QUANTUM INSIDER
powered by RESONANCE

# Market Intelligence White Paper

Explore the quantum technology market data, reports , analytics and insights.

**TLDR? Watch the overview here:**

**The Quantum Intelligence Platform: track the quantum market in one place**

# Introduction

Quantum technology is a rapidly emerging and constantly evolving industry that is increasing in size and complexity daily. Not only are quantum technology companies part of a rich ecosystem that deals in sometimes counter-intuitive science, its vertical and horizontal depth and width is expanding as quantum technologies mature and transition from in-house operations to partnering and outsourcing. Numerous specialist, suppliers stretch the value chain to end users across industries, sectors, and government agencies, investigating the transformative power of quantum technologies.

In the quantum technology ecosystem, open-source information is fragmented across startup creation, investment rounds, dissemination of research breakthroughs, constant streams of company news and patent filings. This makes  it nigh impossible to stay informed and up-to-date for improved strategies and operations.

Adding to the complexities, growing pressures of 'economization' is also being witnessed for many quantum technology developers that need to demonstrate commercial value or a roadmap towards it, while navigating quantum markets that are increasingly being fragmented and specialized in regional clusters.

The Quantum Insider's intelligence platform equips decision-makers with credible and timely insights to easily monitor and navigate everything in the quantum technology industries for market research, ecosystem mapping, economic development, due diligence, and more.

Guided by making the complex actionable, the intelligence platform gathers and structures global data on quantum technologies, presenting it in a user-friendly format, and disseminates it into insights that take advantage of powerful network theories.

**Through this platform, investors, startups, corporations, accelerators, policy makers, and governments gain holistic, yet comprehensive insights of the entire quantum technology landscape.**

The platform features detailed data on companies, investors, academic groups, government institutions, and more, underpinned by a proprietary taxonomy that allows the information to be filtered and structured. Customizable metadata, along with powerful visualization tools such as our unique graph explorer and market mapping, make it easy to extract intelligence out of information.

With the Quantum Insider's intelligence platform, decision-makers can stay informed, make strategic decisions, and navigate the rapidly evolving quantum technology ecosystem: to transform the complex into actionable insights.

*This whitepaper is designed to show you and your institution how to use the intelligence platform to accelerate your quantum adoption and readiness journey.*

# Table of Contents

# About Resonance

Resonance, founded in 2019 in Toronto, Canada, makes deep technologies accessible, helping clients and audiences thrive in a rapidly evolving world. We empower corporations, governments, academia, and startups with actionable insights across sectors like quantum technologies, AI, climate tech, space, and digital twins.

Our AI-driven intelligence platform processes real-time and raw data from over 100,000 sources, offering strategic insights for growth and innovation. We deliver this through three key units:

- Intelligence Platform: AI-powered data for informed decisions.
- Intelligence Consulting: Expert guidance for market strategies.
- Intelligence Studio: Enhance your brand with targeted content and marketing.

We have 150 clients globally driving data-driven decision-making in emerging technologies. Whether shaping policies or guiding corporations, Resonance is at the forefront of deep tech innovation, making complex information accessible and empowering clients to shape the future with clarity and purpose.

Resonance empowers decision makers with intelligence to navigate and harness emerging technologies shaping the future.

**150+** Clients Globally

**1M+** Data Point

**150%** Growth

**1M+** Monthly Readers

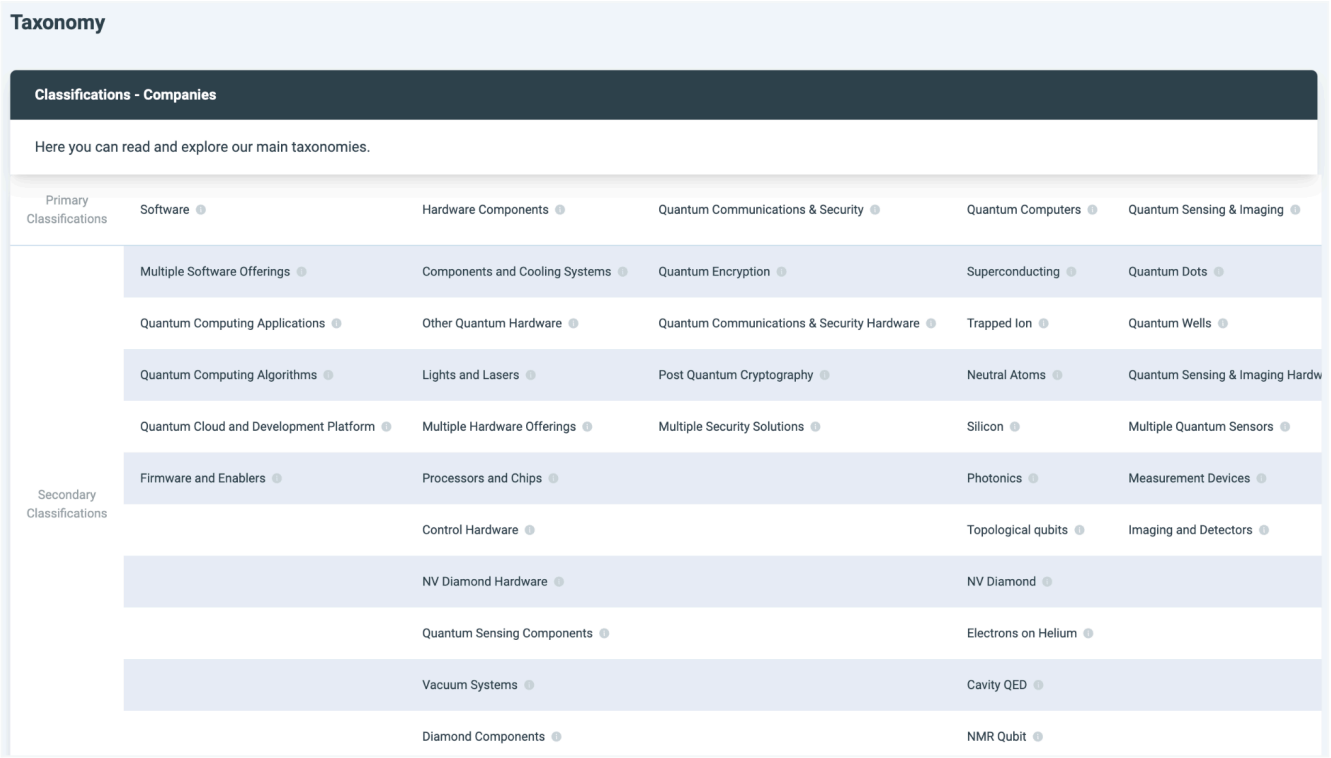
RESONANCE

QUANTUM INSIDER powered by RESONANCE | CLIMATE INSIDER powered by RESONANCE | SPACE INSIDER powered by RESONANCE | AI INSIDER powered by RESONANCE | DIGITAL TWIN INSIDER powered by RESONANCE

# Mapping the Global Quantum Ecosystem

*This section outlines the coverage levels offered.*

### Classifications




Quantum technologies encompass extensive and multifaceted subdomains that increasingly fragment and specialize as the global value chain expands.

Our platform provides a comprehensive analysis of each domain, offering a structured understanding of the fields and opens possibilities for enriching your analysis with network theories.

Each high-level category is underpinned by a deeper taxonomy.

For example, if you need to complete a situational analysis of the superconducting quantum computer ecosystem in Europe, you can filter the quantum ecosystem by the primary classification 'quantum computers', secondary classification 'superconducting' and narrow the region to 'Europe'.

The list of companies can then be characterized and synthesized with additional parameters such as value-adding suppliers, forward thinking end users, investors, and stakeholders such as quantum centers of excellence and universities.

## Quantum Computing

The quantum computing ecosystem is expanding rapidly, spanning start- and scaleups, value-adding suppliers, global corporations, government institutions and centers, and universities actively pursuing utility-scale quantum processing.

Our data includes information on qubit modalities, roadmaps and emerging commercialization as pressure on companies to deliver practical value increases.

Secondary Classifications:

- Superconducting
- Trapped Ion
- Neutral Atoms
- Silicon
- Photonics
- Topological qubits
- NV Diamond
- Electrons on Helium
- Cavity QED
- NMR Qubit

## Quantum Hardware & Software

As quantum technologies mature, the value chain is transitioning from in-house operations to outsourcing to specialist suppliers, diversifying the ecosystem and making it more complex to understand and disseminate.

Quantum hardware and software companies represent a critical part of the supply chain for quantum technology companies, acting as the value-adding entities that produce parts needed to build quantum devices or translate technical complexities into practical solutions for end users.

Often these hardware and software suppliers fly under the radar, making it hard to find reliable information about them.

Our platform tracks over 750 entities, covering their technological details and partnerships across the rapidly growing ecosystem.

Secondary Classifications:

- Components and Cooling Systems
- Other Quantum Hardware
- Lights and Lasers
- Multiple Hardware Offerings
- Processors and Chips
- Control Hardware
- NV Diamond Hardware
- Quantum Sensing Components
- Vacuum Systems
- Diamond Components
- Multiple Software Offerings
- Quantum Computing Applications

- Quantum Computing Algorithms
- Quantum Cloud and Development Platform
- Firmware and Enablers

## Quantum Sensing

Quantum sensing harnesses the principles of quantum mechanics to attain remarkable accuracy, sensitivity, and resolution in measurements. While its practical applications are already evident in various domains, the organizations in this field often remain hidden.

Our platform sheds light on 100+ quantum sensing companies, investors, universities, and other entities, presenting a comprehensive overview of the quantum sensing ecosystem.

Secondary Classifications:

- Quantum Dots
- Quantum Wells
- Quantum Sensing & Imaging Hardware
- Multiple Quantum Sensors
- Measurement Devices
- Imaging and Detectors

## Quantum Communication & Security

As cyberthreats evolve new security methods are being sought, especially critical infrastructure organizations.

Four methods are pursued in addressing the quantum threat to security and communication. The first is specially-designed classical encryptions to protect against quantum processing known as post-quantum cryptography (PQC). The second is a unique form of information-sharing called Quantum Key Distribution (QKD). The two remaining areas are less discussed, Quantum Random Number Generators (QRNGs) that can strengthen existing encryption algorithms, and Quantum Cryptanalysis that explores how quantum algorithms can break existing encryption standards aiming to develop safeguards against them.

We track all stakeholders across this increasingly complex and growing global ecosystem.

