

The Quantum Quarterly

Q3 2024



Welcome to the Quantum Quarterly Review.

Here we cover the biggest commercial news in the quantum technology industry over the last 3 months.

THE QUANTUM Q3 2024



Q3 2024 IN BRIEF

The quantum industry registered a subtle, but quantifiable shift during the third quarter of 2024. From early to July to late September, The Quantum Insider recorded 26 separate funding events – from small pre-seed rounds to large series Cs. This is compared to several recent quarters with the number of rounds in the single-digit to barely double-digit.

The industry could be emerging from investment doldrums that affected most industries after the low interest rate-fueled early 2020s, but an uptick in the pace and size of investments is not the only shift we've seen in quantum.

Research news has also been brisk and significant. Companies and research institutions have made progress in several areas that have been high hurdles to scalability. Quantinuum and Microsoft, to name one collaboration, have rapidly advanced their work on logical qubits. Other quantum companies have also revised their roadmaps, projecting the next two years to be pivotal as the industry transitions from lab to business and from scientific curiosity to real-world benefits.



Click this icon throughout this press to see the full stories behind the brief

The Big News











Riverlane Raises \$75 Million in Series C Round to Meet Demand For Quantum Error Correction Technology

Riverlane announced it raised \$75 million in Series C funding to deliver its quantum error correction (QEC) roadmap. The funding will enable Riverlane to expand operations to meet surging global market demand for QEC technology, with the goal of achieving one million error-free quantum computer operations by 2026. The round was led by Planet First Partners.







Quantum Circuits Secures More Than \$60 Million in Series B Investment

Quantum Circuits, Inc. announced it has secured a final Series B investment round of more than \$60 million, providing additional capital support as the company prepares to commercialize its quantum systems with an industry first – error detection built into a more powerful qubit for scalable, higherfidelity computing.







Quantum Source Raises \$50 Million Series A Funding to Make Scalable, Useful Quantum Computing A Reality

Quantum Source, an Israel-based company developing technology for powerful, costeffective, practical photonic quantum computers, announced it has raised a \$50M Series A investment round led by Eclipse, with participation from Standard Investments, Level VC, Canon Equity, and existing investors Pitango First, Grove Ventures, 10D and Dell Technologies Capital





Aquark Technologies Raises €5 Million, Led by NATO Innovation Fund

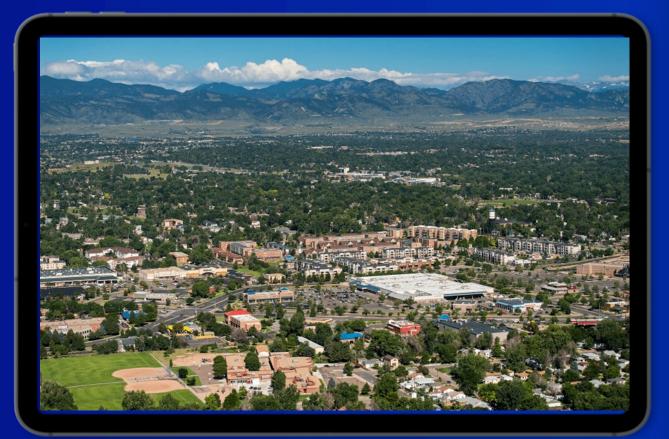
Aquark, a UK quantum technology company, today announces a €5 million seed round led by the NATO Innovation Fund (NIF), with significant investments from EIFO, UKI2S (managed by Future Planet Capital), and MBDA. The investment in Aquark's unique, proprietary technology is an important step towards securing the critical infrastructure that underpins key sectors like defense, telecommunications and finance.

QLLIANSE QLLIANSE Initiative Launches to Establish Southeastern U.S. as Quantum Tech Hub



Launch of QLLIANSE to Propel Quantum Technology in The Southeastern United States

A new initiative, QLLIANSE, is launching to establish the Southeastern United States as a major hub for quantum technology. The launch event will take place at the upcoming Quantum World Congress, where key stakeholders from industry, academia and government will gather to mark the beginning of a transformative initiative.





