How Real Companies Are Navigating the Quantum Computing Journey

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Key Takeaways

- IBM's historic July sell-off overshadowed its acquisition of HRL Laboratories, adding silicon spin qubits to its quantum roadmap and strengthening its long-term scaling strategy.
- By pairing HRL with its new Anderon foundry, IBM is building a diversified quantum manufacturing platform spanning multiple qubit technologies.
- IBM's expanded quantum strategy reinforces the long-term investment case for the WisdomTree Quantum Computing Fund (WQTM), which provides exposure to leaders across the quantum ecosystem.

Quantum computing has spent a long time living in the future. For much of the past decade, the narrative has been consistent:

- Transformative potential
- Meaningful barriers, such as scientific and engineering challenges
- Indeterminate timelines, and I know in most discussions people tell me some version of ‘isn’t this always 3-5 years away?’

That story is not wrong, but I think that it is increasingly incomplete. In mid-2026, something has shifted. The quantum journey is evolving from being primarily a theoretical exercise conducted in research laboratories, and it is becoming a strategic management challenge, and one that real organizations, in real industries, are actively navigating right now.

A new report from the IBM1 Institute for Business Value, *Journey to Quantum Advantage: Voices from the Frontlines,*2 captures this transition with unusual candor. Based on interviews with senior leaders across aerospace, life sciences, finance, energy, automotive, and government, it documents organizations that have moved well past the curiosity phase. What emerges is a portrait of a technology in the middle of a difficult but real maturation, and of the strategic decisions that separate organizations building durable capability from those that are simply watching.

For investors trying to understand what quantum computing means beyond the headlines, this report offers something genuinely useful, namely, ground-level evidence of where value creation is beginning to take shape.

The Honest Middle of the Journey

One of the most striking qualities of the IBM IBV report is its refusal to oversell. The leaders featured are not breathless advocates. They are practitioners who have encountered real friction, and who have adjusted accordingly. I know I was initially thinking that quantum computing is a major initiative for IBM so obviously they will write positively, but it is credible, at least to me, that they didn't allow things to get carried away.

E.ON

The German energy giant began its quantum journey in 2019. Early proofs of concept were encouraging. Quantum techniques seemed poised to reshape grid balancing and renewable energy forecasting. Then, as often happens, the hardware constraints arrived.

1. Shallow circuits
2. Limited qubit connectivity
3. Error rates that compounded at scale

The gap between laboratory demonstration and industrial deployment proved wider than initially anticipated.

Dr. Giorgio Cortiana, E.ON's Head of Quantum Computing, describes the resulting inflection point with clarity, in that fault-tolerant quantum systems are not expected before 2029. That reality forced a recalibration rather than an abandonment. E.ON shifted its roadmap to reflect hybrid quantum-classical workflows for the near term, while sustaining investment in long-term capability building. The framing that Dr. Cortiana offers is worth sitting with. I liked this statement:

Leading-edge innovation demands consistency and endurance. Success comes not from isolated moments of progress, but from long-term commitment that allows capabilities, understanding, and opportunity to mature together.

This is not the language of hype, but instead, it is the language of serious institutional investment under conditions of genuine uncertainty, which, for long-term investors, is precisely the kind of signal worth tracking.

One Company's Journey: Vanguard Finds Its Footing

Of all the case studies in the IBM IBV report, Vanguard's quantum journey may be the most instructive for investors thinking about what near-term quantum value actually looks like in financial services.

Vanguard began its quantum journey in 2022, motivated not by certainty but by the strategic logic of not waiting. Bimal Mehta, the firm's Chief Research Scientist for Emerging Technologies, captures the reasoning plainly. In his view, Vanguard did not want to wait until the technology fully matures and then

try to catch up. The goal was to understand the fundamentals while they still had time to build genuine capability.

The use cases Vanguard explored span anti-money laundering pattern detection, quantum Monte Carlo methods for risk modeling, and, most promisingly, fixed income portfolio optimization. That last application deserves further attention.

Bond portfolio optimization is an extraordinarily complex combinatorial problem. A manager grouping thousands of bonds into baskets must simultaneously satisfy constraints across yield, maturity, coupon rate, duration, liquidity, and more. Classical solvers can find near-optimal solutions, but finding a truly optimal one within a practical time window has historically been out of reach, as the computational search space is simply too large.

Quantum computing's value proposition in this context is not necessarily raw speed. It is, instead, the ability to narrow the search space, and to arrive at a better solution within the same time constraint rather than just arriving at the same solution faster. In Vanguard's experiments, even working with a limited number of qubits, the team was able to get very close to an ideal outcome. The theoretical approach was validated, and the practical question now is one of scale. As qubit counts increase and error rates decline, the quality of the solution should improve meaningfully.