Secondary Classifications:

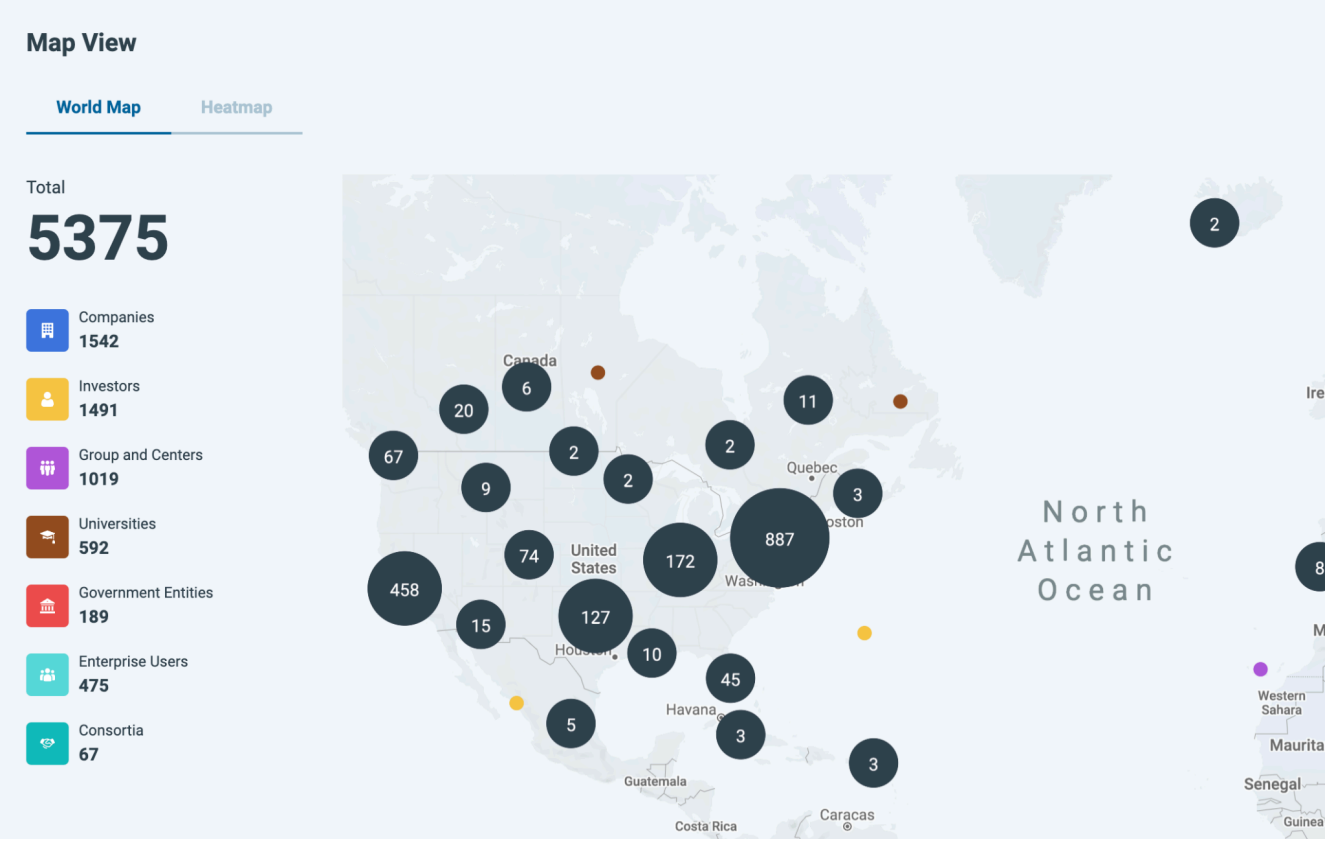
- Quantum Encryption
- Quantum Communications & Security Hardware
- Post Quantum Cryptography
- Multiple Security Solutions

# Entities & Geography

As governments are categorizing quantum technologies as ‘critical,’ regional specialization and commitment are on the rise across continents.

Our platform provides a comprehensive global perspective of the quantum landscape, able to filter data specific to geographies of interest down to the city level.

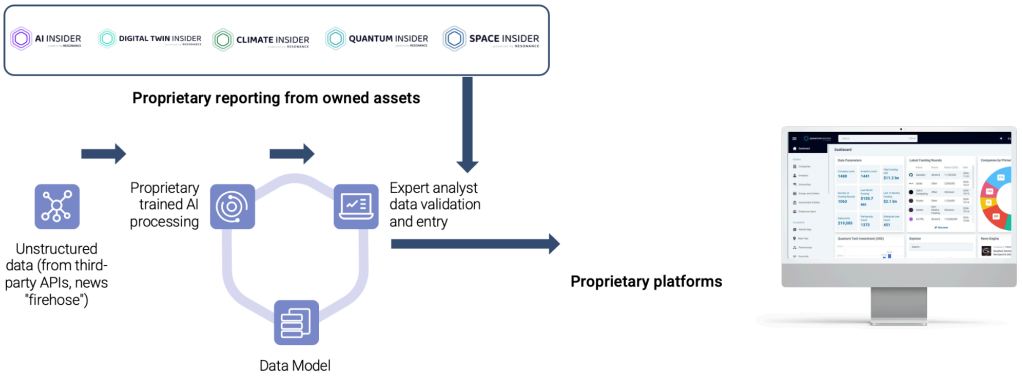
This enables you to identify specialization clusters, how partnerships, mergers and acquisitions evolve, and collaboration deals between nations.




Over 6,000 entities are being tracked in real time globally with more added every day.

1,480+ quantum technology companies (computing, security, sensing, etc.)
1,440+ investors involved in quantum technology fundraises
780+ funding rounds since 2002
960+ groups/centers involved in quantum technology research
580+ universities engaged in quantum technologies
180+ national labs and government agencies
450+ end users of quantum technology
40+ Consortias within the Americas, EMEA, and APAC
80+ Quantum Computing as a Service and Quantum Processing Unit Providers

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




Our proprietary platform consists of three stages to transform unstructured open source data into cleaned up intelligence that enables the dissemination of conclusions to aid decision-making across business and governments.

## Stage 1: Data collection

- The core of the intelligence platform is the live aggregation of open-source intelligence (OSINT in military parlance) into conveniently categorized data.
- Complementary to the OSINT data, Resonance owns independent media brands to supply a consistent flow of editorial information covering the relevant deep technology ecosystem, bringing critical nuance to the raw data.
- To further complement data credibility and fidelity, over 100,000 outlets as data entries from non-Resonance sources, deliver unstructured, unprocessed data.
- Additional 3rd party APIs are leveraged to enrich data inputs (e.g. media coverage data, patent data, and academic paper data).

## Stage 2: Data structuring

- Resonance has developed its own core software to turn large inputs of unstructured data into useful industry intelligence.
- The software is underpinned by Resonance's proprietary industry taxonomies which define how an ecosystem should be structured, understood and analyzed.
- Resonance leverages its proprietary AI to cut through thousands of data points to further structure and process the data.
- As a last step, Resonance experts and analysts consistently check for quality assurance throughout the intelligence platform.

## Stage 3: Data output

- This methodical process concludes in structured data that is presented in a modern and highly customizable multi-tenant SaaS platform.
- Access is provided as a subscription and is delivered through your browser.

# Use cases

*This section provides an overview of the types of use cases covered offered by the platform.*

## Competitive Intelligence

Access relevant comparative metrics across quantum companies to ensure your organization stays competitive.

## Due Diligence

Analyze rapidly emerging technologies with the latest and deepest information, supporting investment decisions and product development.

## Ecosystem Mapping

Gain a structured view of the quantum technology ecosystem, including academic institutions, national labs, and corporate end-users.

## Opportunity Scouting

Cover the entire value chain, from suppliers to end-users of quantum technology, and identify potential partnerships, acquisitions, and collaborations.

## Technological Growth Assessment

Evaluate the readiness levels of various quantum technologies with expert assessments on technology maturity and commercial viability to make decisions on investments, development and timing for market entry.

## Economic Development

Assist the formation and intelligence background of national policies, initiatives, regulations, incentives, and standards for quantum technologies for economic and infrastructure development.

# Worked Examples

*This section provides some practical worked examples of how our different customers use our platform.*

## 1. Develop your National Quantum Strategy

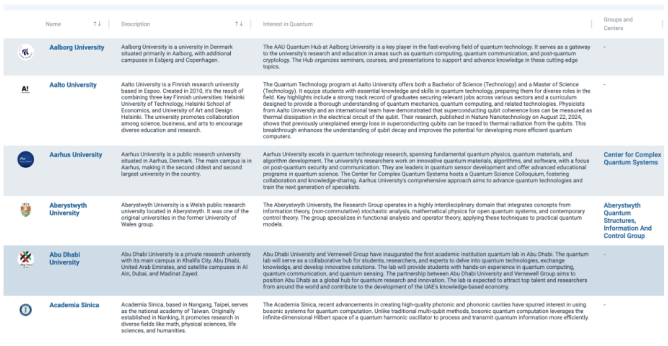

Access reports which give detailed analysis on all National Quantum Strategies (South Korea Shown as an Example)

| Companies | Primary Classification | Secondary Classification | Date | Investors | Lead Investor | Country |
|---|---|---|---|---|---|---|
| Vescent | Hardware Components | Lights and Lasers | 2024-03-07 | Corporate Fuel Advisors, Caruso Ventures | Corporate Fuel Advisors | United States |
| Maybell Quantum Industries | Hardware Components | Multiple Hardware Offerings | 2024-03-04 | Lavrock Ventures, Mark IV Capital, Cerberus Capital Management, Olive Capital, Decisive Point, IQT (In-Q-Tel), Caruso Ventures | Cerberus Capital Management | United States |
| Infleqtion | Quantum Computers | Neutral Atoms | 2024-02-20 | US Department of Energy | US Department of Energy | United States |
| qBraid | Software | Multiple Software Offerings | 2024-02-13 | Future Labs Capital | Future Labs Capital | United States |
| Rigetti Computing | Quantum Computers | Superconducting | 2024-02-05 | Small Business Research Initiative | Small Business Research Initiative | United States |
| Rigetti Computing | Quantum Computers | Superconducting | 2024-01-11 | | - | United States |
| SeeQC | Quantum Computers | Superconducting | 2024-01-09 | US Department of Energy | US Department of Energy | United States |
| Mesa Photonics | Hardware Components | Lights and Lasers | 2023-12-12 | US Department of Energy | US Department of Energy | United States |

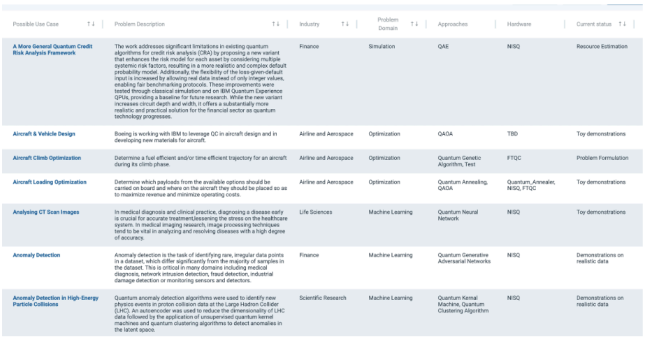
Access detailed funding insights from any geography (US shown as an example)

Our platform assists in developing national quantum strategies by providing in-depth insights into other nations' quantum strategies and their cross-border collaborations, available in the reports section. In addition, comprehensive private and public funding details filtered by geography with detailed network data of regional organizations can assist in policy development and funding commitments.

