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EMERGING TECH RESEARCH

Bit by Qubit: Global Quantum Computing Funding Hits New Records and Is Accelerating

One atomic step for man

PitchBook is a Morningstar company providing the most comprehensive, most accurate, and hard-to-find data for professionals doing business in the private markets.

Key takeaways

- VC investment in quantum computing reached an inflection point in 2025, with $3.9 billion deployed across 125 transactions, the highest annual total on record.

- Roughly five out of every six dollars invested in quantum computing globally flowed through North American or European transactions, with North America capturing 52.5% of deal value and Europe 33.6%.

- A small set of category-defining platform companies is capturing most late-stage rounds as incumbent firms accelerate hitting technical benchmarks.

Introduction

Spin-up(side) momentum

Quantum computing capital has been accelerating because three structural forces are converging: a technical inflection in error correction, escalating geopolitical competition, and the entry of mainstream institutional capital into what was previously a specialist asset class. Together, these forces are compressing the timeline to commercial viability and pulling forward capital that would historically have waited for later-stage certainty.

Technical inflection. Error correction has advanced from theoretical possibility to demonstrated progress. Breakthroughs from Google, IBM, and China's USTC have brought scalable fault tolerance materially closer than it appeared three years ago. Multiple competing modalities are now hitting logical-qubit milestones with gate fidelities approaching utility thresholds, and leading companies are executing on credible roadmaps to hundreds of logical qubits by 2030. The sector has moved from debating feasibility to competing on execution.

Geopolitical competition. Quantum has become a top-tier national priority across all three major blocs. China's 15th Five-Year Plan (FYP) ranks quantum as the leading future industry, ahead of AI and semiconductors, supported by an estimated $27.5 billion in state capital. Cumulative government commitments now exceed $60 billion globally. Public funding has shifted from basic research toward commercialization mandates and procurement preferences, and co-investment structures are now anchoring the sector's largest rounds. State participation directly reduces private capital risk and establishes a strategic imperative to deploy.

Institutional crossover. The capital base has fundamentally repriced. Venture growth's share of deal value rose from roughly 1% in 2024 to 30.4% in 2025, the largest single-year stage shift in the dataset. The leading investors by capital deployed are now NVIDIA, BlackRock, Baillie Gifford, JPMorgan, and sovereign wealth funds rather than specialist quantum venture firms. The arrival of this investor class validates quantum as an institutional allocation and accelerates the capital available to category-defining platforms.

Quantum computing is a fundamentally different model of computation. Where classical computers process information in bits that hold a value of either 0 or 1, quantum computers operate on qubits. A qubit can exist in a superposition of both 0 and 1 simultaneously, and multiple qubits can become entangled—meaning their states are linked in ways that have no classical analog. These two properties allow quantum systems to explore certain solution spaces in parallel. For a specific class of problems, they can perform calculations that would be intractable for even the most powerful classical supercomputers. The practical implications are most often discussed in terms of cryptography, drug discovery, materials science, optimization, and machine learning, where quantum systems are expected to deliver step-change improvements in either speed or solution quality.

The technology has been the subject of theoretical research since the early 1980s. Only in the last decade has it crossed from physics laboratories into commercially funded engineering programs. The transition has been driven by parallel advances in qubit fabrication, error correction, control electronics, and cryogenic infrastructure. It has also been supported by the emergence of cloud-accessible quantum hardware, which allows enterprises and researchers to experiment with real systems without owning them. Practical, fault-tolerant quantum computing remains a multidecade engineering project, but the pace of progress has accelerated meaningfully, and a growing population of well-capitalized companies is now competing to define the dominant architecture.

There is also no single way to build a quantum computer. The sector has consolidated around several competing hardware modalities, each with distinct strengths and trade-offs.

- **Superconducting qubits,** pursued by IBM, Google, Rigetti, and China's Origin Quantum and Zuchongzhi program, offer fast gate operations and benefit from established semiconductor manufacturing techniques. They require extreme cooling near absolute zero.

- **Trapped-ion systems,** advanced by Quantinuum and IonQ, deliver exceptionally high gate fidelities and long coherence times by suspending individual atoms in electromagnetic traps.

- **Photonic quantum computing,** the focus of PsiQuantum, Xanadu, and QBoson, encodes qubits in particles of light. It offers a path to room-temperature operation and integration with existing telecommunications infrastructure.

- **Neutral-atom systems,** developed by QuEra, Pasqal, Atom Computing, and Infleqtion, use lasers to trap and manipulate arrays of individual atoms, combining strong scalability characteristics with relatively long coherence times.

- **Other approaches,** including topological qubits and silicon spin qubits, remain earlier in their development cycles. Microsoft is also pursuing topological qubits via its Majorana 1 chip, which uses engineered Majorana zero modes in topological superconductors to create inherently error-resistant qubits.

Several technical concepts are worth defining before going further, since they shape both the engineering challenges and the investment thesis. A "gate operation" is the fundamental unit of computation in a quantum system, analogous to a logic gate in a classical computer but operating on the quantum state of one or more qubits. "Fidelity" refers to how accurately a gate operation actually performs the intended manipulation; higher fidelity means fewer errors per operation. "Decoherence" is the loss of a qubit's quantum state due to interaction with its environment, which is why most quantum systems must be heavily isolated and, in many cases, cooled to temperatures colder than deep space. The longer a qubit can maintain its state without decoherence, the more useful operations it can perform.

These limitations explain why error correction sits at the center of the field. Today's quantum systems are noisy: Qubits lose their quantum state quickly, and gate operations introduce errors. The standard solution is to combine many imperfect physical qubits into a smaller number of more reliable logical qubits using error-correcting codes. A logical qubit might require hundreds or even thousands of physical qubits to operate reliably. "Fault tolerance" is the property of a system that can continue computing correctly despite individual component failures. Most importantly, it is the threshold at which quantum computers become practically useful for the most economically important problems. The race to demonstrate scalable error correction at the logical-qubit level is now the central technical contest in the sector. Recent breakthroughs from Google, IBM, China's USTC group, and others have moved this milestone meaningfully closer than it appeared even three years ago.

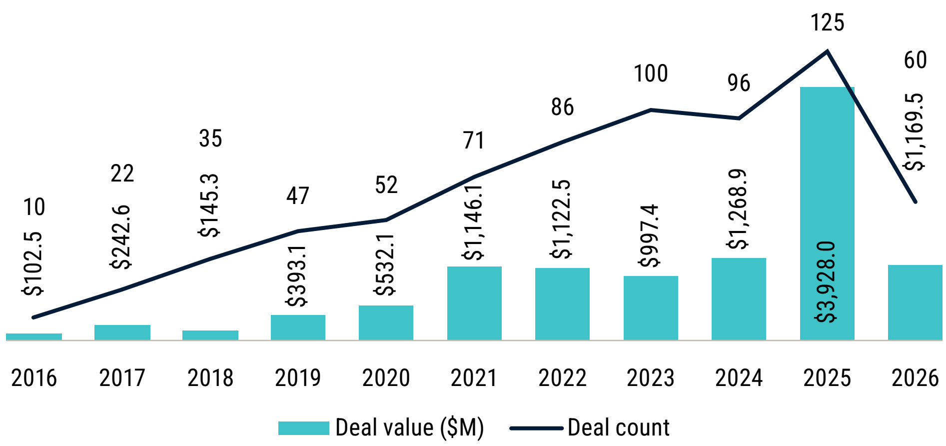
Venture activity in quantum computing: Q1 2016-Q1 2026

The quantum computing venture landscape has undergone a fundamental repositioning over the past decade. What began as a niche, early-stage asset class attracting modest research-adjacent capital has matured into a sector capable of absorbing institutional-scale, late-stage commitments at valuations that would have been unthinkable earlier in its history.

Quantum geography

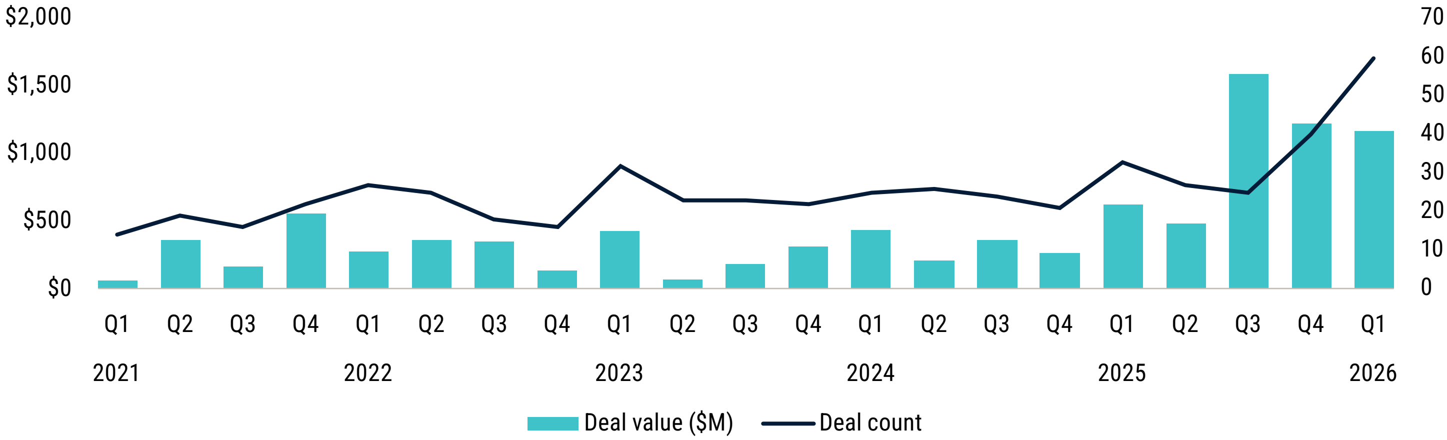
Quantum computing VC deal value reached $3.9 billion in 2025, a record high for the sector. On a quarterly basis, Q3 2025 alone reached a record $1.6 billion. That single quarter exceeded the full-year totals recorded in every year prior to 2021. Q1 2026 maintained the elevated pace at $1.2 billion before softening meaningfully in early Q2, consistent with the kind of digestion period that typically follows a vintage marked by concentrated, large-scale deployment.

Quantum computing VC deal activity



Source: PitchBook • Geography: Global • As of March 31, 2026

Quantum computing VC deal activity by quarter



Source: PitchBook • Geography: Global • As of March 31, 2026

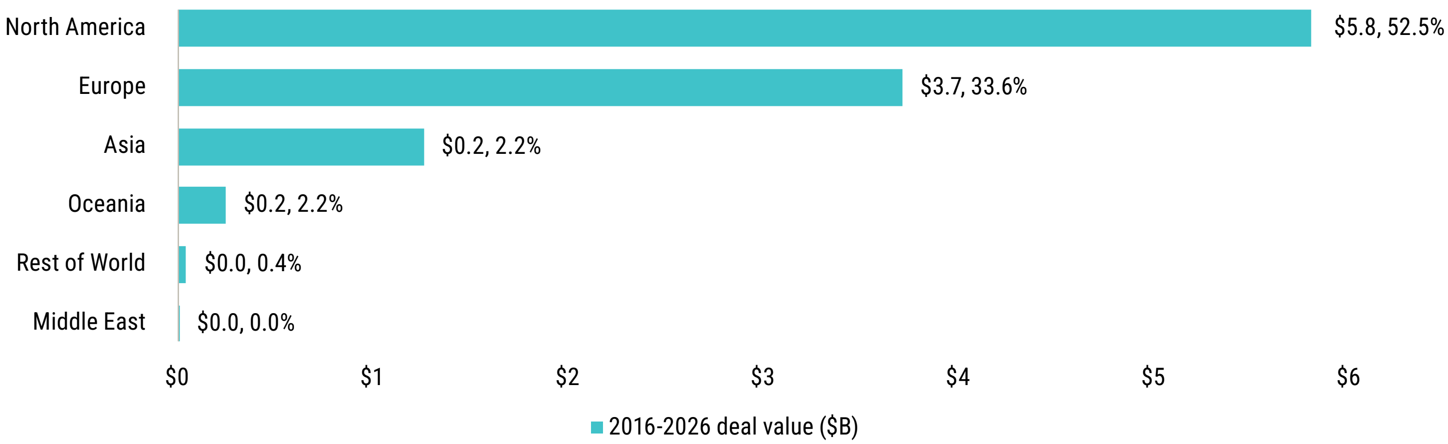
Activity by stage has diverged sharply between count and value. Venture growth and late-stage VC rounds have historically constituted the bulk of deal value, while deal counts were overwhelmingly dominated by pre-seed/seed and early-stage VC transactions. This dynamic was particularly pronounced in 2025, and 2026 is echoing a similar deal-value-to-deal-count split.