Colorado Not 'Wasting Any Time' Preparing For Quantum

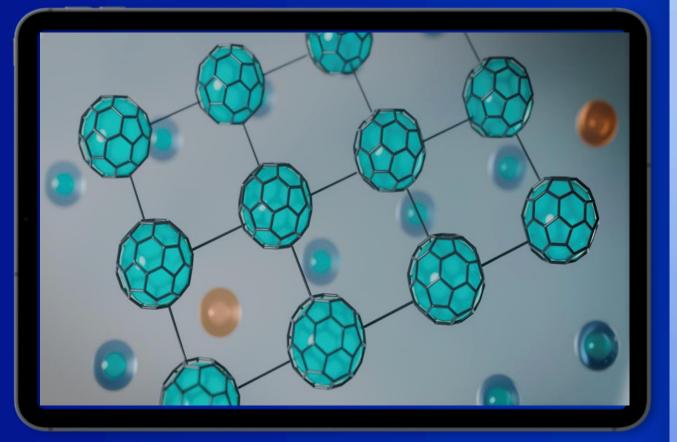
Colorado's quantum industry is about to get a major boost, thanks to the launch of a new Quantum Tech Park in Arvada, Colorado, Colorado media and government officials are reporting. With \$40.5 million in federal funding and additional state support, this initiative aims to transform Colorado into a global hub for quantum technology.





South Korean Quantum Computing Company SDT Raises \$7.5M USD

Quantum standard technology company SDT announced on the 28th that it successfully secured approximately 7.5 million USD Pre-IPO investment from Shinhan Venture Investment. SDT is in the process of raising a total of approximately 15 million USD, plans to complete its funding efforts by securing the remaining funds from global companies and existing shareholders in addition to this lead investment.





Research: Microsoft-led Team Achieves Record for Reliable Logical Qubits in Quantum Computing

Microsoft announced in a blog and a research paper on the pre-print server ArXiv that the company and its collaborators have made a major advance in quantum computing, achieving the largest number of entangled logical qubits with the highest fidelity ever recorded. This development, made in collaboration with Quantinuum, is a significant step in the pursuit of scalable and reliable quantum computing.





Research: India's DRDO Scientists Complete Testing of 6-Qubit Superconducting Quantum Processor Scientists from Defence Research and Development Organisation — DRDO — Young Scientists Laboratory for Quantum Technologies (DYSL-QT), Pune and Tata Institute of Fundamental Research (TIFR), Mumbai have completed end-to-end testing of a 6-qubit quantum processor based on superconducting circuit technology.



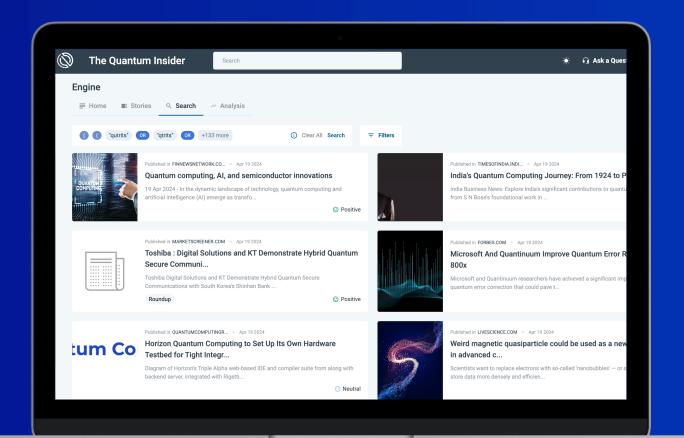




Research: Super Superconducting Qubits: Dual-Rail Qubit Offer Built-in Error Detection, Researchers Report

A new qubit that significantly improves error detection and correction. In a recently published study in Nature Physics, the research team, which includes scientists from Quantum Circuits Inc. and Yale Quantum Institute at Yale University, outlined their implementation of the dual-rail qubit (DRQ), which incorporates built-in error detection capabilities.

Want More News?



The Quantum Insider's Intelligence platform customers now get access to curated news, ranked and analyzed for sentiment and connected to a rich entity database.