## 2. Identify partners for skilling and solutions



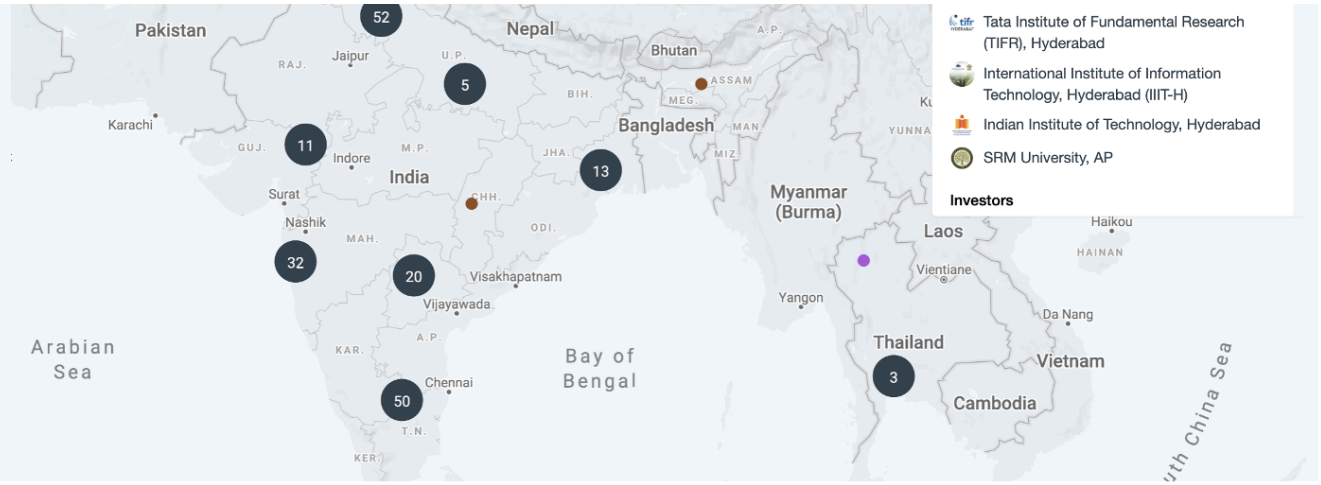

Comprehensive list of universities that can be filtered based on location, size and founding date.




Exploring diverse applications: A snapshot of various use cases showcased on our platform.

Our platform provides in-depth information on a nation's or region's universities and other academic institutions actively engaged in quantum research and vocational programs. This empowers users to identify suitable partners for skill development and research collaborations, or in assessments of new expansions. Additionally, to inform users of quantum technologies' potential, use cases are featured that can provide practical value.

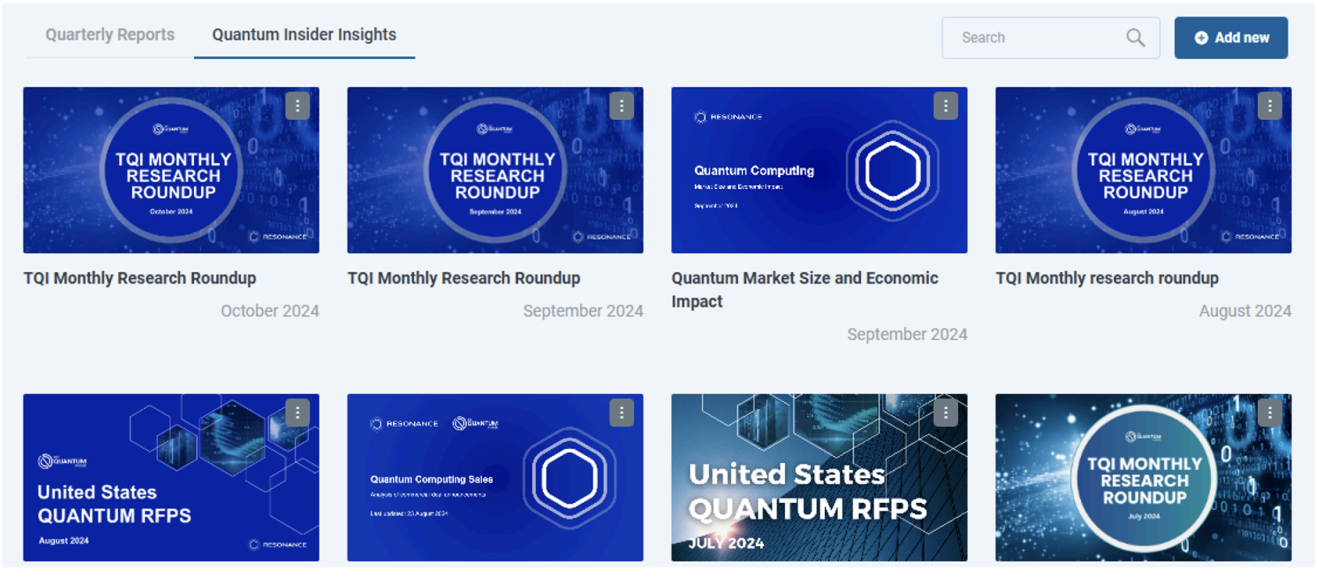
3. Obtain information about your country's quantum ecosystem




Get comprehensive understanding of any countries quantum ecosystem through our map view (India shown as an example)

Using our map view feature, users can get a complete understanding of a country's or region's quantum ecosystem through network visualization, forming intricate nodes and connections between startups, larger corporations, universities, government entities, investors, and more. This way, government institutions and policymakers can track the networks of their local quantum technology organizations to inform where incentives and programs benefit the most.

4. Access comprehensive reports to gain a deeper understanding of quantum technology

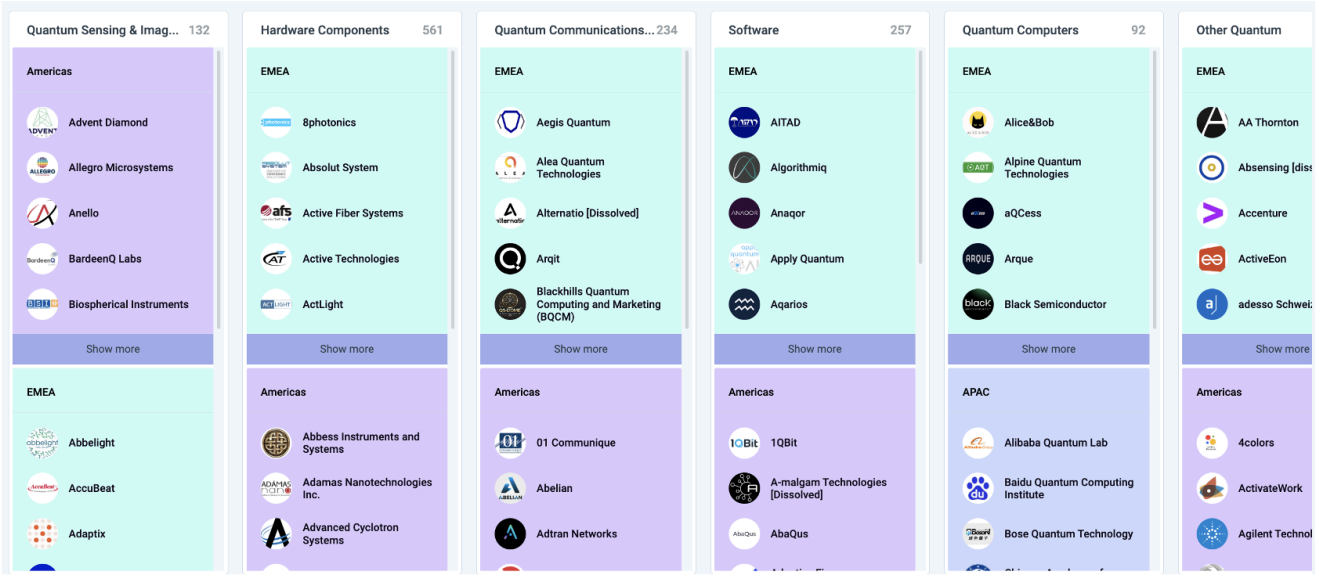



Comprehensive reports on happenings in quantum technology

We regularly publish commercial news in the quantum computing industry and monthly research roundups that also provide in-depth reports on vendor sales, quantum security, and more. The reports illustrate how our platform's data can be disseminated into insights, while providing unique details on leading themes in quantum technologies for our users.

# Investors

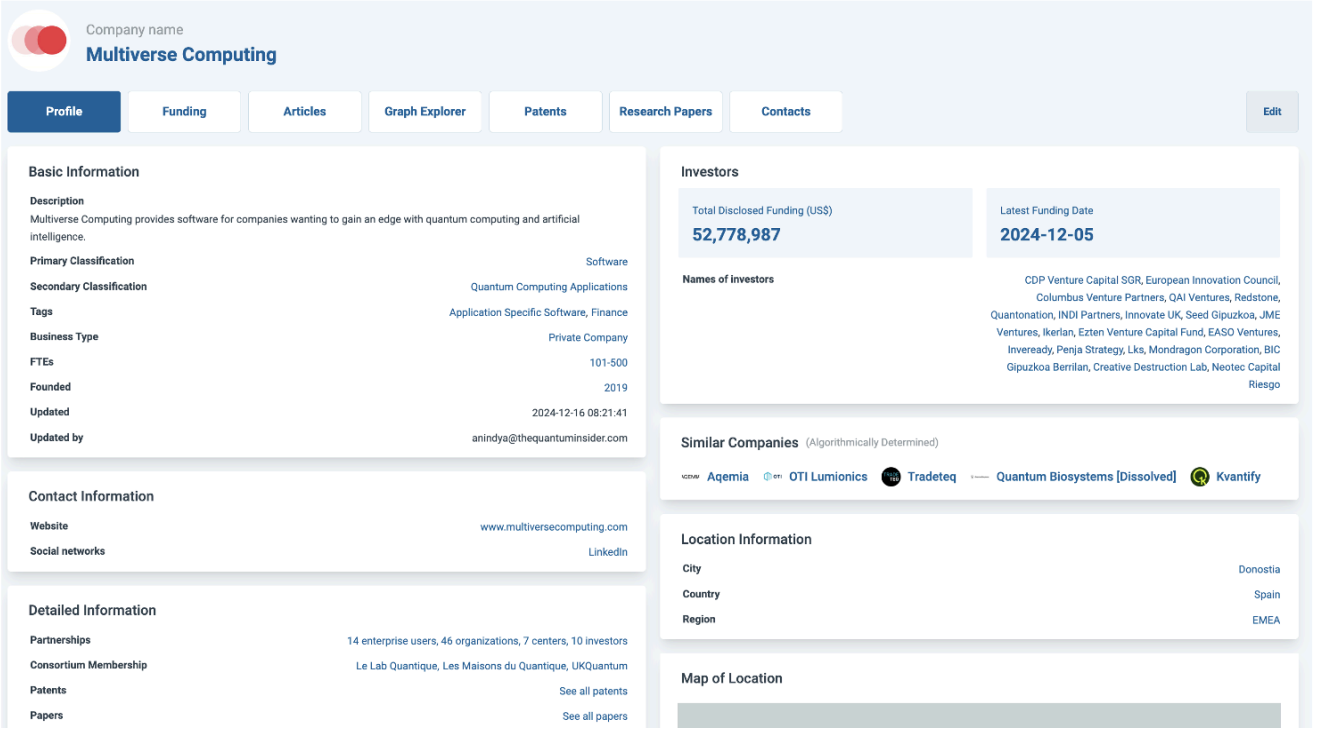
1. Discover potential investment opportunities