Information technology accounted for 97.6% of all quantum computing VC deal value across the full period. Healthcare, B2B, materials, financial services, and energy each represented less than 1% of the total. End-market applications in fields such as pharmaceuticals, finance, or logistics will emerge later, once the underlying platforms reach commercial maturity.

From 2016 through early 2026, roughly five out of every six dollars invested in quantum computing globally has come from North America or Europe. North America has been the dominant region at approximately 50% of all VC deal value, with Europe a meaningful but distant second at approximately 34%. Oceania, the Middle East, and the rest of world together represented the remaining 4.8%. It is worth noting that Asia, and China in particular, is likely underrepresented in these figures, as Chinese quantum investment is often state-funded rather than structured as VC deals. Therefore, China's representation in the quantum world as far as private market data goes is understated.

The broader pattern is one of sustained repositioning. Quantum computing has evolved from a niche, early-stage asset class into one attracting institutional-scale capital. From 2016 through early 2026, deal value has been increasingly concentrated in large, late-stage rounds, reflecting growing investor conviction in the sector's commercial viability. The companies receiving this capital are, on average, older and further along their technical roadmaps than their predecessors in earlier vintages, and the valuations they command reflect a market that increasingly believes quantum advantage is a question of when rather than whether.

Quantum computing VC deal value by region, 2016-2026

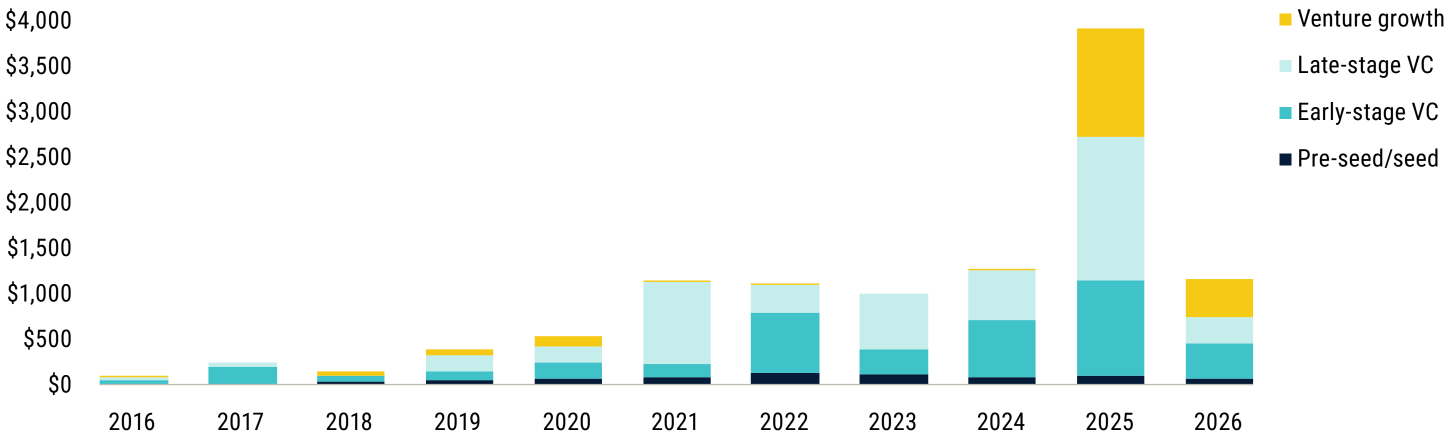


Source: PitchBook • Geography: Global • As of March 31, 2026

Late stage, early dominance

The distribution of deal value across stages tells one of the clearest stories in the dataset. Across the full 2016 to 2026 period, late-stage VC captured the largest share of capital at 42.2% ($4.7 billion), followed by early-stage VC at 33.8% ($4 billion), venture growth at 17.2% ($1.9 billion), and pre-seed/seed at 6.8% ($786 million). The stage breakdown in 2025 looked materially different from the full-period averages, with late-stage VC accounting for 40% of deal value; early-stage VC, 27%; venture growth, 30.4%; and pre-seed/seed just 2.4%.

Share of quantum computing VC deal value by stage



Source: PitchBook • Geography: Global • As of March 31, 2026

The most consequential shift is the expansion of the venture growth tier. In 2024, venture growth captured roughly 1% of quantum deal value. In 2025, that share reached 30.4%, an increase of more than 25x in a single year. The driver is straightforward: Quantinuum's November 2025 Series B, technically classified as early-stage VC but transacted at venture-growth scale ($838.9 million at a $10 billion pre-money valuation), and the broader emergence of rounds exceeding $100 million across a diverse set of platform companies. The company went public on June 4 and raised $1.7 billion, selling 28 million shares at $60 per share.

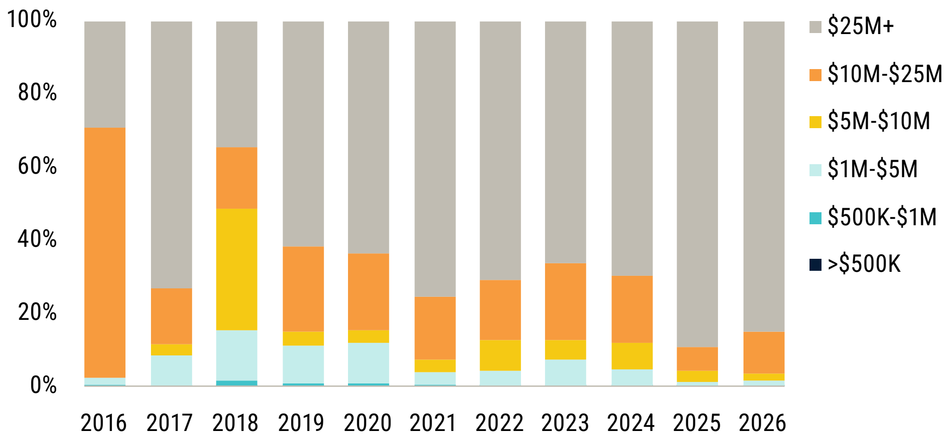
Prior to 2024, venture growth activity in quantum computing was sporadic and small in absolute terms. The 2025 figure marks the first year in the dataset in which late-stage institutional capital behaved as a systematic presence rather than an episodic participant.

The pre-seed and seed tiers have moved in the opposite direction. Their share of deal value compressed from 6.8% in 2024 to 2.4% in 2025, even as aggregate dollar amounts ($86 million in 2024, $94 million in 2025) remained roughly consistent. The compression reflects the denominator effect of late-stage mega-rounds rather than any collapse in early-stage formation. It also underscores a broader dynamic worth monitoring: In absolute terms, deal activity below $5 million has remained flat across the full period, with annual totals in the single-digit millions throughout.

Mega-rounds are the new normal

The $25 million-plus deal tier has come to define the quantum computing venture landscape. After a modest $30 million in 2016, this cohort surpassed $800 million annually by 2021 and reached $3.5 billion in 2025, roughly four times the prior peak of $885 million recorded in 2024. Critically, this growth was not broad-based. Deal value in the sub-$10 million tiers was flat to declining in 2025, indicating that a concentrated set of mega-rounds accounted for the vast majority of deployed capital.

Share of quantum computing VC deal value by deal size



Source: PitchBook • Geography: Global • As of March 31, 2026

This pattern is consistent with dynamics seen in other deep-tech verticals at comparable stages of maturity, where a handful of category-defining companies attract disproportionate investor attention while the broader population raises on more modest terms.

The $10 million to $25 million tier has delivered the most consistent growth trajectory of any size band, expanding from $70 million in 2016 to $253 million in 2025. While headline figures across other tiers have been volatile, this mid-market band's steady progression suggests a maturing pipeline of companies successfully navigating from early development into growth-stage fundraising.

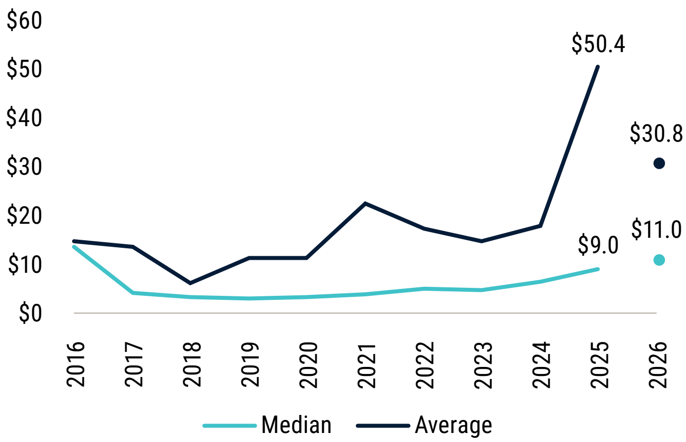
Deal activity in the tiers below $5 million has remained largely flat across the full period, with annual totals in the single-digit millions throughout.

Early 2026 data is mixed. Through April, the sector saw $1.3 billion across 64 deals. On an annualized basis, this would project to approximately $4.5 billion, modestly above 2025's $3.9 billion full-year total. The $25 million-plus tier is tracking at roughly the same pace as 2025, suggesting that mega-round activity has not meaningfully decelerated. The $5 million to $10 million tier is the principal exception, tracking well below 2025's pace.

Size matters: Pre-money and post-money valuations

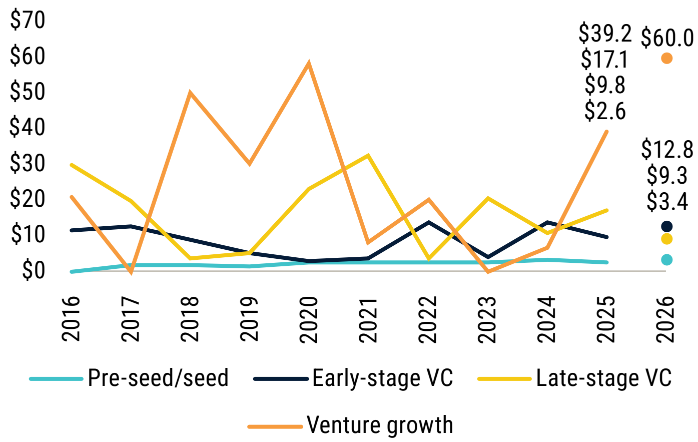
The persistent gap between median and average deal size underscores the degree to which a small number of outsized rounds have come to define the market. This divergence was most pronounced in 2025, when the median of $90 million sat against an average of $50.4 million.

Median and average quantum computing VC deal value



Source: PitchBook • Geography: Global • As of March 31, 2026

Median quantum computing VC deal size by stage



Source: PitchBook • Geography: Global • As of March 31, 2026

Venture growth has emerged as the most consequential stage by deal size, with median rounds reaching $60 million in 2026, as companies are raising late-stage capital to fund commercialization. Early-stage VC medians have been more volatile, swinging from $3 million in 2020 to $12.8 million in early 2026, likely reflecting the small number of transactions per year. Pre-seed/seed deals have been the most stable tier, growing gradually from $1.7 million in 2017 to $3.4 million in early 2026. Having said that, the funding gap between the younger cohort and their later-stage counterparts further reinforces the idea that investors are focusing on existing companies with viable technical and commercial roadmaps. Unless an emerging startup leverages a novel quantum computing approach, VCs are more keen to allocate capital to incumbents that are further along in their commercial and technical maturity.