Key Numbers







Latest Funding Rounds

- Example funding rounds including series A and later
- Non-exhaustive list excluding non-dilutive, seed stage and earlier

Funding				_						C Reset Resizing	∓ Filters	C Export	
Companies	Primary Classification	Secondary Classification	Date 斗	Investors	Lead Investor	Country	City	Transaction Type 1	Region	Total \$ ↑↓	Source		Building full-stack superconducting
Olter Quantum Source	Quantum Computers	Photonics	2024-09-10	Grove Ventures, Pitango Venture Capital, Canon Equity, Standard Investments, Eclipse Ventures, Level Ventures, Dell Technologies Capital, 10D	Eclipse Ventures	Israel	Rehovot	Series A	EMEA	50,000,000	Θ		architecture
Entropica Labs	Software	Quantum Computing Algorithms	2024-09-05	State Farm Ventures	State Farm Ventures	Singapore	Singapore	Series A	APAC	800,000	Θ		
Quantum Circuits	Quantum Computers	Superconducting	2024-08-15	Hither Creek Ventures, Fitz Gate Ventures, Sequoia Capital, Tao Capital Partners, Tribeca Venture Partners, Connecticut Innovations, OUP (Osage University Partners), ARCH Venture Partners, Canaan, F-Prime Capital, IQT (In-Q-Tei)	Hither Creek Ventures, Sequoia Capital, ARCH Venture Partners, F- Prime Capital	United States	Madison	Series B	Americas	60,000,000	e		To meet growing demand for quantum error correction software
Riverlane	Software	Multiple Software Offerings	2024-08-06	Altair, National Security Strategic Investment Fund (NSSIF), Amadeus Capital Partners, Planet First Partners, ETF Partners, EDBI, Cambridge Innovation Capital	Planet First Partners	United Kingdom	Cambridge	Series C	EMEA	75,000,000	Θ		quantum error correction software
planqc	Quantum Computers	Neutral Atoms	2024-07-08	Bayern Kapital, CATRON Holding, UVC Partners, Max-Planck-Förderstiftung, Speedinvest, DeepTech & Climate Fonds (DTCF)	CATRON Holding	Germany	Munich	Series A	EMEA	54,115,000	Θ		Oversubscribed series A (\$5m from
Nanosystems	Hardware Components	Processors and Chips	2024-06-27	Invest-NL, Delft Enterprises, European Innovation Council	Invest-NL	The Netherlands	Rijswijk	Series A	EMEA	5,000,000	9		new investors)
Diraq	Quantum Computers	Silicon	2024-06-23	UniSuper, University of New South Wales, Taronga Ventures, John Higgins Family Investments, Main Sequence Ventures, CoAct Capital, Uniseed	Main Sequence Ventures	Australia	Sydney	Series A	APAC	7,117,110	Ð		/
Οπ. Ορίαι	Software	Multiple Software Offerings	2024-06-20	Sahasra capital, SIDBI Venture Capital, Pratap Reddy, Ramaswamy Prahbakar Saniav Katkar HEM ANGELS, YourNeet Venture Capital Kailaeh	SIDBI Venture Capital, VourNect Venture	India	Bengaluru	Series A	APAC	6,500,000	Θ		Raised after reporting 99.9% qubit



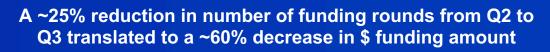
+ rumors of big IPOs

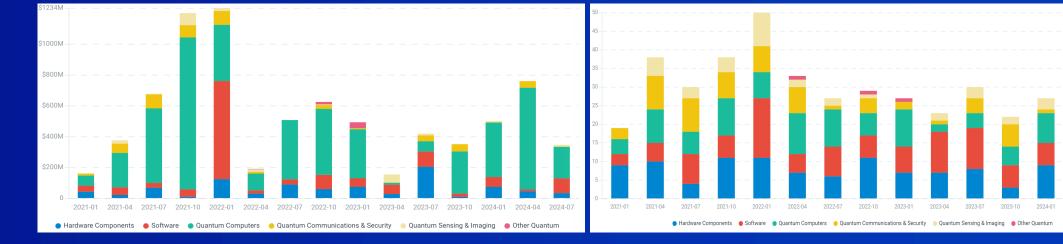
Source: The Quantum Insider Intelligence Platform, data as of 03 October 2024

control accuracy

Q3 Capital Markets Preview

Q3 venture funding tapered relative to Q2 – unsurprising given the outsized PsiQuantum funding round late in Q2





Total quantum funding by year (USD)

Number of quantum funding rounds by quarter

Source: The Quantum Insider Intelligence Platform Visualization Analysis, data as-of 03 October 2024)



\$348M

New private capital flowing into Quantum Technology companies in Q3 2024

-17%

Percentage change in private investment into quantum technologies Q3 2023 versus Q3 2024

