is becoming the standard architecture for large-scale GPU clusters, and Nvidia needed to lock in supply for the buildout it is planning.

But there is a second reading of that $4 billion that the market may not have not fully processed. The same photonics capabilities that solve Nvidia's data center bandwidth problem can also hold one of the keys to scaling quantum computers. The supply agreements that Nvidia signed with Lumentum and Coherent to secure AI interconnect capacity will scale up manufacturing of precision optical components that quantum systems also require.

The investors who look only at the AI side of this story may be reading only part of the thesis.

### Two Uses of Light, One Supply Chain

To understand how the same companies can serve both markets, it helps to understand why quantum computing needs photonics at all, and why that need is different from what AI infrastructure requires.

In AI data centers, photonics solves a bandwidth and power problem. As GPU clusters scale toward millions of chips, copper interconnects can no longer carry data fast enough or efficiently enough between nodes. Optical fiber and silicon photonic components replace copper for these connections, delivering higher bandwidth at lower power consumption.

The photonics here is classical and being used in support of classical computing, as light carrying digital information between chips and servers.

**Photonics and Quantum: Three Distinct Applications**

Glass and light serve quantum computing in three distinct ways, and understanding each one clarifies why the companies the market calls AI photonics plays are also, quietly, quantum infrastructure.

*Number 1: Light has a Limited Thermal Envelope*

The first is the most immediate. Most quantum processors, including the superconducting systems used by IBM, Google, and Rigetti, operate inside dilution refrigerators at temperatures near absolute zero, colder than outer space. The control signals that program quantum gates, and the readout signals that extract computational results, must physically travel through that thermal environment. Every cable crossing the boundary between room temperature and millikelvin temperatures carries heat into the refrigerator, which degrades qubit coherence.

*Optical fiber can make this crossing where copper cannot, with its thermal conductivity orders of magnitude lower, and photons carrying no electrical current, generating none of the electromagnetic noise that erodes fidelity.*

Researchers have demonstrated that a photonic link using laser light guided by optical fiber can deliver precise microwave-frequency control signals directly to superconducting qubits without adding meaningful heat to the system.2 As qubit counts scale toward thousands, the number of control and readout lines must scale proportionally. Without photonic interconnects, the wiring problem alone would prevent large-scale superconducting quantum computers from existing.

*Number 2: Photonic Qubits*

The second application is the one Xanadu and PsiQuantum are pursuing directly, photonic qubits themselves. This regards using particles of light as the fundamental unit of computation rather than superconducting circuits or trapped atoms. We covered this modality, as well as Xanadu, in our prior article.

*Number 3: Quantum Networking*

The third is quantum networking. When quantum processors need to communicate over distance, which could manifest as connecting multiple quantum processing units (QPUs) into a distributed architecture, or transmitting quantum states for quantum key distribution, photons are the only viable carrier.

Unlike classical information, quantum states cannot be amplified without destroying them, but they can be transmitted through low-loss optical fiber while maintaining coherence. The same ultra-low-loss fiber that

Corning produces for telecom networks is the physical substrate for the quantum networking infrastructure that distributed quantum computing will require.

**Lumentum: Precision Light, AI Revenue, Quantum Optionality**

Lumentum is the most directly relevant photonics company to quantum's near-term infrastructure needs, and it is also the one whose current financial story is almost entirely about AI. That combination, notably:

- Strong current AI revenue momentum
- Genuine quantum relevance
- Potential quantum optionality that is not currently appreciated by the market

Could be worth understanding.

Lumentum's Cloud and Networking segment grew 30% year-over-year in its most recent fiscal year, driven by ramping shipments of 800G transceivers, Electro-absorption Modulated Laser (EML) laser chips, pump lasers for undersea cable transmission, and narrow linewidth lasers for data center interconnect.

The company was named as a key supply partner in Nvidia's Quantum-X and Spectrum-X co-packaged optics platforms, which are the world's first commercial-grade CPO networking switches, and is one of only a handful of suppliers globally capable of producing 200G-per-lane EML lasers at volume. Nvidia's April 2026 $4 billion investment is not a passive endorsement; it is a capacity reservation for components that are critical to Nvidia's own product roadmap.3

The quantum relevance sits in a specific product category:

*Narrow linewidth lasers.*

These are lasers with extremely precise, stable frequency output, in other words the kind of precision required to address individual atoms in a trapped-ion or neutral-atom quantum computer without disturbing neighboring qubits. The same specifications that make narrow linewidth lasers valuable for coherent optical communications in data centers make them essential for qubit control in IonQ-style and Infleqtion-style systems. Lumentum is already producing these components at scale for the AI market. The quantum market will require the same components, at finer specifications, as quantum systems grow.