Pre-money valuations have broadly tracked deal sizes, with the median climbing to a dataset high of $72.6 million in early 2026. Averages, however, paint a different picture. In 2025, the average pre-money valuation hit $537.4 million while the median was just $32.8 million. Once again, this unusually wide gap shows that a few extremely high valuations pulled the average up, even though most companies were valued far lower.

Data point counts underlying these figures are relatively limited, ranging from 4 to 42 observations per year, and are modest compared to more established deep-tech verticals where larger transaction pools allow for more statistically robust conclusions. Individual large or small transactions can have an outsized effect on median and average figures in any given year, and these trends should be interpreted with that constraint in mind.

By stage, late-stage VC valuations have swung the most, from $12.7 million in 2017 to $970 million in early 2026. Early-stage VC valuations have also been uneven, ranging from $7.1 million in 2023 to $72.6 million in early 2026. Pre-seed/seed valuations have been the most stable, rising steadily to $27 million in early 2026, as investor confidence in the sector has grown.

Post-money valuations mirror the pre-money pattern, with the median climbing to a dataset high of $79.4 million in early 2026. The 2025 average of $604.6 million sat far above the $35.5 million median, again pointing to a handful of outliers pulling aggregate figures upward.

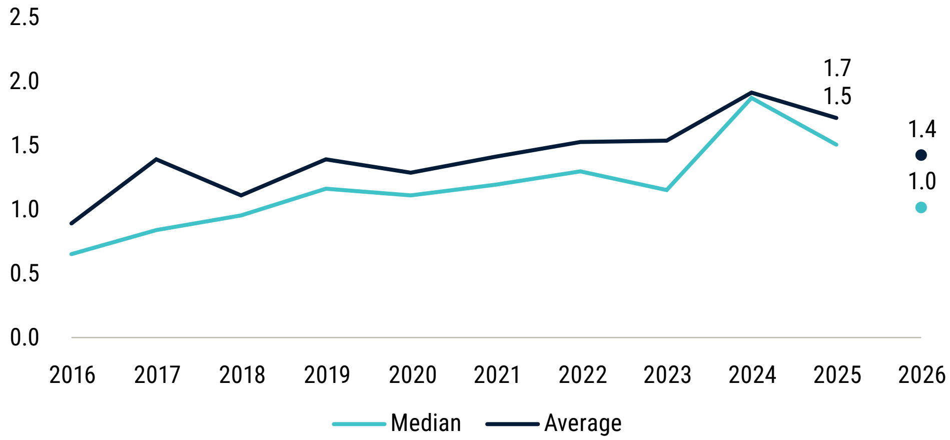
Late-stage VC post-money valuations have varied the most, jumping to $1.1 billion in early 2026 after sitting between $17.1 million and $129.7 million from 2017 to 2024. Venture growth post-money valuations only appear in 2025 ($3.9 billion) and 2026 ($1.2 billion), as the stage saw no recorded deals in earlier years. Pre-seed/seed remains the most stable, climbing from $5.6 million in 2017 to $35.8 million in early 2026 as the sector matures.

A sense of urgency

The median time between funding rounds has remained relatively stable across the period, hovering between 0.7 and 1.9 years. That suggests active quantum companies have been returning to market at a fairly consistent cadence across very different capital market environments. The slight elongation observed in 2024, where the median reached 1.9 years, may reflect a more selective fundraising environment in which companies needed more time between rounds. However, the subsequent compression to one year in early 2026 suggests the 2024 extension was temporary rather than structural.

Companies are raising capital later in their life cycles, with the median age at time of deal nearly doubling from 2.1 years in 2017 to 4.1 years in 2025. This reflects a maturing sector in which investors increasingly favor companies with real operating history over concept-stage bets. The pattern holds across stages: Late-stage VC consistently funds companies 6 to 7 years old, venture growth skews older at 7 to 18

Average and median quantum computing time since last VC



Source: PitchBook • Geography: Global • As of March 31, 2026

years, and pre-seed/seed remains the entry point for the youngest companies at 1 to 2.5 years.

Mind the gap

The limited exit activity observed through most of the dataset is less an anomaly than a reflection of where the sector sits in its development cycle. Most quantum computing companies are still working toward quantum advantage, the point at which a quantum system demonstrably outperforms classical computers on a commercially relevant task. Until that milestone is reached at scale, the universe of acquirers and public-market investors willing to underwrite an exit at an attractive valuation remains narrow.

This is compounded by the age profile of the companies in the dataset. With a median of roughly three to four years since founding at time of deal across much of the period, the majority of companies that have received venture backing are simply not yet exit-ready. Deep-tech companies historically take 10 to 15 years from founding to exit, placing the bulk of the current quantum cohort several years away from that threshold.

Exit conditions remain difficult. The SPAC wave of 2020 to 2022 produced a handful of quantum public listings, most of which have significantly underperformed, narrowing the IPO path. Strategic acquirers, large tech firms, defense contractors, and financial institutions are largely building internal capabilities rather than acquiring, leaving exit activity muted through 2025.

Public listings have driven nearly all exit value, with the $2 billion in 2021 reflecting the IonQ and Arqit SPAC mergers, followed by Rigetti and D-Wave listings in 2022. Activity has been episodic since: zero in 2023, $143 million across four deals in 2024, and $223 million across five deals in 2025. Acquisitions have been similarly modest at under $250 million annually. Buyouts have been essentially absent, unsurprising given that quantum companies are pre-profit and built around specialized IP and talent, making them poor LBO candidates.

Q1 2026 changed the picture decisively. Four transactions, Xanadu ($2.8 billion), Infleqtion ($1.7 billion), Quantum Circuits ($550 million), and Horizon Quantum Holdings ($503 million), totaled $5.7 billion, roughly 15 times the combined exit activity of 2023 to 2025. That just four deals account for all of 2026 exit activity underscores the episodic nature of liquidity in this market, where a handful of large events define the aggregate.

Reverse mergers remain the dominant exit route, with Xanadu, Infleqtion, IonQ, Arqit, Rigetti, and Horizon all going public via SPAC-style structures rather than traditional IPOs. Disclosed acquisitions include Quantum Circuits ($550 million), Good Chemistry ($75 million), and QAN ($0.3 million), but many others, including Cambridge Quantum Computing, Super.tech, and QxBranch, closed without disclosed values, making the true scale of M&A activity hard to assess.

One acquisition warrants specific attention. Cambridge Quantum Computing's November 2021 combination with Honeywell Quantum Solutions was recorded without a disclosed value. The deal formed Quantinuum, now the dataset's most highly valued company at a $10 billion pre-money valuation on its November 2025 Series B. It is a reminder that undisclosed or modestly valued exits can seed some of the sector's most consequential outcomes.

Geographic concentration in exits mirrors broader deal activity. Most value is concentrated in the US and Canada. The UK is represented via Arqit and Cambridge Quantum Computing. China appears through QuantumCTek's June 2020 domestic IPO, and Singapore via Horizon Quantum Holdings in 2026. Capital is flowing into quantum companies across many markets, but the conditions for meaningful liquidity events remain concentrated in a smaller set of jurisdictions.

Capital gravity

Capital concentration is a defining feature of the quantum computing venture landscape. The top five transactions from 2016 through early 2026 account for 26.8% of all VC deal value, representing $2.9 billion of the $11 billion deployed over the period.

The two largest deals on record reflect a market increasingly willing to underwrite quantum companies at valuations that would have been unthinkable earlier in the sector's development. Quantinuum's $838.9 million Series B, closed in November 2025 at a $10 billion pre-money valuation, is the single largest deal in the dataset. PsiQuantum's $1 billion Series E, closed in September 2025 at a $6 billion pre-money valuation, ranks second. Together these two rounds alone account for nearly $1.8 billion in capital deployed.

Investor-level concentration mirrors the deal-level picture. The top five investors by participated capital account for 70.9% of total VC deal value from 2016 through early 2026. The investor base reflects the institutionalization of quantum computing as an asset class. NVIDIA leads by invested capital at $1.6 billion, followed by BlackRock ($1.7 billion), Baillie Gifford ($1.6 billion), Ripple Impact Investments ($1.6 billion), and

Temasek Holdings ($1.6 billion). The top 20 also includes Honeywell, JPMorgan Chase, the Qatar Investment Authority, Amgen, and Mitsui. The presence of sovereign wealth funds, corporate strategics, global asset managers, and an investment bank signals that quantum computing has moved beyond specialist venture capital into mainstream institutional allocation.

By deal count rather than capital participated in, European specialist investors dominate through broad early-stage coverage, while American and Asian institutions lead on capital through concentrated late-stage participation. The 2025 vintage was defined by a concentration of large rounds: IQM closed a $372.5 million Series B, QuEra raised $230 million. Multiverse Computing raised $203.3 million. Quantum Machines raised $170 million. Classiq Technologies, Photonic, Alice & Bob, and Infleqtion all closed rounds approaching or exceeding $100 million.

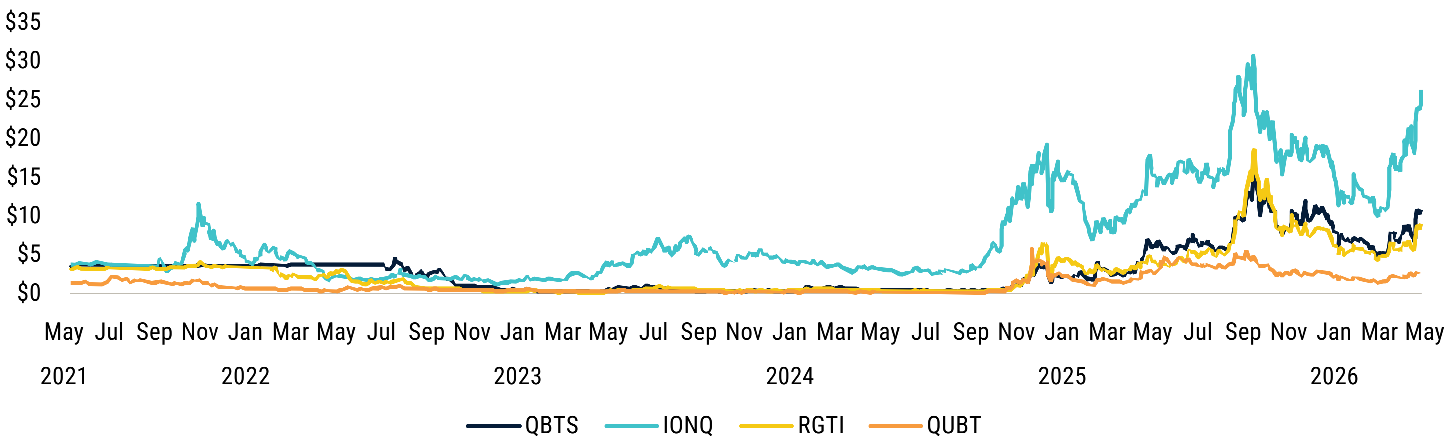
The 2026 deal landscape has opened differently. Pasqal's $236.9 million round leads the year. Atom Computing follows at $182 million and QBoson at $145 million. Chinese companies are notably prominent, with QBoson and SpinQ Technology both appearing in the top deals. While North America and Europe dominate aggregate figures, the top deals span 13 countries. Israel stands out for its small but outsized impact, with Quantum Machines, Classiq Technologies, Quantum-Art.Tech, and Qedma all appearing among the top 2025 transactions.