About Us







Executive Summary

- Resonance provides data-underpinned market intelligence to enterprises, investors and governments.
- We are a venture-backed 50-person team of analysts, developers, consultants and ex-investors, HQ'd in Toronto, Canada.
- We specialize in complex, emergent markets such as quantum, space, immersive, AI, and climate-related technologies.
- Our market intelligence is underpinned by a combination of expert analysis and Al-underpinned data collection and structuring at scale and sold as a subscription
- We use our data to inform our strategic advisory work but enrich this with primary research, looping in our sector experts where required.
- We own proprietary media brands in the verticals we operate in, giving us an unfair advantage versus competitors providing marketing services
- We have a strong track record of case studies and a blue-chip client base.



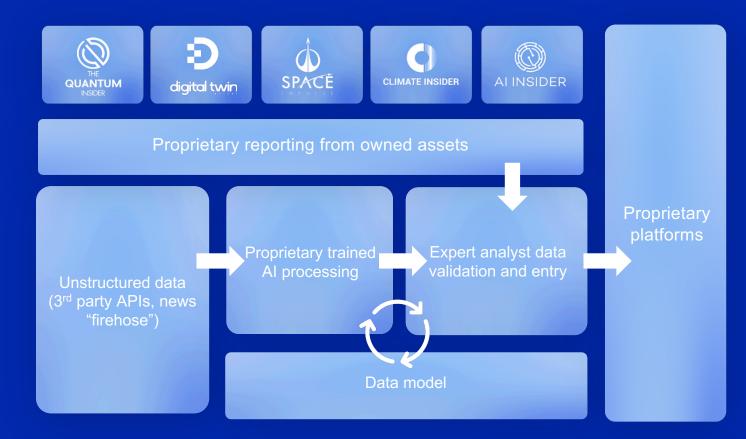
Resonance provides the market intelligence to navigate technologies shaping the future

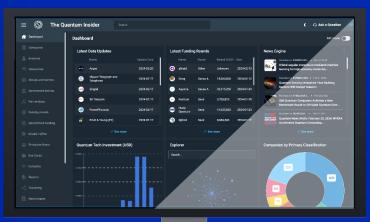
Commercial offerings	Industries covered	Metrics		
Data and market intelligence		5	Verticals covered, representing the world's most critical exponential technologies	
	AI INSIDER	3	Live data platforms, proprietary Al- underpinned technology	
Enterprise marketing		1M+	Monthly readers	
		50k+	Social media followers	
Strategic Advisory		150+	Happy clients from startups to blue-chip enterprises and governments	
Otrategic Advisory		120%	Revenue growth, representing consistent	
		Labs	Active deep tech research partnering with public institutions	
Catalyst / Labs		Backing	Venture backed with deep industry connections and advisory board	

We own proprietary intelligence platforms which provides customers with foundational intelligence on exponential technologies



Our intelligence engine leverages AI to structure and present real time data, at scale







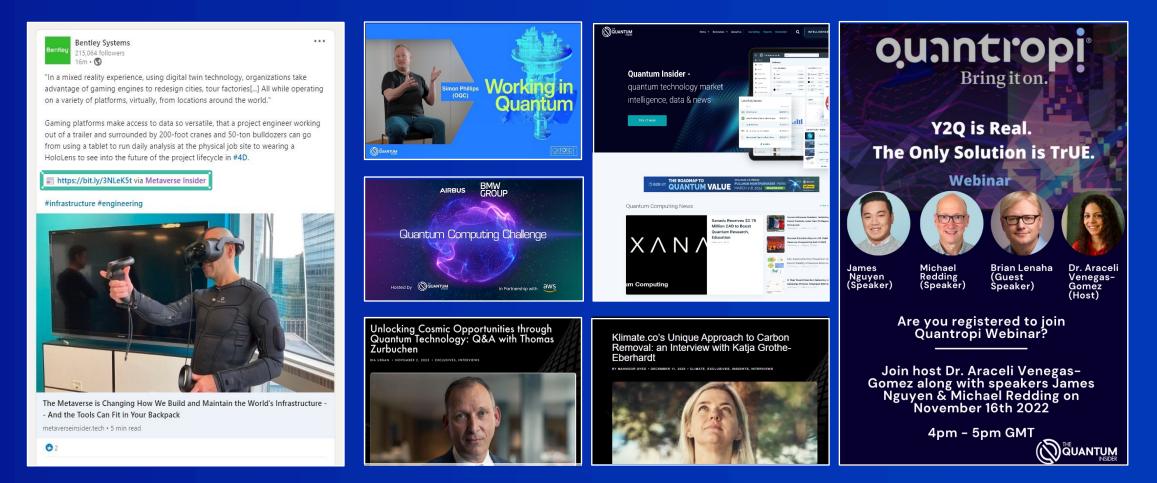


Our unique combination of proprietary industry intelligence and multi-disciplinary team underpins our strategic advisory support