Mehta is explicit about what quantum advantage means to Vanguard in practical terms. A demonstration of advantage in physics or chemistry may be scientifically impressive. For Vanguard, advantage only matters if it is usable, meaning if it allows the firm to deliver better portfolio outcomes, better risk management, or a better client experience. Otherwise, it is just a technology milestone. That framing, advantage defined by client outcomes, not by benchmarks, represents a maturation in how the financial industry is thinking about quantum.

What is equally notable is what Vanguard built along the way: **internal knowledge, workflow fluency, and organizational confidence.** Mehta notes that if qubit counts were to expand significantly tomorrow, Vanguard's team would know exactly how to scale what they have already built. That is the compounding effect of early investment, a readiness that cannot be replicated quickly.

The Broader Pattern: What Early Movers Are Learning

Vanguard's experience is not unique. Across the IBM IBV report, several consistent themes emerge from organizations that have been on the quantum journey long enough to develop real institutional knowledge.

Advantage is use-case specific, not universal. Boeing's Dr. Jay Lowell frames it directly, in that quantum advantage is only meaningful in the context of a particular, precisely defined application. The question is not whether quantum computing is generally superior, rather, it is whether, for a specific computation, quantum can deliver more accuracy, lower cost, or greater speed than any available classical method. This disciplined framing has helped Boeing avoid the trap of chasing quantum for its own sake.

Hybrid architectures are the near-term reality. Almost without exception, the organizations furthest along the quantum journey are not running purely quantum workloads. They are running hybrid quan-

tum-classical systems, using quantum processors for specific subroutines where they offer advantages while relying on classical infrastructure for everything else. Volkswagen's quantum team is explicitly targeting hybrid quantum-classical architectures across materials science, optimization, and fluid dynamics. Yonsei University's on-site IBM Eagle processor is connected to the Fugaku supercomputer in Japan, with a latency of just 20 milliseconds across 800 kilometers. The integration of quantum and classical high-performance computing is not a transitional compromise; it is the architecture of the near-term quantum era.

Ecosystem participation is a competitive variable. IBM IBV research finds that roughly half of quantum-ready organizations participate in one or more quantum ecosystems. These networks, connecting industry partners, academic researchers, government agencies, and hardware providers, function as accelerants. They compress learning curves, distribute risk, and create shared infrastructure that no single organization could justify building alone. Singapore's National Quantum Strategy, which has committed over SGD 1 billion since 2002 and launched a coordinated National Quantum Office in 2024, exemplifies the government side of this dynamic. The Basque Country's BasQ initiative, built over a decade and encompassing universities, public research centers, banks, and industrial companies, illustrates how regional ecosystems can punch above their weight.

Talent is the binding constraint. Across the IBM IBV survey data, 61% of organizations cite inadequate quantum skills as the top barrier to adoption, ahead of immature technology and unclear use case timelines. This is a striking finding, in that it is telling us all that the challenge is not primarily technical; it is human. Chicago State University's story, building quantum certificate programs, partnering with Argonne National Laboratory, and positioning itself as a workforce development engine for the Illinois Quantum Microelectronics Park, reflects the kind of ground-level infrastructure that will determine how quickly the broader quantum ecosystem can scale.

What This Means for the Investment Thesis

At WisdomTree, our coverage of the quantum computing space through the WisdomTree Quantum Computing Fund (WQTM) is built on a conviction that quantum computing is not a monolithic bet on a single breakthrough. It is an investment across an evolving stack, meaning hardware, software, services, and the classical infrastructure that supports quantum systems. The IBM IBV report reinforces this view.

The organizations building durable quantum capability are not waiting for a singular moment of advantage. They are accumulating knowledge, building hybrid workflows, securing ecosystem relationships, and developing the talent pipelines that will matter enormously when fault-tolerant systems arrive, likely in the late 2020s to early 2030s. The race is not only about who builds the best qubits. It is about who is ready to use them.

Vanguard's fixed income optimization work, E.ON's recalibrated roadmap, Bosch's pivot toward fault-tolerant algorithm development, and Yonsei's quantum-HPC integration are not outliers. They are early indicators of a technology transitioning from research infrastructure to operational relevance.

The question for investors is not whether quantum computing will matter. The evidence that it will is accumulating with every quarterly disclosure, every milestone paper, and every organizational commitment documented in reports like this one. The more useful question is which organizations, meaning hardware providers, software developers, service integrators, and end users, are building the capabilities today that will translate into defensible advantage when the technology crosses its next set of thresholds.

The journey from lab to ledger is underway. The organizations paying attention are not waiting for the destination to be announced. They are already on the road.

1 As of July 20, 2026, IBM represented a 3.26% weight within the WisdomTree Quantum Computing Fund. **Holdings subject to change.**

2 Source for this piece, unless otherwise stated: IBM Institute for Business Value. (2026, June). *Journey to quantum advantage: Voices from the frontlines*. IBM Corporation.

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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.