Investment trends in publicly traded quantum computing securities

Entangled with Wall Street

In parallel with private markets, quantum computing securities—stocks and ETFs alike—have seen record-breaking inflows and triple-digit growth in their market caps. As of

Market cap ($B) of leading quantum computing stocks, 2021-2026



Source: Morningstar • Geography: Global • As of May 28, 2026

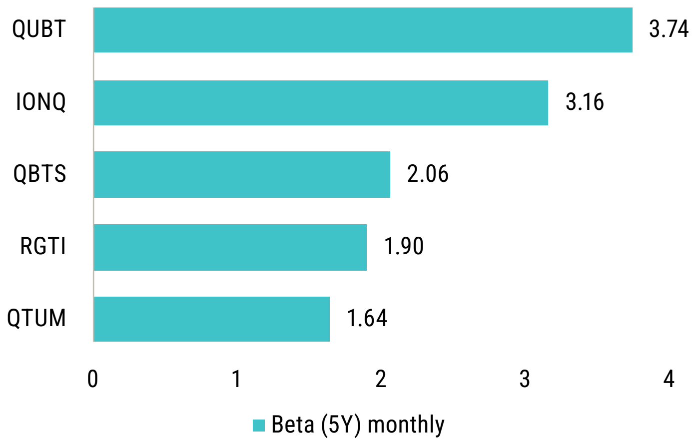
June 2, D-Wave Quantum, IonQ, Rigetti, and Quantum Computing have all seen their market caps grow 183%, 564%, 152%, and 93%, respectively, over the past five years. Since 2024, share prices have risen by quadruple digits.

QTUM is the most liquid quantum computing ETF trading on the market with 87 holdings and diversified exposure to the quantum stack. While the vehicle itself also holds semiconductor firms such as Micron and Marvell, AI infrastructure and the software it powers is complementary to quantum; to that extent, these holdings do not compromise the thematic purpose of the vehicle. While QTUM made its debut in the latter half of 2018 with a sub-billion-dollar AUM, its market footprint sharply accelerated in the past year. Between January 1, 2025, and June 1, 2026, the ETF's assets grew from $1 billion to $5.8 billion. Most of the capital inflows came in 2025

QTUM daily close price

Source: Morningstar • Geography: Global • As of June 17, 2026

Stock beta of quantum computing securities



Source: Morningstar • Geography: Global • As of May 28, 2026

and 2026, along the same timeline as the megadeals announced and completed in private markets. We expect funding dynamics to continue accelerating over the next few years as more technical benchmarks are reached and government-backed initiatives inject more capital.

While other ETFs exist, including WQTM, QNTM, and QANT, their respective market caps are several orders of magnitude below QTUM's. Furthermore, their relatively illiquid nature—along with individual company stocks—makes them volatile, with quantum pure-plays averaging 2.5x to 3x the beta of the S&P 500, while QTUM comes closer to 1.5x. The comparatively high stock price oscillations indicate the market is still in its adolescence and vulnerable to narrative-driven hype.

However, underneath the fickle sentiments, institutions and retail investors alike are converging on an aligned conclusion: Quantum computing is no longer a niche experiment but an emerging technology with transformative potential. Quantum has ridden the coattails of the AI hype and has helped bring the frontier technology to a more mainstream cohort of investors. Combined with public-sector support, we anticipate volatility for individual quantum stocks to remain high, while more diversified investment vehicles will generate better risk-adjusted returns.

The mega-catalyst: Geopolitical competition

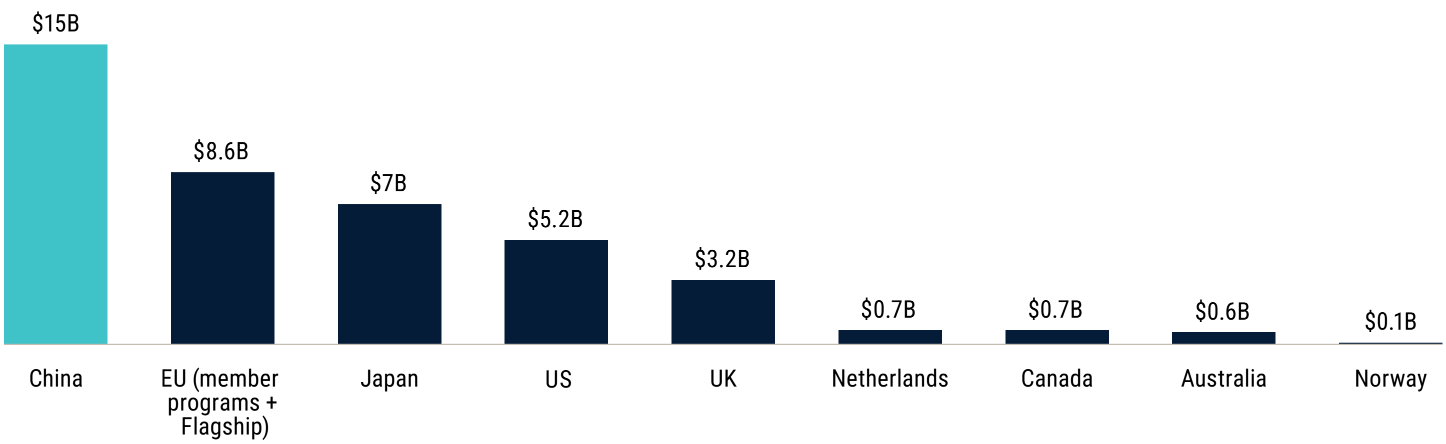
The global political economy has shifted from a model of cross-regional integration to a security-first paradigm in which the north star of policy is geopolitical risk minimization, not economic maximization. This is one of the most consequential shifts in international affairs because of the downstream effects it has on the investment landscape. Export controls, industrial policy, and other rules are all exogenous forces influencing capital flows, particularly around strategic technologies that enhance national security interests. Like AI, quantum computing is a technological frontier with major commercial and state-security applications.

Cumulative government commitments to quantum technology now exceed $60 billion globally, concentrated in China but spanning at least a dozen national programs of meaningful scale.[1] Government funding accounted for 34% of total quantum startup investment in 2024.[2] Public-private co-investment has increasingly defined the sector's largest transactions. For example, PsiQuantum's $750 million round combined private capital with approximately AUD $620 million in Australian government support.

Atomic scaling, globally

China's estimated $15 billion reflects coordinated state-directed capital across multiple cycles rather than a single disclosed line item. The EU's approximately $8.6 billion aggregates the €1 billion Quantum Flagship.[3,4] Major member-state programs in France, Germany, Italy, and Spain,[5] as well as EuroHPC allocations,[6] reflect a federated rather than centralized approach to public investment.

Government investment in quantum computing by region

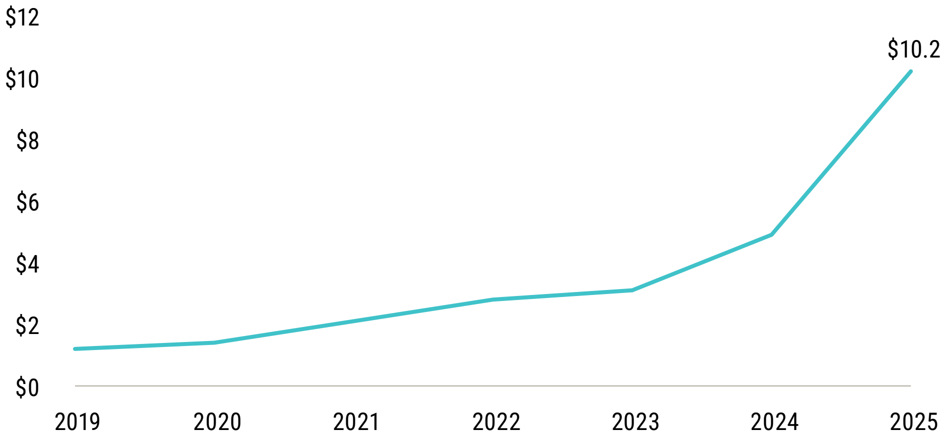


Source: PitchBook • Geography: Global • As of March 31, 2026

The $5 billion US contribution combines the National Quantum Initiative (NQI)[7] with proposed Department of Energy (DOE) funding through 2030. While this figure trails China materially in absolute terms, the US operates alongside a significantly deeper private venture ecosystem. Taken together, these commitments reflect a global consensus that quantum computing is too strategically important to leave entirely to private markets.

Japan's $7.4 billion single-announcement commitment, unveiled in early 2025, is the largest non-Chinese national announcement to date and substantially reorders the traditional US, EU, and China triangle.[8,9] The UK's approximately $3.2 billion 10-year National Quantum Strategy and Canada's CAD $360 million program represent two of the earliest formalized national strategies and anchor the broader English-speaking research network.[10,11] Smaller but strategically significant programs include Australia's AU $893 million (roughly AUD $620 million of which anchors PsiQuantum's Brisbane fault-tolerant project), the Netherlands' Quantum Delta NL National Growth Fund, and

Global quantum computing public sector investment commitments ($B)



Source: PitchBook • Geography: Global • As of March 31, 2026

> The $10.2 billion 2025 figure reflects announcement timing rather than annual disbursement. Japan's $7.4 billion is a multiyear commitment and Spain's €808 million covers 2025 to 2030. McKinsey distinguishes between announced commitments and startup-directed disbursements; the latter were approximately $680 million globally in 2024, representing roughly 34% of total quantum startup investment.[15]

Norway's NOK 1.1 billion five-year package.[12,13] The aggregate picture is one of a sector now competing for national strategic attention on par with artificial intelligence and semiconductors.

Annual public commitments to quantum technology rose steadily from roughly $1.2 billion in 2019 to $4.9 billion in 2024 before a step-change in 2025, driven by simultaneous mega-announcements.[14]

The qualitative character of the announcements has also shifted. Earlier-vintage commitments from 2019 through 2022 emphasized basic research, national laboratories, and workforce pipelines.[16] Announcements from 2024 and 2025 increasingly specify commercialization outcomes: The EU's Quantum Europe Strategy targets 100 error-corrected qubits by 2030 and thousands by 2035;[17] China's 15th FYP specifies manufacturing subsidies, government procurement preferences, and mandated application deployments.[18,19] This is the language of industrial policy, not research policy, and it reflects a recognition across all three major blocs that the bottleneck is no longer scientific feasibility but industrial scale.

KISS: Keep it sovereign, stupid

The tempo of major policy actions has accelerated materially. The 2018 launches of the EU Quantum Flagship[20,21] and the US NQI[22] established the framework for modern quantum industrial policy. China's 14th FYP in 2021 elevated quantum to the second-ranked frontier science field and committed an estimated $15.3 billion in research & development (R&D) through 2025,[23] prompting a wave of European responses from France, Germany, and Italy the same year.[24]

The competitive dynamic intensified from 2023 onward. The UK and Canada formalized national quantum strategies,[25,26] the US and its allies imposed coordinated export controls on quantum hardware,[27] and the National Institute of Standards and Technology (NIST) finalized its post-quantum cryptography standards.[28] By 2025, Japan had announced $7.4 billion in commitments,[29] and the EU had adopted a unified Quantum Europe Strategy.[30]

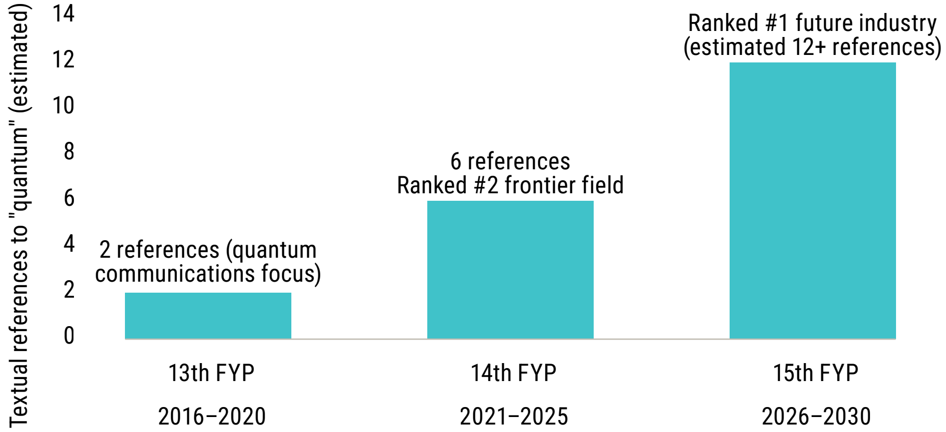
A different kind of great leap forward

China's 15th FYP, adopted in early 2026, ranked quantum as the top future industry, ahead of both AI and semiconductors.[31,32] The degree to which policy signals and venture activity are now moving in lockstep has rarely been more visible. A major push behind China's new policy architecture comes in part from its shift from horizontal to vertical industrial policy with a focus on strategic technologies. Complementary to that is the People's Liberation Army's (PLA)'s new approach to warfare, known as "systems confrontation,"[33] which relies on frontier technologies such as AI and quantum computing to execute.