We provide incisive updates on exponential technologies and use our platforms to support our clients





The Company We Keep

Select examples across Resonance's businesses (>150 clients in total)

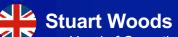


Resonance Advisory Board



Dan Caruso

- 3X decacorn entrepreneur
- Managing Director of Caruso Ventures
- Previously, founding CEO/Chairman of Zayo Group



- Head of Operations & Strategy at Quantum Exponential
- Previously, Managing Director and board member at Oxford Instruments





- Partner at Rothschild
- European Head of Technology M&A
- Rothschild veteran with 20 years of experience advising on a wide range of technology transactions





Inder Singh

- Numerous board positions, including at one of the world's leading quantum companies (lonQ)
- Former CFO of tech companies incl Arm, and a Wall Street veteran
- Advisor on critical infrastructure and national security projects

Shelli Brunswick

- Numerous executive board and advisory positions
- Former COO of Space Foundation
- 25 years of experience in the US Air Force and global Space sector

Julianto Sidarto

- Numerous board positions including at one of Asia's largest mobile network operators (XL Axiata)
- Previously, Managing Director of Accenture in South-East Asia





THE QUANTUM INTELLIGENCE PLATFORM

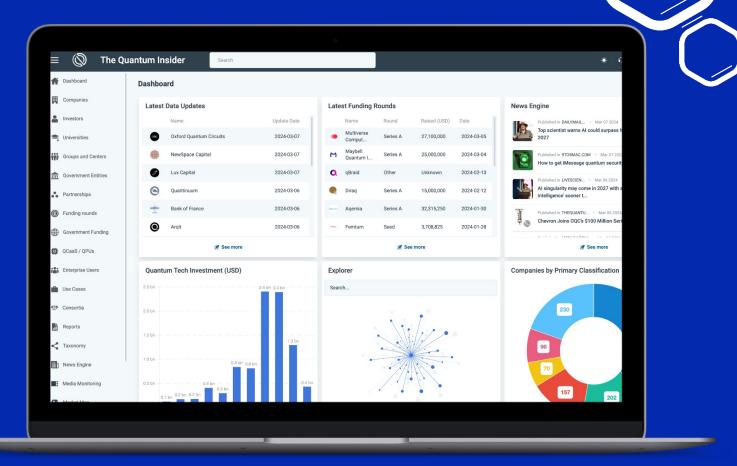
The leading provider of information, data, and insights on quantum technologies



Our Platform

The Quantum Insider collects and structures global data on quantum technologies and delivers this in a user-friendly platform.

Our platform helps investors, startups, corporations, accelerators, policy makers, and governments gain a holistic overview of the quantum technology landscape.





Focus Features



Custom Taxonomy

We have applied our deep expertise in quantum technologies to carefully classify and segment all stakeholders across the ecosystem.



Trusted Market Intelligence

Our platform provides comprehensive analysis and reports to navigate the dynamic landscape of emerging technologies, giving you a competitive edge in this intricate industry.



Ecosystem Graph Explorer

We map the quantum technology ecosystem, including academia, labs, and corporate users, in a modern graph interface.



Powerful Media Search

Customized powerful search tool which prefilters for trusted sources, tracks source reach and includes named entity recognition and sentiment analysis.



Artificial Intelligence Accelerated

Our data combines proprietary data and the usage of Large Language Models (LLMs) to provide foundational intelligence. This is manually enriched by our sector specialists.



Bespoke Expert Support

Use our "ask a question" feature to get in direct contact with our team of experts with a strong combination of academic and commercial experience.

Use Case Examples



Our Testimonials

Serving hundreds of premium subscriber customers globally

bdc

Control Con

THOMAS PARK

Partner Lead for BDC's Deep Tech Venture Fund



Understanding the quantum market can be akin to understanding quantum physics itself. TQI breaks down the market and allows me to look at the data how I want simply and cleanly ~ separating out funding from investment to services and applications. This product again shows The Quantum Insider's industry leadership.