**The honest framing for investors:** Lumentum is today an AI photonics company. Its quantum revenue is minimal and not even separately disclosed. But Nvidia's investment in manufacturing scale-up means that the precision optics manufacturing base Lumentum is building for AI will be available to serve quantum customers as quantum system deployments grow. The optionality is real, in our view, but the timeline could be measured in years, not quarters.

**Corning: The Glass That Goes Everywhere**

Corning's quantum story is less about near-term product revenue and more about the physical substrate of the entire quantum infrastructure buildout. The company is the world's dominant manufacturer of specialty

optical fiber, and optical fiber is load-bearing infrastructure in both the AI connectivity wave and the emerging quantum networking architecture.

The AI connection is well understood:4

*On May 6, 2026, Nvidia and Corning announced a multiyear partnership that reframes the AI fiber story entirely. Corning will build three new manufacturing facilities in North Carolina and Texas, increasing its U.S. optical connectivity capacity tenfold and fiber production by more than 50%. Nvidia made an initial $500 million securities investment with warrants that could extend total equity commitment to $3.2 billion over three years.*

The scale of that commitment signals something more than supply chain security:

***Nvidia is moving to replace copper interconnects inside its own rack-scale AI systems with optical fiber, a transition that would embed Corning's glass at the heart of the world's dominant AI computing platform.***

The quantum connection is currently far less discussed but structurally important.

**Corning's ultra-low-loss fiber variants, products designed for applications where even minimal photon loss per kilometer matters, are the physical medium through which quantum states will be transmitted in future quantum networks.**

Photons are sometimes called flying qubits precisely because optical fiber allows quantum information to travel between locations while maintaining the coherence properties that make quantum computing useful. A research team demonstrated in 2026 that a three-node quantum network could be built across existing fiber-optic cables in New York, using entanglement swapping to connect quantum links, an early proof of concept for the kind of distributed quantum architecture that companies like PsiQuantum and Xanadu are designing toward.5

Inside quantum systems, Corning's standard single-mode fiber already serves as the physical connection medium for the photonic links that carry control signals through cryogenic environments. As superconducting quantum computers scale from dozens to thousands of qubits, the demand for precisely specified, low-loss fiber connections within the refrigerator architecture will grow alongside qubit count.

Corning's position is different from Lumentum's in one important respect because fiber is infrastructure. Once deployed, it is not frequently replaced. The quantum networking buildout, when it comes, will represent a step-change demand event rather than recurring component orders, more analogous to the telecom fiber boom than to the transceiver business. The timing is both further out and uncertain, and the scale is also uncertain, but the physical necessity, in our opinion, is not.

**Cisco: The Systems Integrator Waiting for the Network**

Cisco's quantum connection is the most forward-looking of the three companies in this article, and it is the one that requires the most explicit time-horizon framing. Cisco is not today a meaningful quantum

computing company from a revenue perspective, but it potentially could be the most important networking infrastructure provider for quantum computing once quantum systems need to be connected.

The present-day story is, again, AI.

Cisco demonstrated 1.6T optical transceivers, 800G linear pluggables, and AI networking solutions at OFC 2026 in Los Angeles in March of this year, reinforcing its position as the company that assembles photonic components into full network systems. Its acquisition history in optical networking, including the 2021 purchase of Acacia and ongoing investments in silicon photonics, has built a systems integration capability that is directly applicable to quantum networking architectures.6

The quantum case for Cisco rests on a simple observation that Mark Thompson, Co-Founder and Chief Technology Officer, PsiQuantum said directly:7

*The only way to create a large-scale quantum computer is through a distributed approach where multiple units are connected together, just as you would in a conventional data center.*

The architectural blueprints are already being drawn.

- IonQ published its 'Walking Cat' fault-tolerant architecture in April 2026, which describes how mobile ions and distributed quantum memory would work in a networked multi-node system.8
- Xanadu's Aurora computer is explicitly modular and networked, and its demonstration system used 13 kilometers of optical fiber to connect components across four server racks.9

While these are small systems today, we see the infrastructure they will require at scale as being very likely Cisco's domain.

**The Honest Investor's Read on Glass and Light**

Lumentum, Corning, and Cisco are photonics and networking companies with AI-driven near-term revenue and quantum optionality that is real but not imminent. In our view, none of us should be surprised if they choose not to publish a quantum revenue line in their next earnings call. The quantum market is not what is moving their stocks today, and anyone who frames these as quantum plays in the near term could be getting ahead of the timeline.