From a funding perspective, China's approach is structurally different from its Western counterparts. Chinese quantum policy flows through FYPs that establish hierarchical priorities, followed by cascading implementation vehicles: national laboratories, provincial and municipal funds, state-owned enterprises, private champions, and coordinated military R&D budgets.[34] The result is sustained multidecade funding that does not depend on annual appropriation cycles or shifting political majorities. The 15th FYP's National Guidance Venture Fund allocation of approximately $17.5 billion is roughly seven times the size of the US DOE Quantum Leadership Act's entire five-year proposal,[35,36] and the NQI itself has operated without formal reauthorization since 2023.[37]

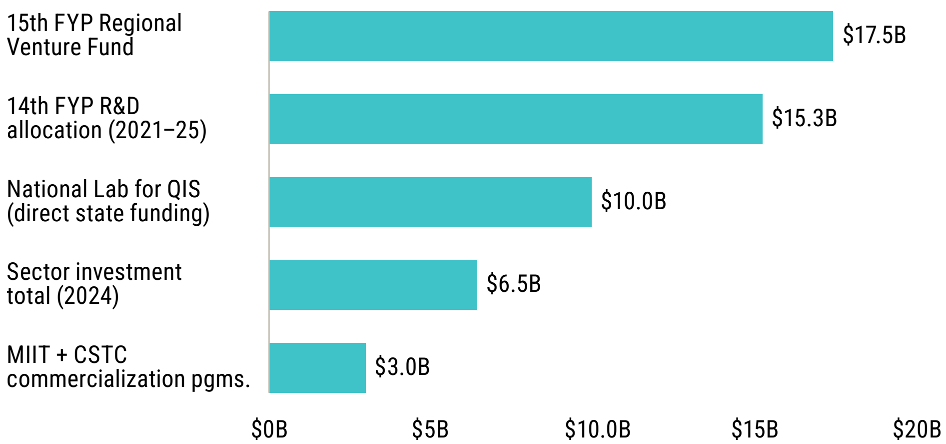
The trajectory across China's three most recent five-year plans tells a story of deliberate strategic elevation. Quantum was a peripheral concern in the 13th Plan, mentioned in passing alongside the Micius satellite. By the 14th Plan, it had become a designated frontier science field with dedicated R&D allocations. The 15th Plan,

Quantum computing's ascent in China's five-year-plans



Source: PostQuantum, Quantum Insider • Geography: Global • As of March 31, 2026

China's bureaucratic allocation of quantum computing capital



Source: PostQuantum, Made-in-China, ITIF, TechNode, CSIS • Geography: Global • As of March 31, 2026

adopted in early 2026, completed the trajectory by ranking quantum as the top future industry, ahead of both AI and semiconductors.[38,39]

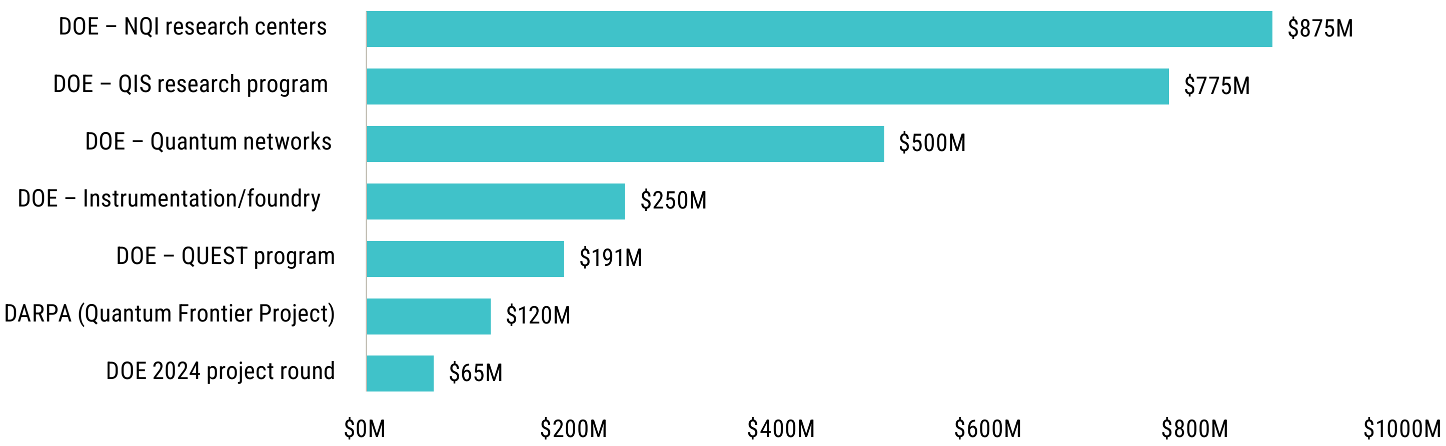
What changed is not just the rhetorical priority but the funding model. Where the 14th Plan flowed primarily through university grants and basic research,[40] the 15th Plan operates through procurement preferences, manufacturing subsidies, and mandated application deployments.[41,42] This is a deliberate pivot from research policy to industrial policy, and it has no clear analog in any Western jurisdiction at the same scale.

The 15th FYP's National Guidance Venture Fund is the most important near-term mechanism. Its RMB 121.8 billion allocation, roughly $17.5 billion, spans three regional mega-clusters covering quantum computing, communications, and commercial applications.[43,44] Earlier state commitments are larger in headline terms but harder to verify. The National Laboratory for Quantum Information Sciences in Hefei was reported at up to $10 billion when construction began in 2017. Confirmed phase-one spending sits closer to $1 billion.[45,46] At the provincial level, Anhui established a $1.4 billion Quantum Science and Technology Industry Development Fund in 2017.[47]

The commercial response has been immediate. China's quantum computing sector reached approximately $1.6 billion in 2025, with annual growth above 30% and the number of active companies rising from 93 in 2023 to 153 in 2024. Beyond direct state allocation, the sector attracted $6.45 billion in total investment during 2024.[48] Private capital has re-accelerated alongside the policy push, with SpinQ and QBoson each closing rounds of roughly $145 million in April 2026 after a quiet stretch following Alibaba's and Baidu's 2023 to 2024 quantum lab exits.[49] State-anchored consolidation is also visible in China Telecom's assumption of controlling interest in QuantumCTek and CIQTEK's STAR Market IPO approval at a roughly $1.6 billion valuation.[50]

Worth noting from the private dataset: CIQTEK's most recent post-money valuation of $1 billion places it as the fourth-most-valuable quantum company globally, behind Quantinuum, PsiQuantum, and Pasqal. Despite the disclosure gap, Chinese companies are already operating at the upper end of the international valuation hierarchy.

US DOE Quantum Leadership Act proposed allocations for fiscal years 2026-2030



Source: Committee on Science, Space, and Technology • Geography: Global • As of March 31, 2026

Centralized fragmentation

The US system distributes quantum funding across multiple federal agencies operating on overlapping but distinct mandates. The DOE handles hardware research and national laboratories; NIST handles standards and metrology; the National Science Foundation funds basic research and workforce; and the Department of Defense handles defense applications.[51,52] The absence of a single coordinating authority is a feature rather than a defect, producing redundancy and competitive pressure between centers, which has historically been effective for US innovation ecosystems.

The principal near-term vehicle is the DOE Quantum Leadership Act of 2025, introduced in February 2025, which proposes $2.5 billion across five line items for fiscal years 2026 to 2030. This builds on the $2.5 billion deployed through the original NQI authorization between 2019 and 2024.[53]

The largest single allocation, $875 million for the National Quantum Information Science Research Centers, funds five existing DOE-hosted centers that serve as the institutional anchors of the US quantum research enterprise.[54] The $775 million for the DOE QIS Research Program supports competitive grants to universities and national labs. The $500 million for Quantum Network Infrastructure targets the build-out of a nascent quantum internet. The $120 million DARPA Quantum Frontier Project, executed in partnership with New Mexico (which is matching the federal commitment dollar-for-dollar through 2029), exemplifies the public-private co-funding model the US increasingly favors for deep tech.[55]

Several caveats apply to the public-sector figures presented above. First, "announced" and "disbursed" funding are frequently conflated in secondary reporting; we have noted where figures reflect multiyear commitments rather than single-year outlays.[72] Second, Chinese public investment totals are the least independently verifiable in this analysis. The $15.3 billion 14th FYP figure is derived from US congressional analysis rather than Chinese government publication,[73] and the $10 billion National Laboratory for QIS figure is an industry estimate.[74] The Chinese figures should be treated as directional rather than audited. Third, currency conversion uses approximate exchange rates as of the figure's announcement date; small differences from spot rates would not alter rank ordering or scale. Finally, public investment figures do not include adjacent categories such as military quantum R&D, classified programs, or intelligence-community budgets, which are known to exist but not reported and which would likely increase the US and China totals if accounted for.

Several caveats frame the US picture. First, the NQI itself has operated without formal reauthorization since 2023, creating a gap that the Quantum Leadership Act is partially intended to close.[56] Second, the US and China Economic and Security Review Commission's 2025 annual report to Congress explicitly recommended a "quantum first" national goal by 2030, with targeted objectives in cryptography, drug discovery, and materials science, an escalation in the framing of quantum as a near-term national security concern.[57] Third, the 2024 addition of quantum computers and related equipment to the US Commerce Control List, coordinated with allied export-control regimes, marks quantum's formal entry into the strategic-technology tier alongside advanced semiconductors.[58]

Europe's commendable aspirations

Europe's challenge is the inverse of China's. The continent hosts the world's largest pool of quantum researchers, held roughly 50% of global academic output in the field through the mid-2010s, and has deployed more than €11 billion in public quantum R&D funds over the past five years.[59,60] Yet the continent has consistently lagged the US in translating that research into scaled companies. The July 2025 Quantum Europe Strategy was the European Commission's explicit acknowledgment of this translation gap.[61,62]

The strategy identifies five areas for action:

- Research and innovation
- Quantum infrastructures
- Strengthening the EU quantum ecosystem
- Space and dual-use applications
- Quantum skills[63]

It targets 100 error-corrected qubits per platform by 2030, aligned with industry roadmaps for meaningful computational advantage and thousands of error-corrected qubits per platform by 2035.[64] The strategy also establishes a Chips Joint Undertaking quantum design facility and a Europe-wide centralized network of open-access quantum testbeds, both intended to accelerate the transition from prototype to market.[65,66]

At the member-state level, the three largest national programs are:

- France's €1.8 billion plan (the PROQCIMA program, launched March 2024, targets two prototype 128-logical-qubit universal quantum computers by 2030 and fault-tolerant systems extending to 2,048 logical qubits by 2035)
- Germany's €2 billion pandemic-recovery-fund allocation[67]
- The UK's £2.5 billion National Quantum Strategy (outside the EU but deeply integrated with European research networks)[68,69]

Smaller but strategically significant programs include Italy's €227 million spread from 2021 to 2024; Spain's €808 million from 2025 to 2030; Finland's €20-plus million IQM partnership, which has produced a 50-qubit superconducting system by 2025; and the Netherlands' Quantum Delta NL National Growth Fund.[70,71] The distributed nature of European funding is both a strength in terms of research diversity and breadth and a weakness in terms of duplication, fragmented procurement, and scale-up friction, precisely the tension the Quantum Europe Strategy is intended to resolve.