STUART WOODS

COO Quantum Exponential

DUANTINUUM

C The Quantum Insider has emerged as a critical resource for our team as commercial markets develop for quantum technologies. Their continued contributions to the quantum ecosystem is significant.

JIMMAC LOFTON

Business Development at Quantinuum



Our Coverage



COMPANIES

1,200+ quantum technology companies (including computing, security, sensing etc.)



INVESTORS

1,100+ investors who have been involved in quantum technology fundraises



FUNDING 800+ funding rounds since 2002



UNIVERSITIES

500+ universities involved in quantum technologies



GROUPS & CENTRES

600+ groups/centres involved in quantum technology research



GOVERNMENT ENTITIES

Over 20 national labs and list of government agencies



END USERS/USE CASES

300+ end users of quantum technology and tracking of use case



Case Study

100 Department for Science, Innovation & Technology

National Quantum Strategy

March 2023



His Majesty's Government required reliable market intelligence on the quantum technology industry - covering the global market - to help inform their £2.5 billion national strategy announced in March 2023.

We provided BEIS (renamed to DSIT) with subscription access to our market intelligence platform. The TQI team also consulted on how to interpret the data and engaged in deep dive reviews to further support the strategy.

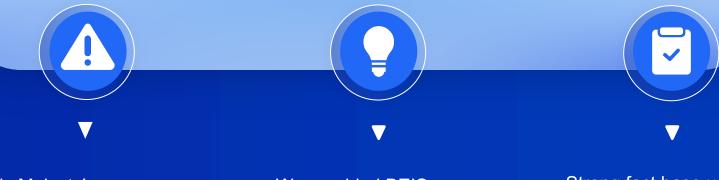
Strong fact base used to drive multi-billion dollar industrial strategy

Leading national strategy.

Ś

Department for

Science, Innovation, & Technology



Case Study





Quantum computing is a rapidly growing field that has the potential to revolutionize the way we process information and solve complex problems. Given the potential benefits of guantum computing, it's no surprise that many organizations are investing heavily in research and development to drive this

investment is made

 $\mathbf{04}$

technological revolution. From tech giants like IBM and Microsoft to startups and academic institutions, many players are working to advance the field. Governments, too, are recognizing the importance of quantum computing and are investing in research and infrastructure to support the growth of this industry



Ernst and Young (EY) sought reliable and comprehensive data on quantum technology funding to gather insights and incorporate them into their public reports, offering valuable knowledge to their clients and stakeholders.

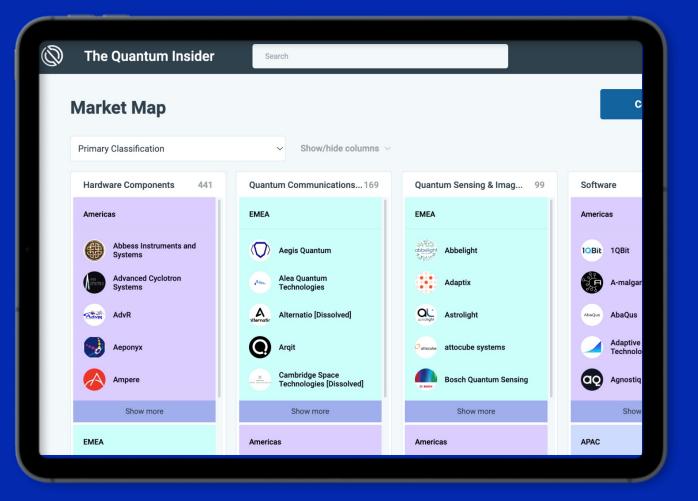
Our market intelligence platform provided an indepth analysis of private and government funding trends, including investments, grants, and partnerships.

Data-driven insights utilized by EY to enhance their reports, providing clients and stakeholders with valuable information on the funding landscape of quantum technology, enabling them to make informed decisions and drive innovation in the sector.