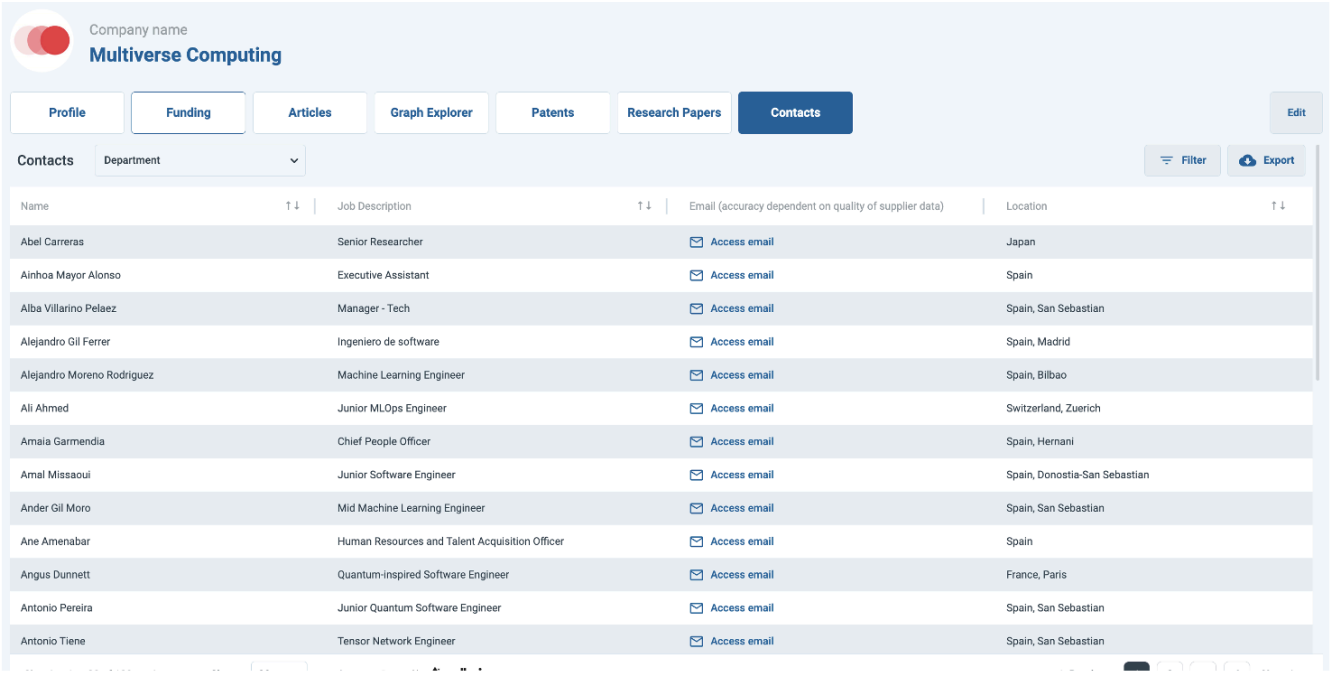

Snapshot of Quantum Startups Across Various Fields from Our Platform

The intelligence platform provides comprehensive and up-to-date company information spanning quantum domains across the globe. This empowers users to discover transformative quantum ventures in their early stages, offering valuable investment opportunities.

2. Perform due diligence on companies of interest




Company Profile gives in depth insights into each company (Multiverse Computing shown as an example)




| Name | Job Description | Email (accuracy dependent on quality of supplier data) | Location |
|---|---|---|---|
| Abel Carreras | Senior Researcher | Access email | Japan |
| Ainhoa Mayor Alonso | Executive Assistant | Access email | Spain |
| Alba Villarino Pelaez | Manager - Tech | Access email | Spain, San Sebastian |
| Alejandro Gil Ferrer | Ingeniero de software | Access email | Spain, Madrid |
| Alejandro Moreno Rodriguez | Machine Learning Engineer | Access email | Spain, Bilbao |
| Ali Ahmed | Junior MLOps Engineer | Access email | Switzerland, Zuerich |
| Amaia Garmendia | Chief People Officer | Access email | Spain, Hernani |
| Amal Missaoui | Junior Software Engineer | Access email | Spain, Donostia-San Sebastian |
| Ander Gil Moro | Mid Machine Learning Engineer | Access email | Spain, San Sebastian |
| Ane Amenabar | Human Resources and Talent Acquisition Officer | Access email | Spain |
| Angus Dunnett | Quantum-inspired Software Engineer | Access email | France, Paris |
| Antonio Pereira | Junior Quantum Software Engineer | Access email | Spain, San Sebastian |
| Antonio Tiene | Tensor Network Engineer | Access email | Spain, San Sebastian |

Our newly launched contact feature helps you get relevant personnel contact information which can be filtered by departments.

We offer in-depth information about each company. This includes essential details such as basic company information, technological specifications, contact details, funding data, patents filed, and relevant articles.

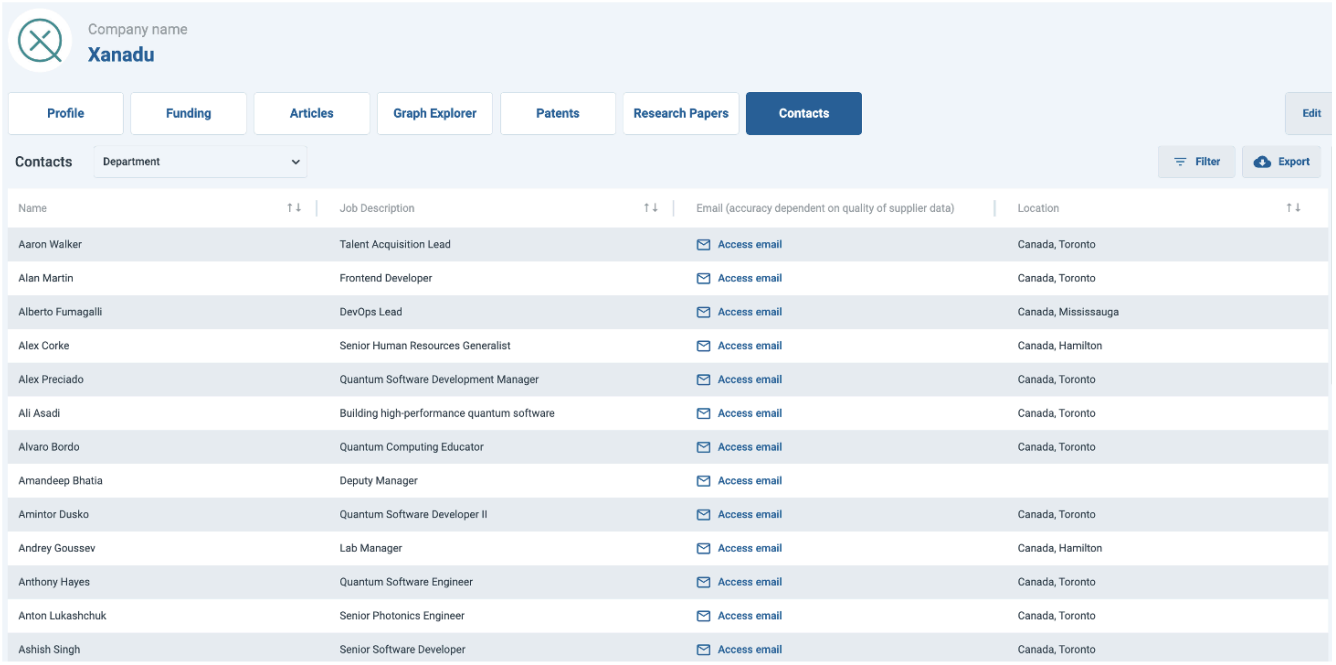
3. Find universities with notable quantum research activity to scout early spin offs