Industry insights

To bring an industry perspective into the analysis, PitchBook interviewed several quantum computing and quantum-focused investors on how they view the frontier technology.

Michael Stewart, managing partner, M12

What does the timeline for quantum computing look like when it comes to commercial deployment? Is it more or less what the market is expecting?

This is a tough question because the baseline business case for quantum computing to me still looks like the HPC [high-performance computing] market but with the ability to tackle massive scale or computationally impossible problems that resemble that world. This means everything from factoring large prime numbers, complex financial trading and operations management problems, scientific modeling of fluid behavior, and physical and electronic structures of molecules. Quantum machines with logical qubits at 10,000 or 100,000 scale are end-of-decade for most companies I'm aware of, which is the point at which you start being able to run the basic algorithms that are beyond the capabilities of normal scale HPC. Somewhere between 100,000 and 1,000,000 qubit scale is where a quantum computer has broad superiority for all classes of calculations we know of. What isn't baked into most people's models or mental pictures is how disruptive that will really be, especially with the recent example of the transformative usefulness of generative AI that's only emerged in the last three years, versus the preceding 50 or more years of effort in AI that focused on problems like recognizing and predicting simple patterns.

What's the single most important signal you look for when evaluating a quantum hardware company, separate from technical benchmarks?

At this point I am satisfied with the number of modalities I've seen that can establish a basic physical qubit. The criterion that matters most to me is a path to scaling to very large numbers of logical qubits that provides consistency and efficiency in the operation of the system. This seems to be a common factor in later-stage quantum startups, to leverage either mainstream or specialty semiconductor foundry technology in their device or manufacturing scheme. It will matter quickly to have multiple compatible systems that either work together, or can reproduce each other's work with matching precision and accuracy, so it would be wise to explore how semiconductor fabs can miniaturize or mass produce future qubit systems.

How do you see AI complementing or accelerating quantum computing research and commercial deployment?

Today's useful quantum systems are already hybrid machines that use GPUs or CPUs extensively to accelerate and simulate quantum calculations and actuate the control plane of the physical qubits to establish stability and perform error correction. This aspect is unlikely to go away with increased system scale and complexity. As for the complementary scenario, there's a future use case of quantum which looks somewhat similar to HPC that I described above, and then there are the use cases of larger-scale quantum computers that are accessible to ASI or a much more advanced AI on heterogeneous hardware. Performing complex financial optimizations for trading scenarios are a good example of mathematical problems that a human can formulate and understand but not go about manually solving in any practical way. Even with user-friendly software like chatbots or agents, it takes a significant degree of specific human expertise to be able to know what problems might be best tackled with a quantum computer and how to set up calculations so that a meaningful answer is returned. We're probably not realizing, essentially missing many incredibly valuable use cases of quantum computing due to the general lack of familiarity with it compared to classical computing. ASI-level intelligence that natively runs on heterogeneous hardware will likely be able to internalize and harness the unique combination of extremes, such as ability to map large-scale interacting systems with precision down to the level of quantum mechanics, and generalize this to systems that few to no humans would intuitively be able to grasp. We've learned with the bitter lesson, against our own intuition, that throwing more compute and data at a functioning intelligent system leads to surprising capabilities that seem to be emergent, and I see no reason why quantum systems would not add to the overall scaling of such systems once they're at a certain level of logical qubits.

What would make you walk away from a deal even if the team and technology looked strong on paper?

We will be seeing many quantum systems come online and start increasing their logical-qubit counts steadily over the next few years toward the end of the 2020s. The last thing I'd want to see as an investor is a business plan that wasn't focused on aggressively finding use cases and solving customer problems over debating the best approach to creating qubits. I am not sure there is as much question of the existence of a useful quantum computer anymore, so I'm very interested in what kind of application development can increase the userbase or general applicability of those systems toward a business breakthrough that could resemble Jasper AI or ChatGPT a few years ago. I hope I'm prepared for when that moment comes.

PsiQuantum

What's the single most important signal a VC should look for when evaluating a quantum hardware company, separate from technical benchmarks?

The maturity of their roadmap to scale. Qubits are now a dime a dozen; even logical qubits are popping up. However, how can you build utility-scale, fault-tolerant systems with high-quality operations and systems that can deliver an answer on a reasonable timeframe? Does your roadmap provide a realistic, manufacturable pathway to build those systems?

There are not many groups in the world that can properly evaluate a quantum computing company. Luckily, DARPA's QBI is by far the most robust and well-funded program in the world to rigorously stress test and diligence quantum computing companies.

What convinced you that photonics was the right modality to bet on, versus the other approaches?

- PsiQuantum was founded under the premise that a useful quantum computer is a million-qubit scale, fault-tolerant system and that the best way to scale to a system of that size was to use photonics and leverage the semiconductor industry.
- Photons have lots of benefits when it comes to scaling, but before we got to realize those benefits, PsiQuantum had to chip away at designing and developing beyond state-of-the-art photonic components to reach the spec needed for fault-tolerance. After several years and hundreds of millions invested into developing this chipset, entering into GlobalFoundries Fab 8 and manufacturing our own wafers, we finally got to a feature complete photonic chipset we call Omega and announced last March. [75]
- Now that we have developed that foundational technology, we can now get to the advantages of photonics which are four main categories:
    - Cooling. Photons don't feel heat and we can run our systems at 2K to 4K, which is 100x warmer than superconducting approaches, which operate at milli-kelvin temperatures.
    - Manufacturability: The silicon photonics industry had the platform we needed to build on top of which allowed us to leverage US semiconductor manufacturing capability at GlobalFoundries. We are in the same operating environment, using the same tools as the ones we will use to build our first commercial systems.
    - Networking. Our qubit is a photon, which means we can use standard telecom fiber to network our systems together without having to do any exotic networking.
    - Control electronics: Our systems allow for the integration of control electronics with modular packaging units, reducing the overall physical complexity.

When fault-tolerant quantum computing arrives at scale, which use case do you think will deliver the most value first?

- Chemistry (drug development) and materials science are likely the first two industries to find the biggest impact.

- This is not about quantum computing answering whole questions, rather how quantum computing can be used to provide very precise, very difficult to generate pieces of information that provide a critical missing layer to a drug development process (The bridge ain't a bridge when it is 95% built).

PsiQuantum has partnered with GlobalFoundries to manufacture photonic chips at scale. How much of the remaining challenge is physics versus manufacturing engineering?

- Much of the first ~six years of the company was spent heads-down developing bleeding-edge silicon photonic components. Without that performance, we would not have a technical foundation on which to scale. This includes a significant amount of materials science work to develop Barium Titanate (BTO) which is the integral material for our optical switches, which was the final component for our Omega chipset.

- Now our main challenges lay primarily in the integration of systems at scale, the scaling up of many components and sub-systems, and not to be forgotten, but the absolutely critical development of the fault-tolerant algorithms that will actually be deployed on these systems. Algorithms must continue to improve, and they will!

Jan Goetz, CEO and co-founder, IQM

What's the single most important signal a venture capitalist should look for when evaluating a quantum hardware company, separate from technical benchmarks?

It's the ability to deliver. Anyone can build theories, components, or systems that work in a science lab. The question that separates real companies from research projects is whether you can take that system out of the lab, put it inside a supercomputing or data centre, integrate it with classical HPC infrastructure, and have it running reliably six months later. That is an entirely different engineering and operational challenge—and most teams haven't faced it yet. When I look back at what has defined IQM's trajectory since we spun out of Aalto University in 2018, it is exactly this. We made a deliberate choice early on to build for deployment, not for demos. That's why we have systems running around the world, for example in South Korea, Poland, Italy, Taiwan, Finland, Germany, and the US today.

What convinced you that superconducting was the right modality to bet on, versus the other approaches?

I did my doctorate at the Technical University of Munich, working on superconducting quantum circuits. So, there's an element of knowing the physics from the inside—

understanding not just what the textbooks say but where the real opportunities and also engineering challenges lie. And what I saw clearly that superconducting had something the other modalities didn't: a manufacturable path. The fabrication processes are grounded in decades of semiconductor industry knowledge. The control electronics exists. The cryogenic supply chain is mature enough to build on. These are not small advantages.

Trapped ion has beautiful coherence properties—I have enormous respect for companies that are building this. Neutral atoms can cool large number of qubits, and I watch that space carefully. But when we founded IQM, the question wasn't which modality would win a physics competition in 2035. It was which modality could be engineered into a deployable, scalable system within a realistic timeframe on commercial terms. Superconducting gave us the clearest answer. Eight years later, I'm more convinced of that than ever—though I'd also say the modality question matters less than people think. What matters is execution.

What do you think will be the industry that sees the benefits of quantum computing first—and last?

High-performance computing and the research institutions that sit alongside it. This is already happening. The integration of quantum processors with advanced supercomputers—which is the core of IQM's strategy—creates hybrid systems that can tackle problems classical HPC alone cannot solve efficiently. These customers don't need millions of qubits to start extracting value. They need reliable, well-integrated quantum hardware that their researchers and engineers can build on today. That is the market we are in right now. On use cases, financial services and pharmaceuticals/materials science are the most cited candidates. Finance because quantum algorithms can optimize portfolios, detect fraud, and price complex derivatives faster than classical computers. Pharma and materials science because simulating molecular interactions at the quantum level—currently impossible at scale classically—could dramatically accelerate drug discovery and the design of new materials like better batteries or catalysts.

The superconducting space is crowded. What do you see as IQM's clearest and most durable advantages over the next three to five years—especially versus IBM, Google, or Rigetti?

Indeed, in the superconducting camp we see large organisations with extraordinary resources. We are not trying to out-scale them with investments or purely in the cloud. That is not our game; we want to be fast, agile, and capital-efficient. What we identified very early—and what I believe more strongly now than when we started—is that the world needs sovereign quantum infrastructure. National research institutions, enterprises, universities, etc., need hardware they own and control, integrated with their own HPC environments, operated on their own environment.

IQM is built for exactly that. Our production quantum model, our HPC integration approach, our unique architectures designed with error correction in mind from the start. This is a deliberate strategy for the market. The €40 million we committed to expanding our chip fabrication facility in Finland last year is part of making our production quantum model real.

Overall, we come from a position of strength based on our unique deployment model. We raised over $300 million in our Series B in September 2025—the largest Series B in quantum outside the US. We have a clear roadmap toward hundreds of logical qubits by 2030. We've announced our plans to go public. The global tech race is real. We are building a global tech champion out of Europe, which is quite unique and exciting!

Benjamin Bloom, CEO, Atom Computing

What's the single most important signal a venture capitalist should look for when evaluating a quantum hardware company, separate from technical benchmarks?

When evaluating a quantum hardware company, the single most important signal for a VC, separate from raw technical benchmarks, is whether the team is building genuinely differentiated technology with a clear path to utility scale. The industry has moved past the phase of simply trying to catch up or skipping foundational work. The relevant question now is whether a company has accurately identified what is actually required to reach utility scale and is systematically assembling the specific pieces needed to solve those challenges.

You moved from strontium-87 in Phoenix to ytterbium-171 in the next-gen system. What did that switch unlock, and were there any trade-offs you had to accept to get there?