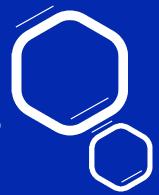
Feature deep dives



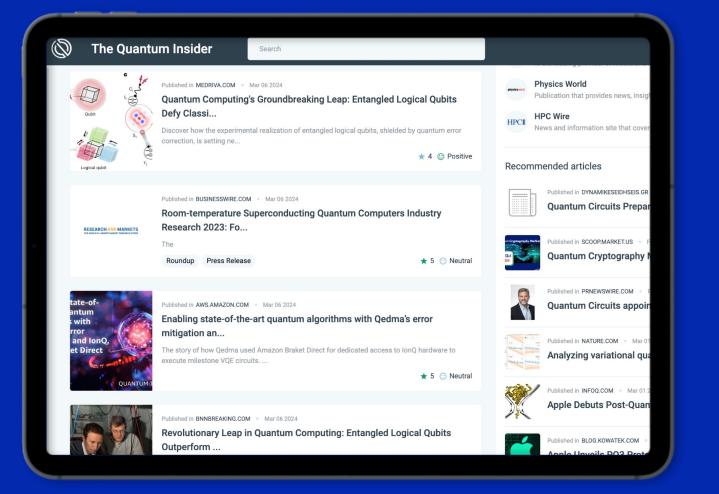
1. Custom Taxonomy



We have applied our deep expertise in quantum technologies to carefully classify and segment all stakeholders across the ecosystem.



2. Powerful Media Search



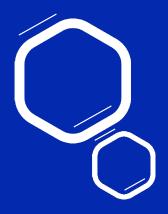
Customized powerful search tool which prefilters for trusted sources, tracks source reach and includes named entity recognition and sentiment analysis...



2. Powerful Media Search

0	The Quantum Insider	Search
	ngine	~ Analysis
	() ("qutrits" (OR "qtrits" (OR +131	I more ① Clear All Search = Filters Last 90 days, default sources
	Google, XPRIZE Launch \$5M Quantum Computing Competition Google has partnered with XPRIZE Foundation to launch a \$5 million competition aimed at	Google, XPRIZE Launch \$5M Quantum Computing Competition
	finding prac Apple's Major 1.7GB iOS 17.4 Update Offers New Features and DMA Compliance All Apple has released its biggest iPhone software update of the year, iOS 17.4. The 1.7GB update includ	Google has partnered with XPRIZE Foundation to launch a \$5 million competition aimed at finding practical applications for quantum computers that could benefit society. The competition focuses on developing new quantum algorithms or applying existing ones to address real-world problems, with a grand prize of \$3 million, \$1 million for runners- up, and \$50,000 for 20 semi-finalists. The competition aims to shift the focus of quantum computing researchers towards tangibly beneficial applications and is tied to the United Nations Sustainable Development Goals.
	Samsung Semiconductor India Research Expands R&D Facility in Bengaluru (SSIR) has opened a new R&D facility in	
	Bengaluru, the company'	

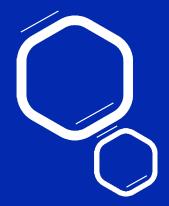
...enriched with Al summaries and named entity recognition...



2. Powerful Media Search

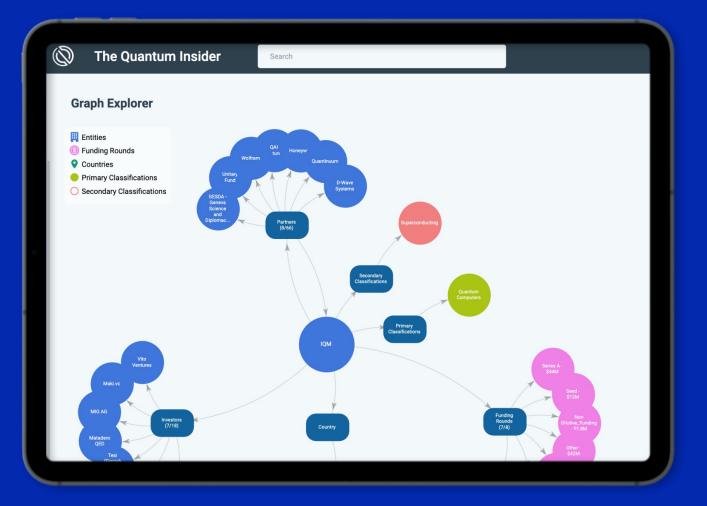
D The Quantum Insider	Search			
Media Monitoring				
E Stats Comparison ~ Analysis				
O lonQ X 📾 IBM X			X 🗸	mpare (2) \Xi Filters
Selected entities Clear All	Q	×	IBM	×
	IONQ IonQ		IBM	
Total number of articles Over last 90 days	267 ↓ 1 %		11858 🔸 48	%
Average sentiment Over last 90 days	Negative Neutral F	Positive	Negative Neutral	Positive
Top platform entities mentioned	lonQ	1038	IBM	898
For the last 100 articles	Microsoft	45	Keio University	29
	IBM	43	Microsoft	17
	Rescale	28	Dow	7
	Amazon	19	Amazon	5