What is accurate, and what is worth building into a long-duration investment thesis, is this:

- The manufacturing scale-up being funded by AI demand is directly relevant to quantum infrastructure.
- The fiber being laid for AI data centers is the same fiber that will carry quantum states in future networks.
- The precision lasers being scaled for co-packaged optics are the same lasers needed for qubit control in trapped-ion and neutral-atom systems.
- The systems integration expertise Cisco is building for AI networking is the expertise required to connect quantum processors at scale.

The market has largely, in our opinion, not focused on this potential quantum optionality into these names. Whether that represents an opportunity depends on time horizon. For investors with a five-to-ten year view on quantum infrastructure, the convergence of AI-driven manufacturing scale-up with quantum application demand could be a structural thesis worth holding, even if in the near term the AI side of the story is the one most likely to drive results.

The glass being laid today for AI can carry the quantum signals of tomorrow. The supply chain is already being built, the market just hasn't turned its attention to the second use case yet.

The WisdomTree Quantum Computing Fund (WQTM) focuses on a spectrum of companies that are involved in pushing quantum computing forward, and we appreciate that many investors have a lot of interest in developments in this space.

1 Sources: NVIDIA & Lumentum. (2026, March 2). *NVIDIA announces strategic partnership with Lumentum to develop state-of-the-art optics technology* [Press release, SEC Form 8-K Exhibit 99.1]; NVIDIA & Coherent. (2026, March 2). *NVIDIA and Coherent announce strategic partnership to develop optics technology to scale next-generation data center architecture* [Press release, SEC Form 8-K Exhibit 99.1].

2 Source: Lecocq, F., Quinlan, F., Cicak, K., Aumentado, J., Diddams, S. A., & Teufel, J. D. (2021). Control and readout of a superconducting qubit using a photonic link. *Nature*, *591*(7851), 575–579.

3 Sources: Lumentum Holdings Inc. (2025). *Definitive proxy statement (DEF 14A), fiscal year 2025*. U.S. Securities and Exchange Commission; Lumentum Holdings Inc. (2025, August). *Annual report on Form 10-K, fiscal year ended June 28, 2025*. U.S. Securities and Exchange Commission; NVIDIA Corporation. (2025, March 18). *NVIDIA announces Spectrum-X Photonics, co-packaged optics networking switches to scale AI factories to millions of GPUs* [Press release].

4 Source: NVIDIA Corporation & Corning Incorporated. (2026, May 6). *NVIDIA and Corning announce long-term partnership to strengthen U.S. manufacturing for AI infrastructure* [Press release]

5 Source: Craddock, A. N., Cowan, T., Bigagli, N., Yekasiri, S., Robinson, D., Bello Portmann, G., Verma, A., Guo, Z., Kilzer, M., Zhao, J., Flament, M., Shabani, J., Nejabati, R., & Namazi, M. (2026, March 3). *High-rate scalable entanglement swapping between remote entanglement sources on deployed New York City fibers*. arXiv.

6 Source: Cisco. (2026, March 12). *Cisco introduces optical innovations to power the backbone for AI networking* [Blog post].

7 Source: Thompson, M., as quoted in: Mosca, R. (2025, June). Photons light the way to useful quantum computing. *Optics & Photonics News*, *36*(6).

8 Source: Tripier, F., et al. (2026, April 21). *Fault-tolerant quantum computing with trapped ions: The walking cat architecture*. arXiv.

9 Source: Aghaee Rad, H., et al. (2025). Scaling and networking a modular photonic quantum computer. *Nature*, *638*(8052), 912–919.

## Important Risks Related to this Article

There are risks associated with investing, including potential loss of principal. To the extent the Fund invests a significant portion of its assets in the securities of companies of a single country or region, it is more likely to be impacted by events or conditions affecting that country or region. The economic, political, regulatory, and other events and conditions that affect issuers and investments in the United States differ significantly from those associated with other countries and regions. U.S. financial markets have become increasingly globalized becoming more integrated with financial markets around the world and as a result, U.S. financial markets are increasingly vulnerable to the risks that may affect non-U.S. financial markets. The Fund's investments in the U.S. are subject to the risk that they, and the U.S. economy more generally, will be adversely affected by a decrease in imports or exports, changes in trade regulations, inflation, and/or an economic recession in the U.S. The Fund invests primarily in the securities of quantum computing companies. Companies engaged in the development of quantum computing or machine learning technology may be significantly impacted by rapid technological advancements, product obsolescence, intense competition, consumer demand, and government regulation. Such companies are also heavily dependent upon patent and intellectual property rights. The Fund invests in the securities included in, or representative of, its Index regardless of their investment merit and the Fund does not attempt to outperform its Index. The composition of the Index is governed by an Index Committee and the Index may not perform as intended. Please read the Fund's prospectus for specific details regarding the Fund's risk profile.