Atom Computing's shift from strontium-87 in its Phoenix system to ytterbium-171 in the next-generation platform unlocked several advantageous properties that align well with current engineering realities. While the specific atom still matters, it is no longer the decisive variable as long as the surrounding technologies are sound. Ytterbium brings clear positives for near-term performance, and further improvements are expected. There are trade-offs involved in moving to alkali atoms, but the overall trajectory appears favorable.

If you were running a quantum-focused fund, what questions would you ask the founders, and what other research would you do on potential teams?

If assessing potential investments as the manager of a quantum-focused fund, the core questions for founders would center on their concrete plan for reaching utility scale. Atom Computing has been scaling at 10x the number of qubits per generation and we are excited about the useful work those qubits can perform as they grow exponentially, especially once logical qubits and error-corrected data storage come into play. The key for fund managers is to understand not just a company's next system, but how the company intends to move from hundreds of qubits to millions, and whether its technology roadmap supports the accelerating iteration cycles now being observed. While some other players are also attempting to scale at 10x like Atom, many others haven't come anywhere close to 10x scaling. However, it is those players who are now promising orders of magnitude scaling in the near future, leading to hockey stick roadmaps. Fund managers should look at roadmaps that have been consistent in the past and going into the future, versus roadmaps that present hockey-stick-like improvements based on future tech.

What's been the most useful or surprising feedback from early enterprise pilots or on-premises deployments? Any unexpected integration or workflow challenges moving from lab/demo to real customer datacenters?

Early feedback from enterprise pilots and on-prem deployments has been notably positive, with the level of excitement and enthusiasm from users gaining access to these systems proving surprisingly high. Atom Computing is actively collaborating with governments, including the US and Denmark as well as other nations, with the shared goal of developing utility-scale quantum computers. The company maintains a deep relationship with Microsoft dating back to 2024 that includes joint demonstrations on error correction and contributions to delivery infrastructure such as in Denmark. Atom works with teams focused on adjacent areas of the stack, particularly error correction, and recently announced a partnership with Cisco on quantum networking and integration with Cisco's quantum networking technologies.

Quantum networking is primarily interesting as a way to distribute quantum information across multiple machines, effectively creating a larger composite system. The goal is to scale system size so that larger and more complex problems can be addressed. This approach relies on entanglement, typically implemented through photon-based links that transfer quantum states between separate processors.

Geopolitics plays a substantial role in shaping demand. Governments are expected to be the first and largest customers for quantum computers, creating a concentrated wave of procurement opportunities. The UK's program, for example, is structured to support up to $1 billion in purchases through 2030. The US DOE is also likely to become a significant user given its long-standing practice of acquiring powerful classical supercomputers for materials simulation and related workloads. Between now and 2032, government buyers are projected to remain the primary drivers of early commercial quantum deployments across the industry.

Owen Lozman (managing partner), Helmut Katzgraber (CSO and general partner), and Kai Hudek (general partner), 55 North.

For photonic, neutral-atom, trapped-ion, and superconducting approaches, are there modality-specific diligence frameworks you apply differently?

The modalities share a common underlying diligence framework, but this is evolving rapidly as the technology scales (gate fidelity, coherence time, qubit count trajectory, and scalability architecture) and the weighting shifts substantially depending on where a modality's engineering bottlenecks sit. The more productive question is, what physical qubit count produces a useful number of logical qubits and what is the credible path to reaching it?

Each modality then bifurcates at the scalability question. The critical diligence variable is the interconnect architecture. For every modality, the question of how modules are connected—and how much SWAP overhead and intermodule qubit loss is tolerated—is frequently where otherwise credible business plans quietly break. "Modular" is near-universal messaging. Identifying the breakthroughs needed at each level leads to investability theses within a modality and surfaces opportunities in enabling infrastructure, when a single technology can solve a bottleneck across multiple modalities or full-stack players.

Where in the quantum value chain do you expect the majority of economic value and investment returns to accrue over the next five to 10 years?

The full-stack players are naturally attracting the majority of headline capital today, and a calculated position in one or two is rational as a portfolio element. However, we do not believe the primary return generation over a five to 10-year horizon sits at the full-stack level. The field is pre-product-market fit and pre-utility; the hardware, software, and firmware are not there, and this structurally favors the picks-and-shovels layer where capital can be deployed with clearer milestones and more defensible business models.

There will, and must, be a consolidation among full-stack players at some point as winners in each modality compound their gains, and we have already seen the first wave of this leading to some interesting M&A transactions. The flow of capital will follow into the quantum supply chain. The strongest thesis is around companies that solve a bottleneck across multiple modalities because that diversifies customer risk while capturing structural demand regardless of which hardware winner emerges. For example, this could include:

- Quantum control electronics—Relevant to every gate-based modality
- Laser and optical systems—Serve trapped-ion, neutral-atom, and photonic platforms simultaneously
- Error correction software—Hardware-agnostic at the logical layer; benefits from every physical qubit improvement
- Cryogenic infrastructure—More concentrated on superconducting and spin-qubit; a modality bet is embedded, but diversified across customers within that modality

Where a bottleneck is modality-specific, the picks-and-shovels investment implicitly concentrates on that modality winning but diversifies across that modality's customer set. Full-stack investments remain valid, especially as the ecosystem and supply chain develops (allowing for less capital-intense full-stack approaches and leveraging fab and system level capabilities that have already been scaled), but building a portfolio around them on fundamentals alone is difficult at this stage of the market.

Is any particular modality optimized for a particular vertical application?

The honest answer is that no modality is currently optimized for a specific vertical in a commercially meaningful sense. We are still at the stage where all modalities are competing on hardware fundamentals rather than on application-specific performance differentiation.

The useful historical analogy is silicon in semiconductors. Silicon was selected as the dominant substrate for good enough reasons (integration density, oxide quality, manufacturing scale) but as applications demanded more, the field found that GaN and SiC are superior for power electronics and high-frequency RF. The same dynamic will almost certainly play out in quantum: Modalities will differentiate as hardware matures and application requirements become precise enough to expose the trade-offs. All hardware development today, regardless of modality, is improving control, calibration, and understanding of quantum systems. That foundational work builds the capability necessary to eventually make application-level modality choices.

We do not have enough fault-tolerant logical qubit performance in any modality yet to draw these lines with confidence, but we expect this space to develop rapidly as the supply chain and devices mature.

How do you see quantum merging with AI and what could deployment across sectors look like?

The quantum-AI relationship runs in both directions, and it is worth separating the two vectors because they operate on very different timelines and confidence levels.

Classical AI accelerating quantum (near-term)

AI is being applied to quantum hardware optimization across the stack (error correction, calibration and control, and algorithm discovery). Multi-agent AI systems can now autonomously propose, formally verify, and iterate on quantum algorithms, accelerating a research process that has been bottlenecked by human throughput for three decades.

That last point is underappreciated. Shor's algorithm was published in 1994, and three decades of human research have produced only a handful of proven super-polynomial advantage algorithms outside factorization. AI-driven search over algorithmic space is a structural change to that discovery rate. Early results from agent systems are already producing novel mathematical findings across disciplines. As such, we expect a similar impact for quantum algorithms. The infrastructure to do this systematically, at scale, is being built now.

Quantum accelerating AI (longer-term)

The mechanisms being studied include quantum advantage for machine learning on sparse or high-dimensional datasets, where quantum kernel methods or quantum sampling may expose correlations that classical systems cannot efficiently compute. There are also theoretical pathways for quantum speedups in optimization problems that sit at the core of model training. The honest framing is that these remain research-stage hypotheses—time will tell. The classical AI stack has proven extraordinarily capable at scaling, and the burden of proof for quantum advantage in AI workloads is high.

Sector deployment outlook

The sectors where the AI-quantum convergence is most obvious in the near term are those where AI is already identifying the limits of classical computation (although it should also be noted that these limits are continuously being pushed by developments in classical computation). Examples could include drug discovery and molecular simulation, materials science and chemistry, financial optimization and cryptography, and post-quantum security.

The deployment pattern across these sectors will likely be hybrid: AI orchestrates the workflow and identifies where the classical ceiling sits, quantum handles the computationally intractable subroutine, and classical systems manage I/O and post-processing. This is not a distant scenario—it is the architecture being built by every serious quantum-enterprise partnership today.

Matthew Kinsella, CEO, Infleqtion

What is the single most important signal a venture capitalist should look for when evaluating a quantum hardware company, separate from technical benchmarks?

From the very beginning, when I joined Infleqtion, I believed deeply that the commercial mindset and the ability to system engineer real products would be the ultimate difference maker in quantum. Most quantum companies are understandably focused purely on research because so many of the people doing this work come from academia. Unless you inject commercial DNA into the company from day one, it is extremely difficult to shift from a research-first mentality to a commercial one. The real challenge is to go beyond simply building hardware and instead create systems that deliver genuine practical value. This factor remains underappreciated today, but it will become increasingly obvious as the industry matures. That is part of the reason why Infleqtion started with quantum sensing, to master the engineering discipline required to deliver practical, real-world products.

What convinced you that neutral atoms, particularly using cesium, was the right modality to bet on versus the other approaches?

In 2017, it was still too early to simply pick an existing company, so I went deep into the academic research. At the time, photonics technology had not yet matured enough. While microwaves could be used to control ions, neutral atoms proved much easier to trap and isolate. Two major factors stood out. First, neutral atoms offer unmatched flexibility and capital efficiency as a platform. No other modality spans so seamlessly from quantum sensing all the way to quantum computing. This enables a broad-based quantum technology company. Second, although neutral atoms were relatively underexplored at the time, they showed tremendous promise for quantum computing. To this day, the most exciting progress in the field has come from neutral-atom systems, which are also closest to achieving fault-tolerant quantum computing.

We have already demonstrated 1,600 physical qubits with 99.7% gate fidelity. We ended last year with 12 logical qubits, are targeting 30 by the end of this year, and 100 by the end of 2028.

On the sensing and timing side, the implications are significant. GPS currently synchronizes much of the world's critical infrastructure. Ultra-precise atomic clocks can reduce reliance on GPS while providing backup synchronization. In a potential conflict, GPS would likely be jammed or destroyed first. The side that can still communicate, navigate, and synchronize operations without GPS would hold a major advantage. Similarly, multistatic radar systems with multiple heads need precise synchronization across time, frequency, and phase. Replacing GPS timing with quantum atomic clocks dramatically improves resolution, akin to essentially upgrading from standard definition to 4k. In practical application in warfare, it could allow operators to individually identify and track drones even within a dense swarm.

What has been the most useful or surprising feedback from early customers so far?

One of the most underappreciated advantages has been the power of early customer feedback loops, which are then fed directly back into research & development to improve commercial viability. For example, conversations with high-frequency trading firms about atomic clocks for synchronizing trades and understanding global market timing led to additional insights around spectrum applications. When sending trades globally, firms can use fiber optic networks, which involve many hops and routing delays, or they can send direct signals bounced off the ionosphere at the speed of light. Optimizing the latter approach normally requires very long antennas for the necessary frequencies. Infleqtion's atomic systems can effectively serve as compact antennas and receivers, breaking the traditional relationship between antenna length and performance.

How do you see AI impacting quantum computing, or do you think it is more about how quantum computing will impact AI?

Ironically like a qubit state: a little bit of both at the same time. AI is actively accelerating the path to useful quantum computers, particularly by helping solve the critical challenge of error correction. Identifying and diagnosing errors in these complex, noisy systems is fundamentally an inference problem where AI excels. At the same time, quantum computing will supercharge certain AI-driven workloads. The future compute stack will be CPU plus GPU plus QPU working together.