| Name | Description | Interest in Quantum | Groups and Centers |
|---|---|---|---|
| Aalborg University | Aalborg University is a university in Denmark situated primarily in Aalborg, with additional campuses in Esbjerg and Copenhagen. | The AAU Quantum Hub at Aalborg University is a key player in the fast-evolving field of quantum technology. It serves as a gateway to the university's research and education in areas such as quantum computing, quantum communication, and post-quantum cryptology. The Hub organizes seminars, courses, and presentations to support and advance knowledge in these cutting-edge topics. | - |
| Aalto University | Aalto University is a Finnish research university based in Espoo. Created in 2010, it's the result of combining three key Finnish universities: Helsinki University of Technology, Helsinki School of Economics, and University of Art and Design Helsinki. The university promotes collaboration among science, business, and arts to encourage diverse education and research. | The Quantum Technology program at Aalto University offers both a Bachelor of Science (Technology) and a Master of Science (Technology). It equips students with essential knowledge and skills in quantum technology, preparing them for diverse roles in the field. Key highlights include a strong track record of graduates securing relevant jobs across various sectors and a curriculum designed to provide a thorough understanding of quantum mechanics, quantum computing, and related technologies. Physicists from Aalto University and an international team have demonstrated that superconducting qubit coherence loss can be measured as thermal dissipation in the electrical circuit of the qubit. Their research, published in Nature Nanotechnology on August 22, 2024, shows that previously unexplained energy loss in superconducting qubits can be traced to thermal radiation from the qubits. This breakthrough enhances the understanding of qubit decay and improves the potential for developing more efficient quantum computers. | - |
| Aarhus University | Aarhus University is a public research university situated in Aarhus, Denmark. The main campus is in Aarhus, making it the second oldest and second largest university in the country. | Aarhus University excels in quantum technology research, spanning fundamental quantum physics, quantum materials, and algorithm development. The university's researchers work on innovative quantum materials, algorithms, and software, with a focus on post-quantum security and communication. They are leaders in quantum sensor development and offer advanced educational programs in quantum science. The Center for Complex Quantum Systems hosts a Quantum Science Colloquium, fostering collaboration and knowledge-sharing. Aarhus University's comprehensive approach aims to advance quantum technologies and train the next generation of specialists. | Center for Complex Quantum Systems |
| Aberystwyth University | Aberystwyth University is a Welsh public research university located in Aberystwyth. It was one of the original universities in the former University of Wales group. | The Aberystwyth University, the Research Group operates in a highly interdisciplinary domain that integrates concepts from information theory, (non-commutative) stochastic analysis, mathematical physics for open quantum systems, and contemporary control theory. The group specializes in functional analysis and operator theory, applying these techniques to practical quantum models. | Aberystwyth Quantum Structures, Information And Control Group |
| Abu Dhabi University | Abu Dhabi University is a private research university with its main campus in Khalifa City, Abu Dhabi, United Arab Emirates, and satellite campuses in Al Ain, Dubai, and Madinat Zayed. | Abu Dhabi University and Vernewell Group have inaugurated the first academic institution quantum lab in Abu Dhabi. The quantum lab will serve as a collaborative hub for students, researchers, and experts to delve into quantum technologies, exchange knowledge, and develop innovative solutions. The lab will provide students with hands-on experience in quantum computing, quantum communication, and quantum sensing. The partnership between Abu Dhabi University and Vernewell Group aims to position Abu Dhabi as a global hub for quantum research and innovation. The lab is expected to attract top talent and researchers from around the world and contribute to the development of the UAE's knowledge-based economy. | - |
| Academia Sinica | Academia Sinica, based in Nangang, Taipei, serves as the national academy of Taiwan. Originally established in Nanking, it promotes research in diverse fields like math, physical sciences, life sciences, and humanities. | The Academia Sinica, recent advancements in creating high-quality photonic and phononic cavities have spurred interest in using bosonic systems for quantum computation. Unlike traditional multi-qubit methods, bosonic quantum computation leverages the infinite-dimensional Hilbert space of a quantum harmonic oscillator to process and transmit quantum information more efficiently. | - |

List of universities which are a part of the quantum ecosystem.

Our platform provides detailed insights into universities with active quantum research programs, enabling investors to identify potential early spin-offs as opportunities, or new competitive entrants.

4. Find contacts through our quantum expert network

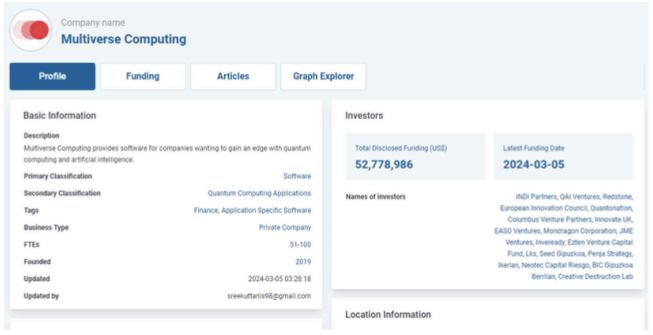



Comprehensive Contact Details: An insight into company's (Xanadu taken as an example) team structure.

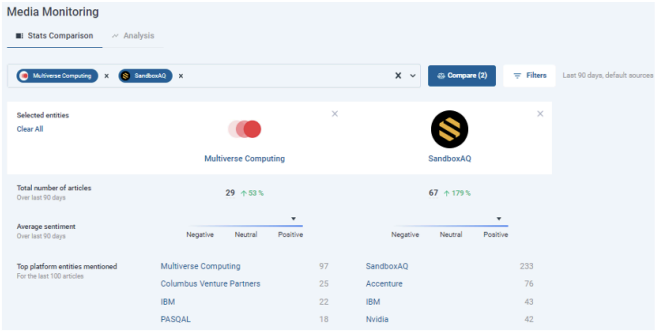
Our platform provides an easy list of quantum individuals in key roles, enabling partnerships, collaborations, investments, or primary research.

# Quantum Company

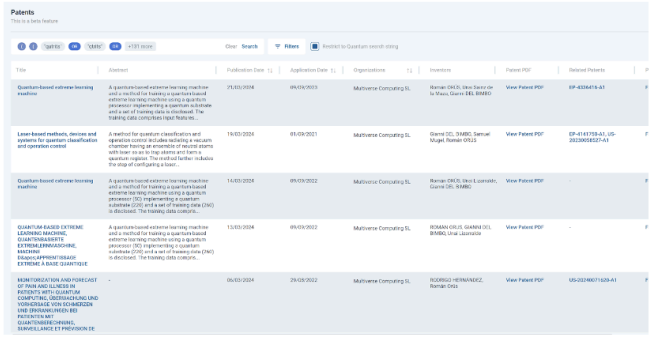
1. Gather Competitive intelligence




Company Profile gives in depth insights into each company (Multiverse Computing shown as an example)




Comparison of media coverage between Multiverse Computing and SandboxAQ using our Media Monitoring Tool.

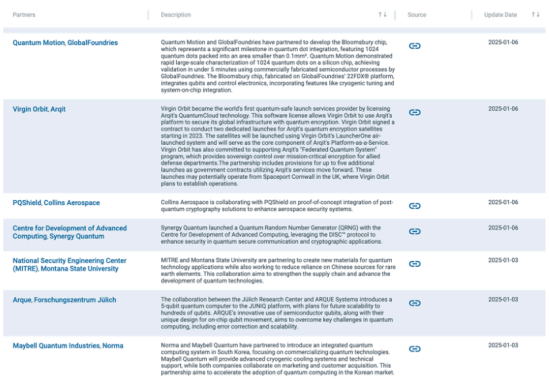



List of patents along with relevant information

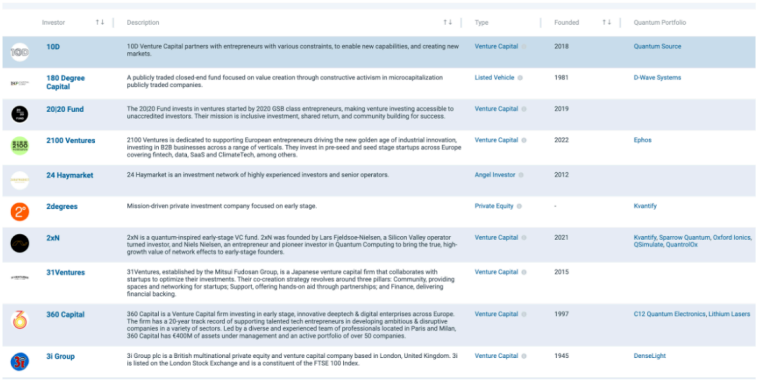

In depth Analysis of patent publication from our platform

Our platform offers in-depth information about each quantum organization, such as basic company information, technological specifications, contact information, funding data, patents filed, and relevant articles. Our unique media monitoring tools further helps our users to gain an overview of media coverage and sentiment, proving to be a great tool to track PR.

2. Identify potential partners or investors




Partnerships between different groups (research institutions, and industries) can be easily tracked on our platform




Showing the various types of investors involved in the quantum field, indicating the wide interest and support in the industry

Our platform offers comprehensive investor information with basic details, portfolio, and funding rounds. Additionally, the partnerships page assists users in discovering potential partners for collaborations, enabling networking opportunities.

3. Stay informed about every country's government funding

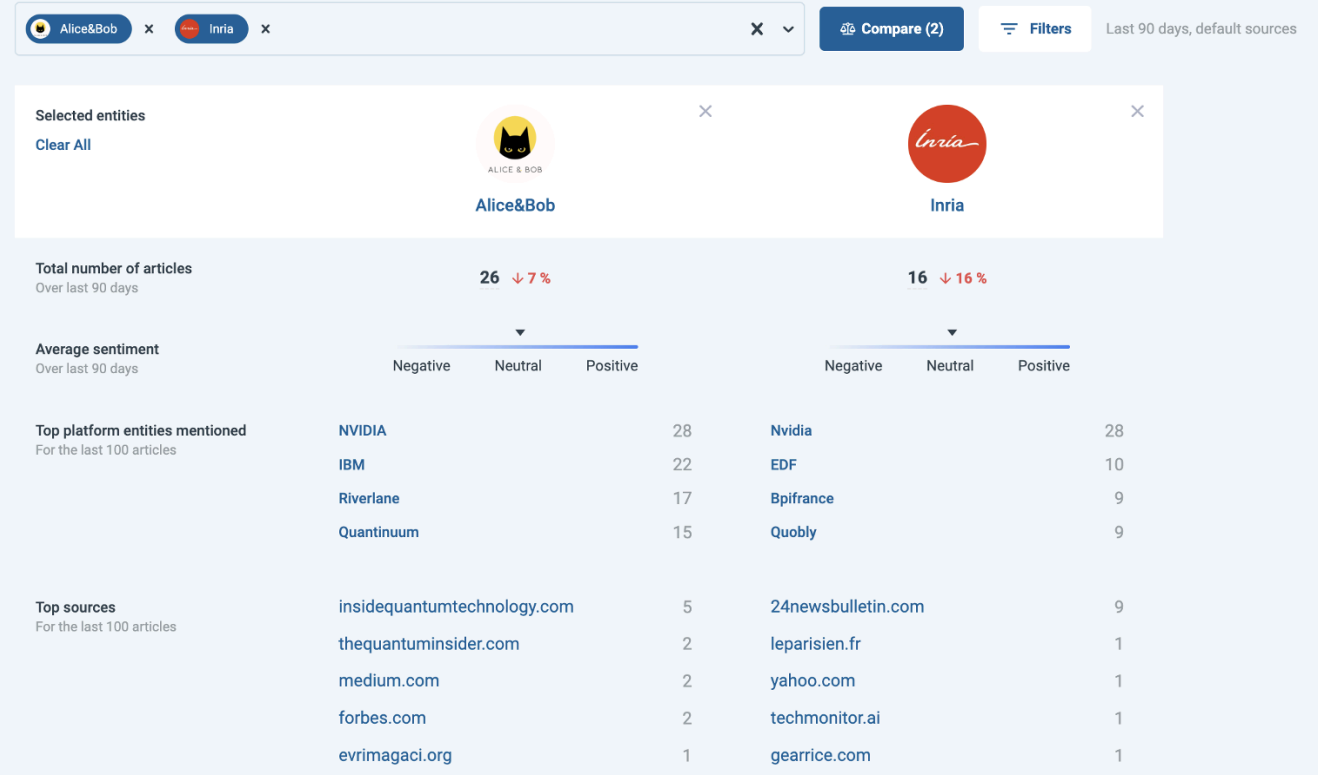
**Quantum Initiative Funding by Country | USD Millions**

| Country/Region | Funding USD | National Strategy |
|---|---|---|
| Australia | 228.6m | Australia National Quantum Strategy |
| Austria | 162.0m | Austrian Quantum Technology Initiative |
| Canada | 1.0bn | Canada's National Quantum Strategy |
| China | 15.0bn | Treated as a strategic industry in China's Five Year Plans |
| Denmark | 604.0m | Quantum Computing Programme |

Global Quantum Funding Insights: Tracking National Investments and Strategic Initiatives

Our platform provides details about the quantum initiatives through national quantum strategies and funding commitments, highlighting each nation's strategic focus in quantum technology. It helps companies identify regions with government support and align their efforts with national priorities.

