The Platforms: Why the Tech Giants Are Always in the Room

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Key Takeaways

- Recent breakthroughs in protein simulation and materials discovery show that IBM, Google, Microsoft, Amazon and Nvidia remain central to quantum innovation, making the WisdomTree Quantum Computing Fund (WQTM) a way to gain exposure without picking a hardware winner.
- While Microsoft, Amazon, Google and IBM are pursuing different quantum architectures, all are building infrastructure designed to capture value as the industry moves toward commercial scale.
- Nvidia's focus on the software and compute layers connecting classical and quantum systems highlights a key theme: platform providers may offer the most durable quantum opportunity.

On May 5, 2026, researchers from Cleveland Clinic, RIKEN, and IBM successfully simulated a 12,635-atom protein complex using quantum-centric supercomputing, a problem relevant to drug discovery that classical computing could not match at comparable speed and accuracy.1

The following day, Q-CTRL and IBM reported a 3,000x speedup in simulating the Fermi-Hubbard model on 120 qubits, using runtime error suppression techniques that demonstrated practical quantum advantage over classical methods.2

Two substantive scientific results, and the same company's hardware in both cases.

This is not a coincidence unique to that week but rather a pattern. Every time quantum computing produces a result that earns space in the scientific literature or the mainstream financial press, which could appear as:

- A new chip architecture
- A fault-tolerance milestone
- A simulation that classical computers cannot match

Microsoft, Amazon, Nvidia, Alphabet, or IBM is in the room. Sometimes they funded the research. Sometimes they provided the hardware. Sometimes they are the hardware. But the platforms are almost always there.

Why Big Tech Cannot Afford to Spectate

The hyperscalers' quantum investments carry a strategic logic that is rarely stated plainly. When AI demand exploded after 2022, Microsoft, Amazon, and Google found themselves paying Nvidia billions for chips they did not control and could not replace. Quantum processing units are the next potential dependency on that list, and the investments being made today are partly insurance against repeating that situation.

The scientific results are genuine, and so is the strategic motivation underneath them.

IBM and Nvidia arrive from different directions entirely. IBM's quantum commitment predates the AI era and is rooted in its identity as a research institution. Nvidia is not trying to build quantum processing units (QPUs) at all, but it is positioning its GPU infrastructure and software stack as the essential interface layer between quantum and classical compute.

Microsoft: Topological Qubits and an Unresolved Physics Bet

Microsoft's quantum strategy is the most technically distinctive of the five platforms and also the most scientifically contested. While IBM, Google, and Rigetti pursue superconducting qubits and IonQ pursues trapped ions, Microsoft has spent over two decades on topological qubits, a fundamentally different approach based on Majorana zero modes, which are quasiparticles whose non-local encoding of quantum information is theorized to provide intrinsic protection against local disturbances, potentially reducing the need for software-level error correction. The theory is well-established; the reliable experimental realization in controllable solid-state devices is what remains actively contested.3

The important qualifier is "in theory." Trapped ions, superconducting qubits, neutral atoms, and photons are all established physical systems with decades of reproducible experimental literature. Majorana zero modes occupy a different category because their existence as stable, controllable quasiparticles in solid-state devices remained disputed in the physics community until very recently, and Microsoft previously retracted a related Nature paper after concerns were raised about the data.

The February 2025 Nature paper demonstrates Microsoft's advances in materials fabrication and measurement technique, but notably, the journal's own peer-review record states that the results do not constitute evidence for the presence of Majorana zero modes in the devices tested. Microsoft's lead researcher acknowledged the paper predated their most recent internal progress. A balanced interpretation is that the materials science is advancing, but independent scientific confirmation of the core claim remains outstanding.4

The gap between that demonstration and a fault-tolerant processor at scale remains vast and unproven.

Today, Azure Quantum operates as a marketplace giving enterprise customers access to IonQ, Quantinuum, Rigetti, and others.