...and powerful comparative tools

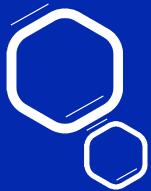




3. Ecosystem Graph Explorer



Platform is built on a modern graph database. This allows our users to map connections and relationships, and follow their curiosity.

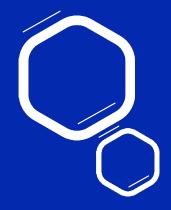


4. Detailed Entity Profiles

📎 The Qu	antum Insider	infleqtion			
	ompany name nfleqtion				
Prof	ile	Funding	Articles	Graph Exp	olorer
Basic Infor	mation				Investors
Super.Tech		Quanta (sells laser-cooled a	and ultra-cold atom enabled quantum		Total Disclosed Funding (I 189,000,000
Primary Classi Secondary Cla			Qi	uantum Computers Neutral Atoms	Names of investors
Tags		L	ogistics, Finance, Quantum Clocks, C Quantum Computing, Cloud Acc		
Business Type Relevant Acqu			lucer Mo	Private Company rton Photonics Inc.	
			Super.Tech [Acc	S SiNoptiq Inc quired by Infleqtion]	Location Information
FTEs				51-100	City
Founded Updated				2007 2024-02-08 6:30:7	Country Region
Undated by			erookutta	anle@8@amail.com	

Entity data is highly structured and interconnected.

Information includes classifications, tags, funding information, acquisitions, spin outs and network analysis.



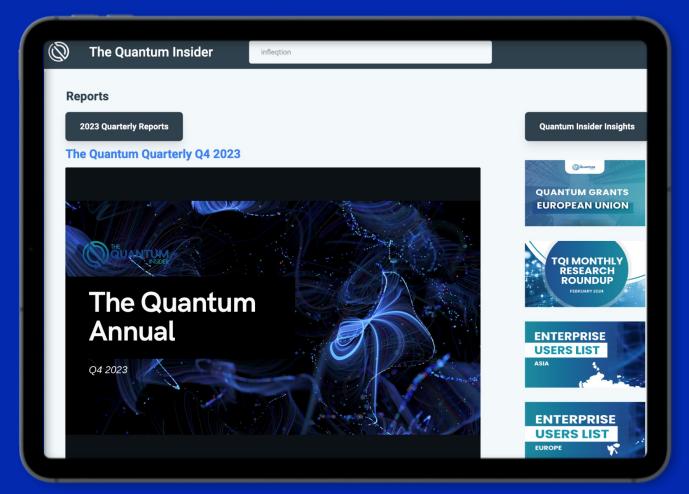
5. Bespoke Expert Support

ashboa	ard				
Latest	Data Updates		Latest Funding Rounds	Nev	vs Engine
	Name	Update	Ask a Question	×	Published in L Al singulari
0	Quantinuum	2024-0	Name		sooner t
DARTED A	Bank of France	2024-0	E.g. John Nollan	(Internet in the second	Published in T
۲	Arqit	2024-0			Published in N
HOCI	HellasQCI	2024-0	Email		The Rise of Electronics.
	Nokia	2024-0	E.g. johnnollan@example.com		Published in S
6	Aramco	2024-0	Your Question		China's top challenges
	off See more				
Quantu	um Tech Investment (USD)			Con	npanies by Pri
2.5 bn —		2.4 bn - 2.4 bn		1.	
2.0 bn —			Urgency: High Low		
1.5 bn —			Cancel Send		96

Use our "ask a question" feature to get in direct contact with our team of experts with a strong combination of academic and commercial experience.



6. Trusted Market Intelligence



The landscape of emerging technologies is constantly shifting. Our platform delivers deep analysis and reports, helping you to keep track of a complex, emerging industry and gain an edge over competitors.



45

GET IN TOUCH

We would love to hear your feedback on our work. Please don't hesitate to contact us.