4. Gain insights into media sentiment to assess perception and boost competitiveness




Snapshot of Media Sentiment Analysis which gives insights into quantum companies' perception.

Our platform offers detailed media coverage insights and sentiment analysis tailored for quantum companies. It provides a comprehensive understanding of public and media perceptions. By

comparing media coverage with competitors, organizations gain valuable insights into their own media presence, enabling them to maintain a competitive edge in the industry.

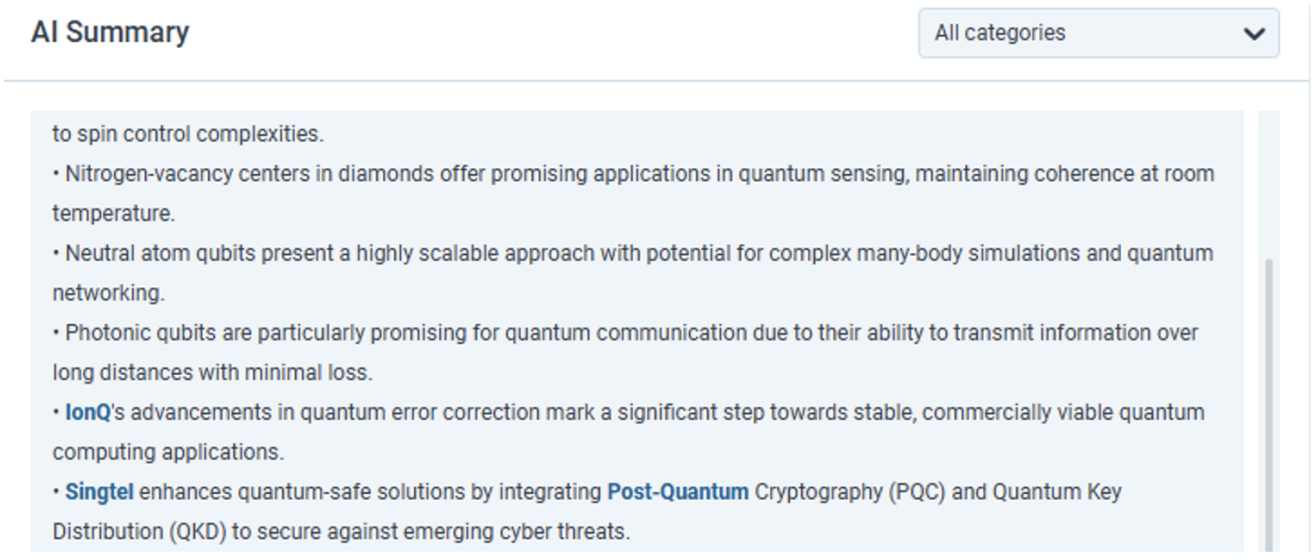
5. Discover a list of Government Opportunities

| Title | Description | Agency | Sub Agency | Updated Date | Posted Date |
|---|---|---|---|---|---|
| Purchase FARO® 3.5-meter Three-Dimensional (3-D) Measuring Arm, FAROBlu xP Laser Line Probe, PolyWorks Inspector™ Premium + Modeler™ Premium Software Package and Training, and Related Accessories | This is a combined synopsis/solicitation for commercial items prepared in accordance with (IAW) the format in Federal Acquisition Regulation (FAR) subpart 12.6 and part 13 as supplemented with additional information included in this notice.... | HOMELAND SECURITY, DEPARTMENT OF | U.S. COAST GUARD | 2025-01-02 | 2025-01-02 |
| Future Program Announcement: Robust Quantum Sensors (RoQS) | The purpose of this Special Notice (SN) is to provide public notification of additional research areas of interest to the Defense Advanced Research Projects Agency (DARPA) Microsystems Technology Office (MTO), specifically for the contemplated forthc... | DEPT OF DEFENSE | DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (DARPA) | 2024-12-23 | 2024-12-23 |
| USAFA Dilution Refrigerator Source Sought | SOURCES SOUGHT: THIS IS NOT A NOTICE OF REQUEST FOR QUOTATION BUT INFORMATION AND PLANNING PURPOSES ONLY! This notice does not constitute a commitment by the Government. All information submitted in response to this announcement is voluntary and t... | DEPT OF DEFENSE | DEPT OF THE AIR FORCE | 2025-01-08 | 2024-12-20 |
| Advanced Computing Branch Subject Matter Expert (SME) Support | The Department of Homeland Security (DHS) Science Technology Directorate (ST), Office of Science and Engineering (OSE), Technology Centers Division (TCD) are conducting market research to identify key personnel to provide SME support in... | HOMELAND SECURITY, DEPARTMENT OF | OFFICE OF PROCUREMENT OPERATIONS | 2024-12-19 | 2024-12-19 |
| Notice of Intent to Sole Source: Vertical Screw Compressor | THIS IS A NOTICE OF INTENT TO AWARD A SOLE SOURCE CONTRACT AND IS NOT A REQUEST FOR COMPETITIVE QUOTES. Rotary Screw Compressor The National Aeronautics and Space Administration (NASA), Glenn Research Center (GRC) has a requirement... | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION | 2024-12-17 | 2024-12-17 |
| Graduate Research, Education and Technology (GREAT) Support | The purpose of this Amendment 6 is to correct time zone errors in Amendment 5. Offerors must be registered in ASSIST and notify the Contracting Officer via email by 30 Dec 2024 at 12:30 CST in order to facilitate submission of their proposal... | GENERAL SERVICES ADMINISTRATION | FEDERAL ACQUISITION SERVICE | 2024-12-30 | 2024-11-27 |
| Low Profile Mast (LPM) Type 20 & Type 24 – Sources Sought | THIS IS A SOURCES SOUGHT NOTICE ONLY. THIS IS NOT A REQUEST FOR PROPOSALS. THIS SOURCES SOUGHT NOTICE IS PUBLISHED FOR MARKET RESEARCH PURPOSES ONLY. THE GOVERNMENT IS NOT SEEKING OR ACCEPTING UNSOLICITED PROPOSALS. This Sources S... | DEPT OF DEFENSE | DEPT OF THE NAVY | 2024-12-12 | 2024-11-25 |

Table showcasing government opportunities for quantum companies to engage in funded projects.

Our platform provides a list of all the government opportunities that could help quantum companies enhance their reputation and business development by working on government-backed projects.

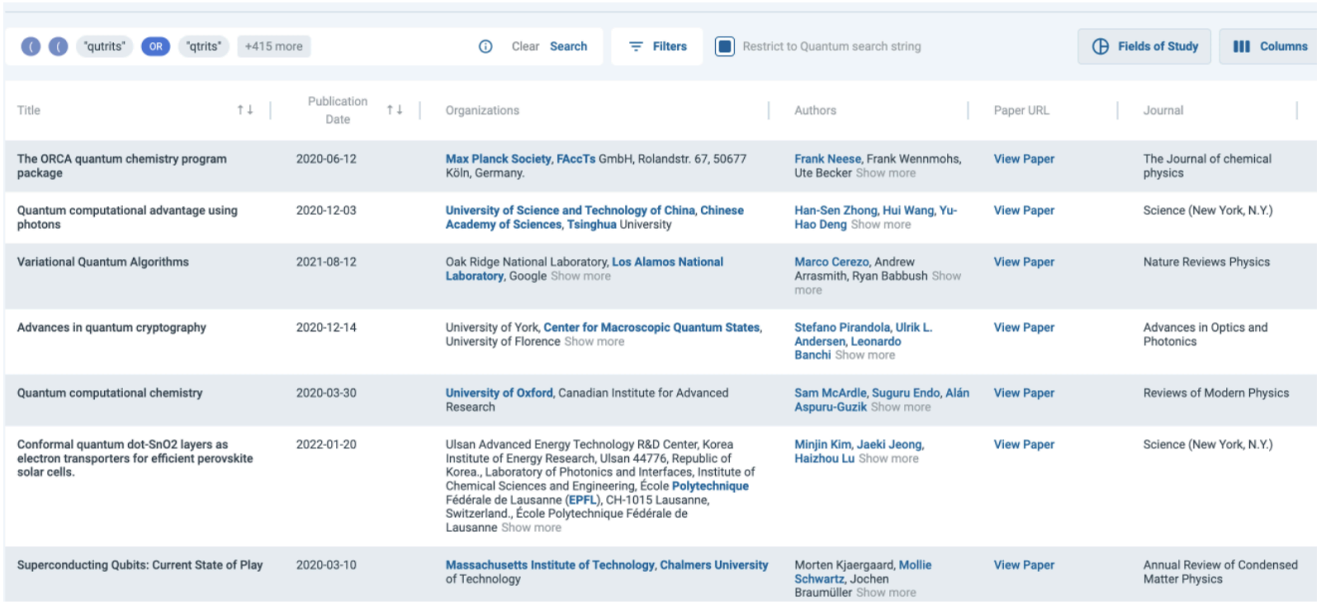
6. Stay up to date with AI-driven news summary




AI driven news for concise and professional summaries.

The platform delivers AI-driven summaries, including technical, grant, market, patent, and financial news. This service makes it easier for companies to stay informed on key developments without spending hours on news consumption. By filtering and distilling relevant information, the platform saves time and ensures that critical insights are never missed.