Amazon: Marketplace First, Hardware Second

AWS Braket, launched in 2019, is a quantum computing marketplace rather than a native hardware platform, allowing customers access to IonQ, Rigetti, D-Wave, and Quantinuum through a single AWS interface without needing to know which hardware they are running on. The model reflects Amazon's

broader cloud philosophy, which is to abstract the infrastructure, charge for access, and capture platform value regardless of which underlying hardware wins.

The February 2025 Ocelot chip is Amazon's longer-term hedge. It uses cat qubits, a superconducting design that builds error resistance into the hardware architecture rather than layering it purely in software, and Amazon claims the approach reduces the physical qubit overhead required for error correction by up to 90% compared to standard superconducting methods.5

Ocelot is a proof-of-principle chip, not a commercial product, developed at Amazon's quantum computing center at Caltech. The integration thesis is straightforward: quantum compute eventually becomes another AWS service, with Amazon controlling both the marketplace and, increasingly, the native hardware beneath it.

Alphabet/Google: The Deepest Research Record

Google's Willow chip, announced in December 2024, delivered one of the field's most significant milestones:6

The first experimental demonstration of below-threshold quantum error correction, meaning that as more physical qubits were added to construct a logical qubit, the logical error rate fell rather than rose.

This had been a theoretical requirement for scalable fault-tolerant computing for decades. Google's superconducting qubit fabrication quality and error rates have been consistently among the best published anywhere.

The integration thesis operates in two ways:

1. Near-term access via Google Cloud Marketplace
2. Longer-term native quantum compute powered by Google's own processors

Google's March 2026 commitment to transitioning its entire internal infrastructure to post-quantum cryptography by 2029 is worth noting, as it signals that quantum's first major commercial impact may arrive in security before it arrives in computation.7

Google's cooperation with Nvidia on the CUDA-Q platform for processor simulation also reflects something characteristic of the quantum field more broadly, which is more open collaboration between large competitors than almost any other technology domain, with peer-reviewed publication as the norm rather than the exception.

IBM: The Roadmap That Gets Hit

IBM publishes a specific, named, year-by-year quantum roadmap, and the company has a track record of hitting it. That combination is unique among the five platforms and is the foundation of IBM's institutional credibility in quantum.

The calendar reads as follows:8

- In 2024, IBM demonstrated accurate execution of a 5,000-gate quantum circuit on 156 qubits.
- In 2025, it released the Nighthawk processor, targeting deeper circuits, and the Loon experimental chip demonstrated, for the first time, all key hardware components required for fault-tolerant computing operating together.
- In 2026, the goal is the first demonstration of scientific quantum advantage and a fault-tolerant module.
- In 2027, the Cockatoo processor will demonstrate entanglement between modules.
- In 2028, the Starling system will demonstrate magic state injection across multiple modules.
- In 2029, Starling scales to 200 logical qubits running 100 million gates, and this is IBM's definition of large-scale, fault-tolerant quantum computing.
- By 2033 and beyond, the Blue Jay system targets 2,000 logical qubits and one billion gates.

The aforementioned May 2026 results, the protein simulation with Cleveland Clinic and RIKEN, and the Q-CTRL 3,000x Fermi-Hubbard speedup, both on IBM hardware, are characteristic of how IBM has built its position: not through solo announcements, but by embedding its systems into the research workflows of the institutions most likely to discover what quantum computing is actually useful for. The IBM Quantum Network, connecting over 200 organizations across industry, academia, and government, is IBM's most durable competitive asset, more durable than any single processor generation.

Nvidia: The Interface, Not the Processor

Nvidia is not building QPUs. Its quantum strategy is predicated on a simpler observation:

Quantum computers will need classical computers to be useful, and Nvidia intends to own that interface.

CUDA-Q is the foundation. It is a hybrid programming environment where developers write algorithms that execute partly on GPUs and partly on quantum hardware, using the same workflow as standard GPU programming. It positions Nvidia at the layer between quantum and classical compute before any commercially viable quantum processor exists.

Ising, released on World Quantum Day in April 2026,9 sharpens that position. Quantum error correction requires a classical processor to decode error syndromes in real time, and the faster and more accurate that decoding, the higher the effective performance of the quantum processor. Ising is an open-source family of AI models designed to do exactly that, performing decoding up to 2.5 times faster and three times more accurately than conventional methods.