Conclusion

Four structural conclusions emerge from the deal-level and policy data reviewed in this report. First, the quantum computing venture market has undergone a fundamental repositioning. It has moved from a niche early-stage asset class into one capable of absorbing institutional-scale late-stage capital. The 2025 vintage's $3.9 billion in aggregate deal value was driven not by a broadening of deal activity but by a concentration of mega-rounds at the top of the market. Quantinuum's $10 billion pre-money valuation and PsiQuantum's $6.3 billion pre-money valuation establish new benchmarks for what late-stage quantum rounds can support. The divergence between median and average deal metrics ($9.8 million median deal size against a $49.5 million average in 2025) confirms that a small number of category-defining companies are capturing a disproportionate share of deployed capital.

Second, the late-stage capital base has materially institutionalized. Venture growth's share of quantum deal value rose from roughly 1% in 2024 to 30.4% in 2025, the largest single-year stage-mix shift in the dataset. The identity of the top investors by capital deployed (NVIDIA, BlackRock, JPMorgan Chase, among others) confirms that quantum has crossed from specialist-venture territory into mainstream allocation by sovereign wealth funds, corporate strategics, global asset managers, and major banks. Capital is increasingly flowing to companies with longer operating histories and more demonstrable technical progress rather than concept-stage formations. At the same time, the stagnation of seed and pre-seed activity in single-digit millions annually raises questions about the composition of the pipeline three to five years out.

Third, geographic and sector concentration remain defining features of the landscape. North America captured 50.1% of deal value over the full period and Europe captured 33.6%, with the two regions together accounting for roughly five of every six dollars deployed globally. Information technology accounted for 97.6% of all deal value, a concentration that underscores quantum's current positioning as a hardware and software platform play rather than an end-market applications category. Chinese venture activity is almost certainly underrepresented in this dataset given the role of state-funded channels, but even adjusting for that gap, the Western venture market remains the dominant locus of disclosed quantum capital.

Fourth, the public-private interface has deepened materially. Government funding accounted for 34% of total quantum startup investment in 2024 and the co-funding structures now being used for the sector's largest rounds. China's coordinated state-directed capital operates at a scale that is difficult for Western programs to match individually, although allied Western commitments in aggregate remain competitive. The implication is that relatively few platform winners are likely to capture the majority of the sector's eventual economic returns.

Outlook

Three dynamics warrant close monitoring. The first is whether 2026's early exit momentum translates into a sustained liquidity cycle or a one-time reset. The $5.7 billion in Q1 2026 exit activity across four transactions (Xanadu, Infleqtion, Quantum Circuits, and Horizon Quantum Holdings) is the largest concentration of exit value in the sector's history and roughly 15 times the combined exit value of 2023 through 2025.

The second is the pace at which China's 15th FYP commercialization mandate converts state-directed capital into commercially viable products. Early signals (SpinQ and QBoson's April 2026 rounds at roughly $145 million each, CIQTEK's STAR Market IPO and $1 billion post-money valuation, China Telecom's consolidation of QuantumCTek) suggest the private-sector response is real. Whether the resulting companies can compete internationally, given Western export controls that have constrained access to key inputs such as dilution refrigerators, control electronics, photon detectors, and superconducting chip production, remains the central strategic question of the next 36 months. The resolution of that question will also determine how much of China's state-directed capital surfaces in future venture datasets as disclosed transactions rather than remaining effectively invisible through state-funded channels.

The third is whether Europe can close its translation gap. The continent has the research foundation, the European specialist investor base, and, with the July 2025 Quantum Europe Strategy, the policy framework. The strategy explicitly identifies industrialization as the binding constraint. If its scaffolding (pilot lines, testbeds, Quantum Competence Clusters, the Chips Joint Undertaking quantum design facility) succeeds in accelerating European startups from prototype to scale, the competitive geography of the sector will look meaningfully different in three to five years. If it does not, European public investment will continue to subsidize scientific output that is commercialized elsewhere, and the venture data in subsequent vintages will continue to show North America capturing the largest share of deployable capital even as Europe supplies the broadest base of early-stage transactions.

The sector enters 2026 at an inflection point across multiple dimensions: deal value concentration, stage composition, the opening of the exit window, the deepening of the public-private interface, and the adoption of explicit industrial-policy frameworks in all three major blocs. The next 24 to 36 months are likely to determine both the winners and the dominant commercialization geography for a technology class that, on the current trajectory, will begin generating meaningful commercial revenue within the decade.

Appendix

Top 20 quantum computing VC deals from 2016-2026

Company	Close date	Deal value ($M)	Pre-money valuation ($M)	Post-money valuation ($M)
PsiQuantum	September 10, 2025	$1,000.00	$6,000.00	$7,000.00
Quantinuum	November 13, 2025	$838.85	$10,000.00	$10,838.85
PsiQuantum	October 1, 2021	$450.00	$2,850.00	$3,300.00
IQM Finland	August 15, 2025	$372.46	$625.70	$998.16
Quantinuum	January 16, 2024	$300.00	$5,000.00	$5,300.00
Pasqal	February 20, 2026	$236.91	$947.64	$1,184.55
QuEra Computing	February 11, 2025	$230.00		
Multiverse Computing	June 12, 2025	$214.17	$339.94	$509.92
Atom Computing	February 10, 2026	$182.00	$570.00	$752.00
Quantum Machines	February 25, 2025	$170.00	$546.96	$700.00
PsiQuantum	December 31, 2019	$150.00	$330.00	$480.00
Origin Quantum	July 15, 2022	$149.03		
QBoson	March 31, 2026	$145.02		
Classiq Technologies	November 13, 2025	$137.07	$274.70	$411.77
Infleqtion	May 27, 2022	$133.46	$360.15	$485.00
IQM Finland	July 25, 2022	$129.09	$372.16	$501.25
CCB Fintech	June 25, 2021	$116.96		
Alice & Bob	January 28, 2025	$103.49		
Pasqal	January 4, 2023	$102.67	$491.33	$594.00
CIQTEK	August 1, 2021	$101.83	$925.77	$1,027.60

Source: PitchBook • Geography: Global • As of March 31, 2026

Top 20 quantum computing VC exits from 2016-2026

Company	Close date	Exit value ($M)	Deal type	Industry sector	Industry group	Industry code
Xanadu	March 27, 2026	$2,825.00	Reverse merger	Information technology	Computer hardware	Other hardware
Infleqtion	February 17, 2026	$1,675.00	Reverse merger	Information technology	Computer hardware	Computers, parts & peripherals
IonQ	September 28, 2021	$1,275.00	Reverse merger	Information technology	Computer hardware	Computers, parts & peripherals
Arqit	September 3, 2021	$685.00	Reverse merger	Information technology	Software	Network management software
Quantum Circuits	January 20, 2026	$550.00	Merger/ acquisition	Information technology	Computer hardware	Computers, parts & peripherals
Horizon Quantum Holdings	March 20, 2026	$503.00	Reverse merger	Information technology	Software	Software development applications
Rigetti Computing	March 2, 2022	$500.00	Reverse merger	Information technology	Semiconductors	Application specific semiconductors
QuantumCTek	June 24, 2020	$305.62	IPO	Information technology	Computer hardware	Computers, parts & peripherals
Good Chemistry	January 5, 2024	$75.00	Merger/ acquisition	Information technology	Software	Business/productivity software
Quantum Exponential Group	November 1, 2021	$18.64	IPO	Financial services	Capital markets/ institutions	Asset management
QAN	June 15, 2020	$0.30	Merger/ acquisition	Information technology	Software	Software development applications
J2 Materials	January 26, 2021		Buyout/LBO	Business products & services (B2B)	Commercial products	Industrial supplies & parts
QxBranch	July 11, 2019		Merger/ acquisition	Information technology	IT services	IT consulting & outsourcing
Super.tech	May 10, 2022		Merger/ acquisition	Information technology	Software	Business/productivity software
Qu & Co	January 11, 2022		Merger/ acquisition	Information technology	Software	Business/productivity software
BTQ Technologies	February 17, 2023		Reverse merger	Information technology	Computer hardware	Other hardware
Cambridge Quantum Computing	November 30, 2021		Merger/ acquisition	Information technology	Software	Business/productivity software
Quantum Benchmark	May 25, 2021		Merger/ acquisition	Information technology	Software	Business/productivity software
Muquans	May 20, 2021		Merger/ acquisition	Information technology	Computer hardware	Electronic equipment & instruments
Entangled Networks	December 30, 2022		Merger/ acquisition	Information technology	Computer hardware	Computers, parts & peripherals

Source: PitchBook • Geography: Global • As of March 31, 2026

Top 20 quantum computing investors from 2020-2026

Investor	Total deal count	Investor type	Investor HQ country
Quantonation	44	Venture capital	France
European Innovation Council	24	Accelerator/incubator	Belgium
Audacia	21	Growth/expansion	France
Alumni Ventures	18	Venture capital	US
DCVC	15	Venture capital	US
QAI Ventures	15	Venture capital	Switzerland
Ground State Ventures	14	Venture capital	Netherlands
Oxford Science Enterprises	13	Venture capital	UK
Bpifrance	12	Sovereign wealth fund	France
Parkwalk Advisors	12	Venture capital	UK
In-Q-Tel	11	Not-for-profit venture capital	US
Main Sequence Ventures	10	Venture capital	Australia
Amadeus Capital Partners	10	Venture capital	UK
High-Tech Gründerfonds	9	Venture capital	Germany
WorldQuant Ventures	9	Venture capital	US
Entrée Capital	8	Venture capital	Israel
BDC Capital	8	Growth/expansion	Canada
Serendipity Capital	8	Venture capital	Singapore
CAS Star	8	Venture capital	China
Ripple Impact Investments	7	Impact investing	US

Source: PitchBook • Geography: Global • As of March 31, 2026

Top quantum computing VC backed companies by most recent post-money valuation ($M)

Company	Most recent post-money valuation date	Post-money valuation ($M)	VC raised to date ($M)	Predicted exit type	Success probability	IPO probability	M&A probability
Quantinuum	November 13, 2025	$10,838.85	$1,163.85	IPO	98%	63%	35%
PsiQuantum	September 10, 2025	$7,000.00	$1,415.00	IPO	98%	96%	2%
Pasqal	February 20, 2026	$1,184.55	$444.62	IPO	98%	90%	8%
CIQTEK	August 1, 2021	$1,027.60	$152.50				
IQM Finland	August 15, 2025	$998.16	$530.54	IPO	97%	86%	11%
Atom Computing	February 10, 2026	$752.00	$272.02	M&A	66%	19%	47%
Quantum Machines	February 25, 2025	$700.00	$262.90	IPO	94%	69%	25%
Terra Quantum	March 31, 2022	$629.38	$85.90	M&A	96%	40%	56%
Multiverse Computing	March 28, 2025	$484.06	$245.28	IPO	96%	56%	40%
Classiq Technologies	November 13, 2025	$411.77	$200.00	IPO	96%	90%	6%
Riverlane	August 12, 2024	$351.18	$127.24	M&A	91%	18%	73%
Maybell Quantum	August 29, 2025	$320.00	$73.30	M&A	95%	33%	62%
HYQ Bit	May 7, 2024	$263.11	$59.74				
ParityQC	April 16, 2024	$259.32	$0.00	M&A	87%	15%	72%
Q-CTRL	October 8, 2024	$253.67	$128.85	IPO	74%	63%	11%
QuSecure	February 12, 2025	$233.00	$33.00	M&A	84%	5%	79%
Monarch Quantum	March 31, 2026	$215.00	$55.00				
HyperLight	September 23, 2024	$205.00	$55.40	M&A	92%	5%	87%
Flexcompute	July 9, 2024	$202.00	$80.68	M&A	84%	3%	81%
QC Ware	September 29, 2021	$199.96	$33.21	M&A	90%	4%	86%

Source: PitchBook • Geography: Global • As of March 31, 2026
Note: Probability data is based on PitchBook VC Exit Predictor methodology.

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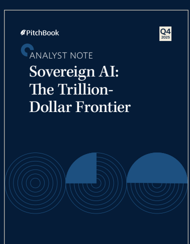

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