7. Gather R&D Analysis




| Title | Publication Date | Organizations | Authors | Paper URL | Journal |
|---|---|---|---|---|---|
| The ORCA quantum chemistry program package | 2020-06-12 | Max Planck Society, FAccTs GmbH, Rolandstr. 67, 50677 Köln, Germany. | Frank Neese, Frank Wennmohs, Ute Becker Show more | View Paper | The Journal of chemical physics |
| Quantum computational advantage using photons | 2020-12-03 | University of Science and Technology of China, Chinese Academy of Sciences, Tsinghua University | Han-Sen Zhong, Hui Wang, Yu-Hao Deng Show more | View Paper | Science (New York, N.Y.) |
| Variational Quantum Algorithms | 2021-08-12 | Oak Ridge National Laboratory, Los Alamos National Laboratory, Google Show more | Marco Cerezo, Andrew Arrasmith, Ryan Babbush Show more | View Paper | Nature Reviews Physics |
| Advances in quantum cryptography | 2020-12-14 | University of York, Center for Macroscopic Quantum States, University of Florence Show more | Stefano Pirandola, Ulrik L. Andersen, Leonardo Banchi Show more | View Paper | Advances in Optics and Photonics |
| Quantum computational chemistry | 2020-03-30 | University of Oxford, Canadian Institute for Advanced Research | Sam McArdle, Suguru Endo, Alán Aspuru-Guzik Show more | View Paper | Reviews of Modern Physics |
| Conformal quantum dot-SnO2 layers as electron transporters for efficient perovskite solar cells. | 2022-01-20 | Ulsan Advanced Energy Technology R&D Center, Korea Institute of Energy Research, Ulsan 44776, Republic of Korea., Laboratory of Photonics and Interfaces, Institute of Chemical Sciences and Engineering, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland., École Polytechnique Fédérale de Lausanne Show more | Minjin Kim, Jaeki Jeong, Haizhou Lu Show more | View Paper | Science (New York, N.Y.) |
| Superconducting Qubits: Current State of Play | 2020-03-10 | Massachusetts Institute of Technology, Chalmers University of Technology | Morten Kjaergaard, Mollie Schwartz, Jochen Braumüller Show more | View Paper | Annual Review of Condensed Matter Physics |

Snapshot of the research papers across various fields of quantum technology

| Title | Abstract | Publication Date | Application Date | Organizations | Inventors | Patent PDF |
|---|---|---|---|---|---|---|
| PHASE-MODE BIT-ADDRESSABLE SENSING REGISTER | Shift register elements of a phase-mode bit-addressable sensing register sample varied AC or DC bias values provided to operational RQL circuitry on the RQL IC via clock resonators or DC bias lines. The shift register can be constructed of phase-mode... | 08/01/2025 | 31/03/2023 | Northrop Grumman Corp | ALEXANDER LOUIS BRAUN, MAX E. NIELSEN, DANIEL GEORGE DOSCH, KURT PLEIM, HAITAO O. DAI, CHARLES RYAN WALLACE | View Patent PDF |
| METHODS AND SYSTEMS FOR STUDYING MOLECULE AND PROPERTIES THEREOF | Provided herein is a method for studying molecule and properties thereof, the method comprising: a) obtaining a request comprising an indication of at least one property of a molecule and a corresponding task; b) performing inference on at least one... | 08/01/2025 | 27/02/2023 | Good Chemistry Inc | TAKESHI YAMAZAKI, Kevin RYCZKO, ARMAN ZARIBAFIYAN, NIMA ALIDOUST | View Patent PDF |
| CRYPTOGRAPHIC KEY AND RANDOM NUMBER GENERATION BASED ON QUANTUM SYSTEMS | An apparatus is provided for generating certified random numbers usable as data keys, for example postquantum cryptographic keys, wherein the apparatus is a self-contained hardware unit configured to operate at room temperature. The apparatus include... | 08/01/2025 | 09/03/2023 | Quantinuum Ltd | Henry SEMENENKO, Nicholas KAY, Mafalda, Ludovina ALMEIDA, Hye, Jung JEE, Matthew HOBAN, Florian CURCHOD, Sherilyn WRIGHT, Cameron FOREMAN, Yui, Chi, Richie YEUNG, ELIZABETH LEE, Stefano PIRONIO, Cameron OKOTH, Kevin MILNER, Maria, Laia, Gines BARTOLOME | View Patent PDF |
| COMPOSITIONS AND METHODS FOR CROSSING BLOOD BRAIN BARRIER | Disclosed herein include novel blood-brain barrier (BBB)-crossing receptors on the BBB interface, targeting peptides and derivatives thereof capable of binding to the novel receptors, and related methods of using the receptors to increase the permeab... | 08/01/2025 | 02/03/2023 | California Institute of Technology | Timothy F. SHAY, VIVIANA GRADINARU, Xiaozhe DING | View Patent PDF |

Snapshot of patents across various fields of quantum technology

Our platform provides a list of research papers and patents per organization to stay informed about emerging trends and competitive factors, while enabling users to foster innovation and safeguard strategies.

# Enterprise

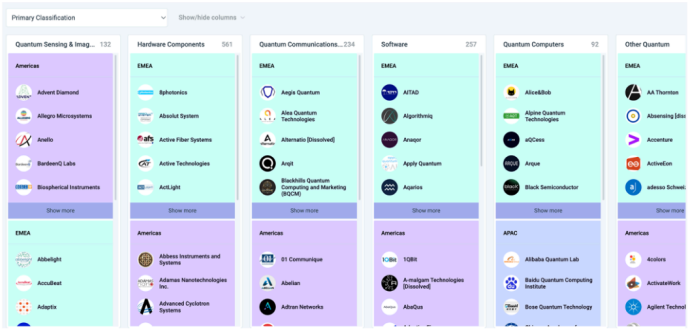
1. Find partners to implement quantum solutions

| Company | Description | Primary Classification | Secondary Classification | Total Funding (USD) | Region | Founded |
|---|---|---|---|---|---|---|
| 01 Communique | 01 Communique operates in the zero-trust remote access software market and has launched IronCAP, a quantum-safe encryption solution. | Quantum Communications & Security | Post Quantum Cryptography | Unknown | Americas | 1992 |
| 1QBit | 1QBit develops and sells hardware-agnostic quantum software tools. | Software | Multiple Software Offerings | 39,099,796 | Americas | 2012 |
| 4colors | They are an R&D consulting company specializing in data, algorithms, and optimization. We leverage mathematical and computational techniques to help businesses and organizations solve complex problems. | Other Quantum | Consultancy | Unknown | Americas | 2016 |
| 8photonics | 8photonics specializes in manufacturing modular fiber and free-space optics prototyping systems. | Hardware Components | Lights and Lasers | 22,592 | EMEA | 2020 |
| A*Quantum | A*Quantum specializes in the development of quantum software solutions compatible with both annealers, including digital annealers from Fujitsu, and gate-based quantum computers from IBM. | Software | Quantum Computing Applications | 2,863,800 | APAC | 2018 |
| A-malgam Technologies [Dissolved] | The company is known to be the power behind MOOVIN.IO, and Shorebird.io, and is a blockchain company specializing in asset managment, data logging and analyzing in mobility. | Software | Quantum Computing Applications | 200,000 | Americas | 2016 |
| AA Thornton | AA Thornton is a firm of Intellectual Property (IP) professionals, including UK Chartered Patent Attorneys, Registered UK and European Trade Mark Attorneys and IP Solicitors, based in London and Alicante. | Other Quantum | Private Research Company | Unknown | EMEA | 1911 |

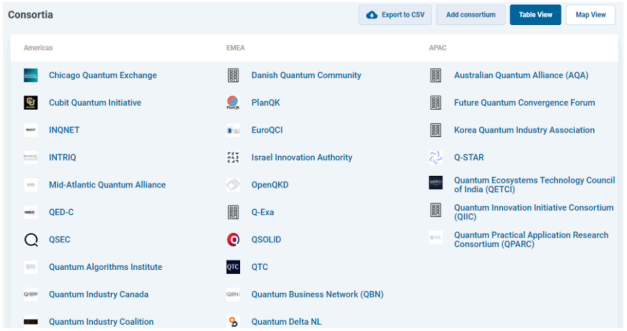
Snapshot of Quantum Companies Across Various Fields

With our platform, users gain valuable insights into all available quantum processors, the services and deployment models offered, and a range of practical use cases identified with each quantum technology organization. This comprehensive information empowers users to make informed decisions and select suitable partners for implementing their quantum solutions effectively.

2. Identify relevant stakeholders and consortia to collaborate with



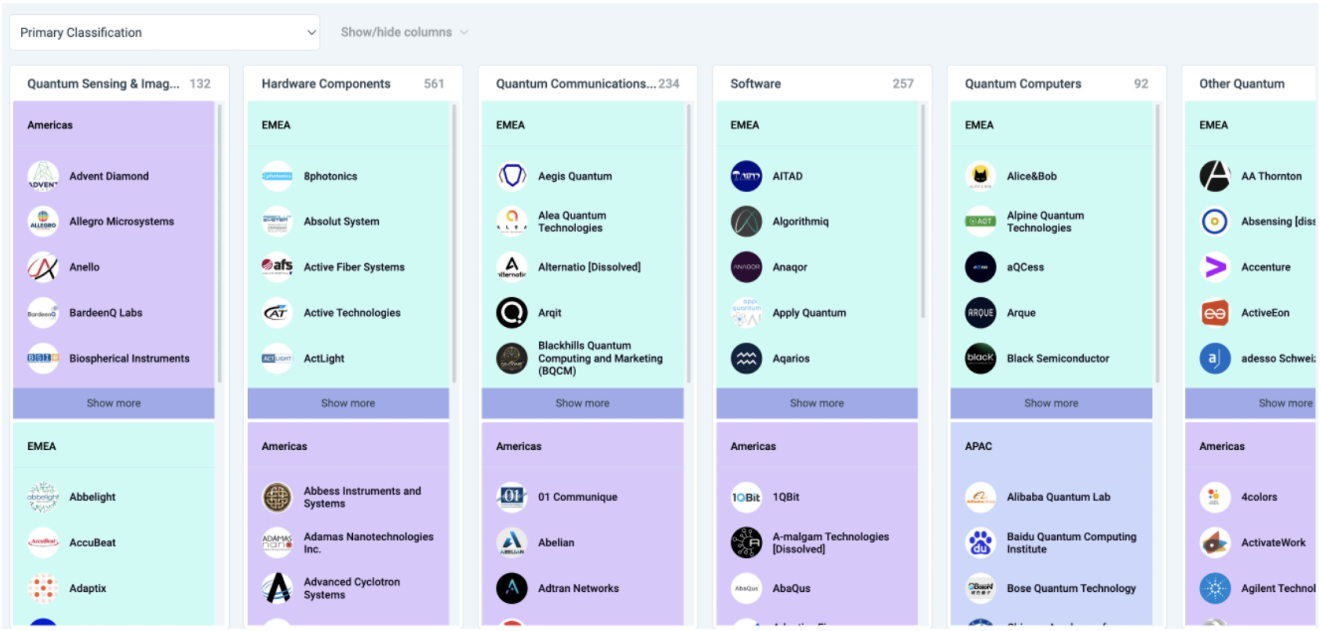
Snapshot of Market Map Tool: This tool shows all the companies, investors, and users around the world, sorted into different groups.




Snapshot of consortiums from different countries and regions around the world.

Users can easily identify relevant stakeholders ranging from universities to startups, collaborative efforts in research, skill development, and more. Our extensive consortia page showcases various quantum technology consortia worldwide, providing a convenient resource for users seeking to connect with consortiums.