Jensen Huang's framing at the announcement was direct: **AI is essential to making quantum computing practical.**

Taken together, CUDA-Q and Ising position Nvidia as essential infrastructure for quantum computing on the classical side, and it is not accidental in our view that this is the same structural position it holds in AI, where the GPUs do not run the models but nothing runs without them.

The Pattern, Explained

The five platforms are not running the same race.

- Microsoft is making the highest-risk hardware bet in the industry, specifically on topological qubits that, if the physics delivers, would leapfrog every competing modality, but the gap between today's demonstration and a fault-tolerant processor remains one of the largest unproven challenges in quantum computing.
- Amazon's marketplace model is the most resilient regardless of which hardware wins, noting that AWS Braket captures value at the access layer regardless of whose QPUs prove best.
- Google holds the deepest superconducting research record and the most deliberately understated commercial timeline.
- IBM has the most specific public roadmap and the most credible track record of hitting it.
- Nvidia is playing a different game entirely, and may be the most certain long-term winner precisely because it does not depend on resolving the modality question at all.

The reason these platforms are always in the room when quantum milestones happen is straightforward: they built the room. The cloud access, the hybrid computing environments, the error correction software, the developer tools, and a research team demonstrating a quantum result almost certainly used IBM Quantum hardware, AWS Braket access, or Nvidia's CUDA-Q stack to do it. That infrastructure position is a moat. The pure plays need the platforms more than the platforms need any individual pure play, which makes platform investing structurally less dependent on picking the hardware winner correctly.

A Note on the Series

This three-part series has examined quantum computing from three distinct vantage points.

- **Blog 1** mapped the five publicly traded pure-play companies, specifically the hardware bets, the modality competition, and what their revenue actually represents.
- **Blog 2** examined Lumentum, Corning, and Cisco, arguing that the AI-driven photonics manufacturing scale-up is building quantum infrastructure as a secondary consequence the market has not yet priced.
- **Blog 3** has profiled the platforms, five big companies with competing views of where quantum value will ultimately concentrate, from Microsoft's physics bet to Nvidia's interface play.

The common thread is this: quantum computing is no longer a theoretical future. The scientific results, the hardware roadmaps, the institutional commitments, and yes, the first nine-figure revenue numbers reflect a technology in genuine commercial transition. The uncertainty about which modality scales, which applications prove transformative, and which companies remain standing when it does—that uncertainty is real. But it is the uncertainty of a market taking shape, not a technology that may never arrive.

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 Source: IBM, Cleveland Clinic, & RIKEN. (2026, May 5). *Cleveland Clinic, RIKEN, and IBM model a 12,635-atom protein — the largest known to be simulated with quantum computers* [Press release].

2 Source: Q-CTRL. (2026, May 6). *Q-CTRL delivers 3,000x speedup in materials discovery for the energy sector with quantum computing, demonstrates evidence of practical quantum advantage* [Press release].

3 Sources: Das Sarma, S., Freedman, M., & Nayak, C. (2015). Majorana zero modes and topological quantum computation. *npj Quantum Information*, *1*, 15001; Microsoft. (2025, February 19). *Microsoft unveils Majorana 1, the world's first quantum processor powered by topological qubits* [Blog post].

4 Source: Microsoft Azure Quantum. (2025). Interferometric single-shot parity measurement in an InAs–Al hybrid device. *Nature*, *638*, 651–655.

5 Source: Koottandavida, A., et al. (2025). Hardware-efficient quantum error correction using concatenated bosonic qubits. *Nature*.

6 Source: Google Quantum AI. (2024, December 9). *Meet Willow, our state-of-the-art quantum chip* [Blog post].

7 Source: Adkins, H., & Schmieg, S. (2026, March 25). *Quantum frontiers may be closer than they appear* [Blog post]. Google.

8 Source: IBM. (n.d.). *IBM Quantum roadmap*.

9 Source: NVIDIA Corporation. (2026, April 14). *NVIDIA launches Ising, the world's first open AI models to accelerate the path to useful quantum computers* [Press release].

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.