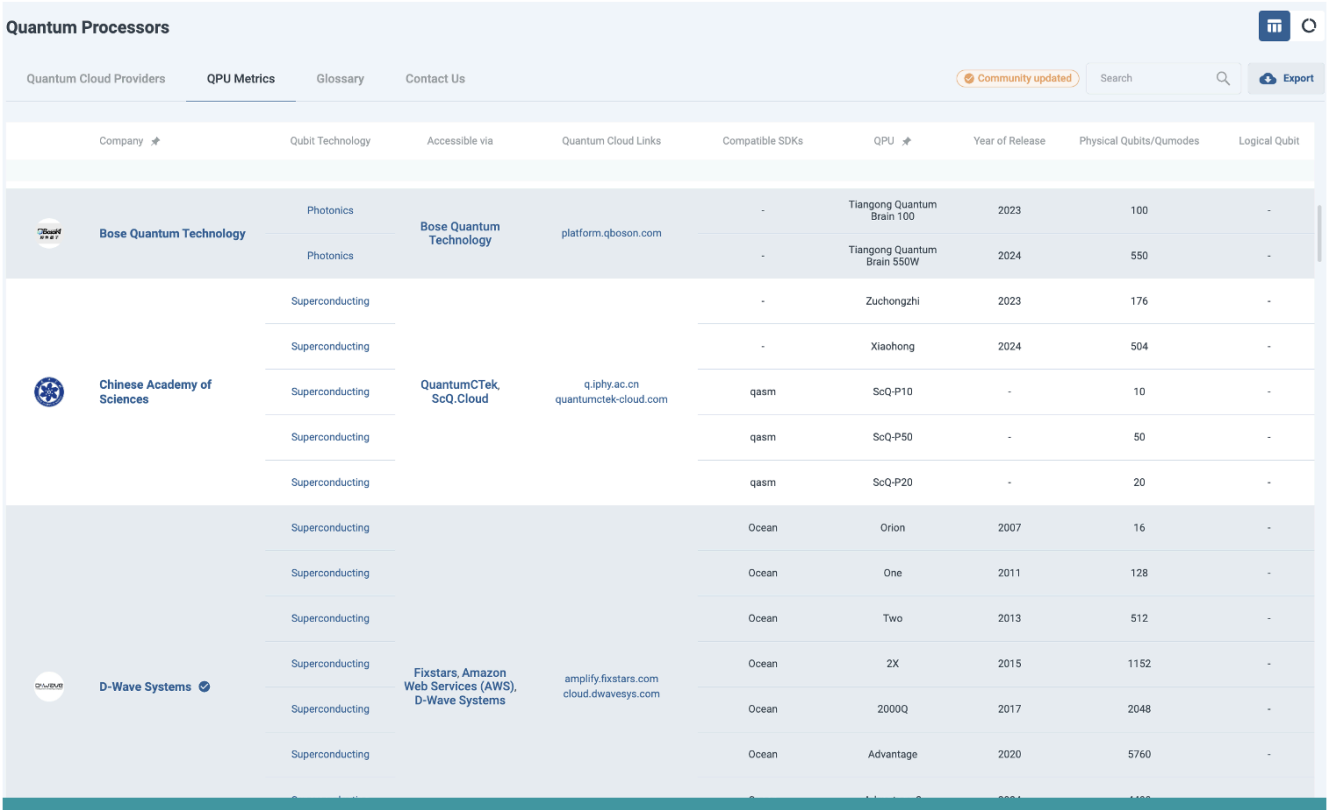
3. Find companies for strategic investments




Snapshot of Quantum Startups Across Various Fields from Our Platform

Our platform provides comprehensive and updated company information spanning quantum technology domains across the globe. This empowers users to discover disruptive quantum ventures in their early stages, offering valuable investment opportunities and competitive information.

4. Identify Quantum Processing Units (QPUs) available for deployment




| Company | Qubit Technology | Accessible via | Quantum Cloud Links | Compatible SDKs | QPU | Year of Release | Physical Qubits/Qumodes | Logical Qubit |
|---|---|---|---|---|---|---|---|---|
| Bose Quantum Technology | Photonics | Bose Quantum Technology | platform.qboson.com | - | Tiangong Quantum Brain 100 | 2023 | 100 | - |
| | Photonics | | | - | Tiangong Quantum Brain 550W | 2024 | 550 | - |
| Chinese Academy of Sciences | Superconducting | QuantumCTek, ScQ.Cloud | q.iphy.ac.cn quantumctek-cloud.com | - | Zuchongzhi | 2023 | 176 | - |
| | Superconducting | | | - | Xiaohong | 2024 | 504 | - |
| | Superconducting | | | qasm | ScQ-P10 | - | 10 | - |
| | Superconducting | | | qasm | ScQ-P50 | - | 50 | - |
| | Superconducting | | | qasm | ScQ-P20 | - | 20 | - |
| D-Wave Systems | Superconducting | Fixstars, Amazon Web Services (AWS), D-Wave Systems | amplify.fixstars.com cloud.dwavesys.com | Ocean | Orion | 2007 | 16 | - |
| | Superconducting | | | Ocean | One | 2011 | 128 | - |
| | Superconducting | | | Ocean | Two | 2013 | 512 | - |
| | Superconducting | | | Ocean | 2X | 2015 | 1152 | - |
| | Superconducting | | | Ocean | 2000Q | 2017 | 2048 | - |
| | Superconducting | | | Ocean | Advantage | 2020 | 5760 | - |

Snapshot of QPUs with key metrics that can be used for deployment for specific applications.

The Quantum Insider platform provides a list of all the available QPUs alongside essential metrics like qubit technology, cloud accessibility, and compatibility with development tools. This enables enterprise users to identify the most suitable QPUs for their specific application domains, streamline integration with existing workflows, and take investment decisions in emerging quantum technology.

5. Identify the appropriate use cases in order to develop effective Quantum Computing solutions

| Possible Use Case | Problem Description | Industry | Problem Domain | Approaches | Hardware | Current status |
|---|---|---|---|---|---|---|
| **A More General Quantum Credit Risk Analysis Framework** | The work addresses significant limitations in existing quantum algorithms for credit risk analysis (CRA) by proposing a new variant that enhances the risk model for each asset by considering multiple systemic risk factors, resulting in a more realistic and complex default probability model. Additionally, the flexibility of the loss-given-default input is increased by allowing real data instead of only integer values, enabling fair benchmarking protocols. These improvements were tested through classical simulation and on IBM Quantum Experience QPUs, providing a baseline for future research. While the new variant increases circuit depth and width, it offers a substantially more realistic and practical solution for the financial sector as quantum technology progresses. | Finance | Simulation | QAE | NISQ | Resource Estimation |
| **Aircraft & Vehicle Design** | Boeing is working with IBM to leverage QC in aircraft design and in developing new materials for aircraft. | Airline and Aerospace | Optimization | QAOA | TBD | Toy demonstrations |
| **Aircraft Climb Optimization** | Determine a fuel efficient and/or time efficient trajectory for an aircraft during its climb phase. | Airline and Aerospace | Optimization | Quantum Genetic Algorithm, Test | FTQC | Problem Formulation |
| **Aircraft Loading Optimization** | Determine which payloads from the available options should be carried on board and where on the aircraft they should be placed so as to maximize revenue and minimize operating costs. | Airline and Aerospace | Optimization | Quantum Annealing, QAOA | Quantum_Annealer, NISQ, FTQC | Toy demonstrations |
| **Analysing CT Scan Images** | In medical diagnosis and clinical practice, diagnosing a disease early is crucial for accurate treatment,lessening the stress on the healthcare system. In medical imaging research, image processing techniques tend to be vital in analyzing and resolving diseases with a high degree of accuracy. | Life Sciences | Machine Learning | Quantum Neural Network | NISQ | Toy demonstrations |

A snapshot of use cases that helps explore the potential of quantum computing applications and develop solutions.

Our platform provides a list of all major quantum computing use cases that addresses high-impact problems in finance, aerospace, healthcare, and other fields, ensuring that the resources are directed towards tangible benefits.

# Case studies

*Example case studies from our customers*

**National Quantum Strategy for the Department for Science, Innovation & Technology**

Department for Science, Innovation, & Technology

**Client Background**
The United Kingdom is one of the global leaders in quantum technologies considered based on funding commitment and leading quantum ecosystems spanning universities, investors, corporate entities, and more.

**Objectives**
To support the conception of the UK government's national quantum strategy, 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.

**Solutions**
We provided the Department for Science, Innovation & Technology with subscription access to our market intelligence platform. While, in parallel, the QI team consulted on how to interpret the data and engaged in deep-dive reviews to further support the national strategy.

**Impact**
Our intelligence platform provided credible data and intelligence insights, backing the UK's quantum national strategy in factual clarity for optimal impact and funding commitment allocation.

**Ernst & Young (EY) Data Intelligence Support**

**Client Background**
As one of the leading consulting firms globally, EY is seeking to cement its authoritative role in the quantum technology ecosystem, pursuing a collaborative approach such as with IBM Quantum.

**Objectives**
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.

**Solutions**
Our market intelligence platform provided an in-depth analysis of private and government funding trends, including investments, grants, and partnerships.

**Impact**
EY used credible quantum data and intelligence on the funding ecosystem of quantum technologies, enabling them to make informed decisions and drive innovation. Our platform increased the quality of their public reports and client deliverables, forming stronger customer relationships and retention.

# Testimonials

*Feedback from our delighted customers*

"Before Resonance, finding aggregated information about the quantum computing market and competitive ecosystem was nearly impossible. As a Competitive Intelligence Analyst at Pasqal, we struggled to access centralized data about global quantum ecosystems. Resonance transformed this with their comprehensive, accurate data platform - saving us at least 50% of our research time. Their ability to understand and anticipate customer needs, combined with rapid platform updates, is impressive. If you're a quantum company looking to improve your strategic decision-making process, Resonance covers 95% of your quantum ecosystem data needs."

**Antoine Bourbon**
*Competitive Intelligence Analyst, Pasqal*

"Understanding the quantum market can be akin to understanding quantum physics itself. I have found that the 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**
*Former Managing Director of Oxford Instruments, and former Chief Operating and Strategy Officer of Quantum Exponential. Currently Business Strategy Adviser on Resonance Advisory Board*

"TQI has become a key source of information and insights for our fund. There are few available resources if you're looking into quantum or deep tech in general, and we're very impressed by what TQI has put together."

**Thomas Park**
*Partner Lead for BDC's Deep Tech Venture Fund*

"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*

# Get started

You can start exploring a limited version of the TQI Intelligence Platform now by visiting the platform here.

Premium access is offered as a SaaS monthly subscription and is priced based on number of seats and access rights.

For those who are looking for more than self-service access, we support our clients with bespoke, market intelligence-driven consulting.

To learn more please contact us at hello@resonance.holdings