Methodology

for *The State of the Quantum Industry 2025* Report

March 2025

Overview

Through the *State of the Quantum Industry* report, QED-C seeks to capture key metrics that characterize the size and impact of the global quantum industry in a way that can be tracked and compared over time.

Inspired by Harvard Business School's Balanced Scorecard,[1] QED-C sought to apply a similar analytical framework to the quantum industry. This *State of the Quantum Industry 2025* report provides a data-driven perspective on the industry's composition, investment, market size, workforce & pipeline, and intellectual property. The data on which the report is based are current as of the end of 2024, with historical and forward-looking comparisons made where possible. This methodology describes the sources of data used in the March 2025 report, how these sources were used, and the limitations of the data and analyses presented.

Composition

QED-C gathered data on the quantum industry composition from publicly available online sources, starting with all quantum-engaged organizations—entities that actively participate in the research, development, and/or application of quantum technologies including computing, sensing and communication. We refined the estimate of quantum-engaged organizations through manual data collection, and we used employment data from these organizations to categorize them into two segments:

- *pure-play* (100% of resources dedicated to work related to a quantum-relevant technology), and
- *partial-play* (less than 100% of resources dedicated to work related to a quantum-relevant technology).

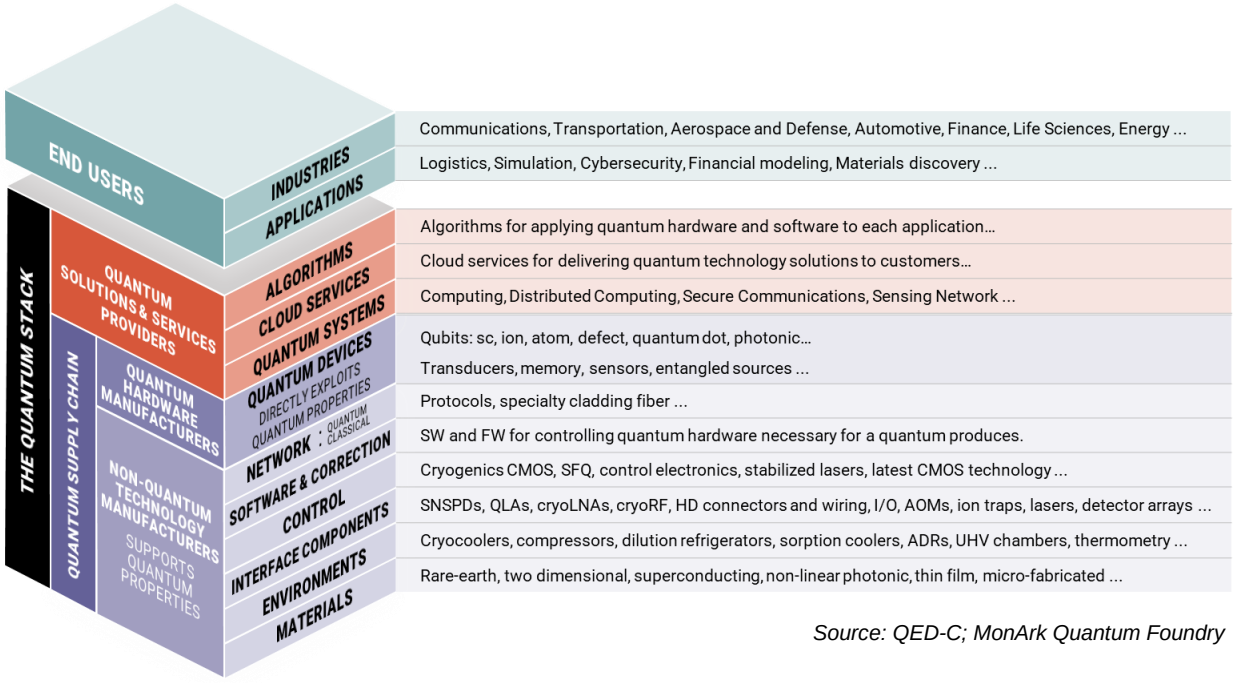
QED-C also classified organizations according to their position as it relates to the quantum stack using the framework developed by QED-C and the MonArk Quantum Foundry, represented in figure 1. Organizations not part of the stack itself, but that contribute to advancing quantum technology, are classified as supporting entities. These include investors (venture capital firms, government investment offices, listed vehicles, special purpose acquisition companies, accelerators, investor networks, organizational investment arms, family offices, etc.), government agencies, universities, and other quantum-engaged entities such as research laboratories, academic groups, and quantum technology centers.

QED-C also leveraged the Quantum Data Intelligence Platform[2] to analyze and provide insights about organizations in the quantum technology industry.

[1] Cote, Catherine. 2023. "What Is a Balanced Scorecard?" HBS Online, Business Insights Blog, October 26, https://online.hbs.edu/blog/post/balanced-scorecard#:~:text=The%20balanced%20scorecard%20is%20a%20tool%20designed%20to,David%20Norton%2C%20it%20captures%20value%20creation%E2%80%99s%20four%20perspectives.

[2] The Quantum Insider. 2025. "The Quantum Data Intelligence Platform," February 5, https://thequantuminsider.com/data/.

Figure 1: The Quantum Stack



Source: QED-C; MonArk Quantum Foundry

Market

QED-C gathered data on the quantum computing and quantum sensing markets through two surveys of industry leaders, one focused on quantum computing and one on quantum sensing. Each survey was constructed in conjunction with the study sponsors and focused on understanding the overall quantum computing and quantum sensing markets, as well as the related technology sector more broadly. The surveys were sent to curated lists of quantum computing and quantum sensing experts who were best positioned to address these topics.

We targeted a respondent set of 100–125 for each of the two surveys to establish a reasonable demographic range for geography, job title, and corporate sector. The quantum computing survey had 115 respondents, while the quantum sensing survey had 100 respondents. The survey data analysis was conducted by a third party to preserve the privacy of individual responses. The third party performed linear extrapolations to estimate global revenues for both quantum computing and quantum sensing based on each survey's sample of responses. Additional insights on customer demand for quantum computing and quantum sensing were derived from Fortune Business Insights.[3]

QED-C's estimated global quantum market size of more than $1.45 billion primarily represents the combined 2024 revenue estimates for the quantum computing and quantum sensing markets; however, it also allows that additional, though currently less significant, revenue may be generated in the areas of quantum communications, including networking and security.

[3] Fortune Business Insights. 2025. "Quantum Computing Market Size...Forecast 2024-2032," February 24, https://www.fortunebusinessinsights.com/quantum-computing-market-104855; "Quantum Sensors Market Size...Forecast 2024-2032," February 24, https://www.fortunebusinessinsights.com/quantum-sensors-market-110331.

Workforce & Pipeline

QED-C gathered employment data for quantum-engaged workers—workers actively participating in the research, development, and/or application of quantum technologies including computing, sensing and communication—from publicly available online sources, including several job-related websites and the websites of quantum-engaged organizations. For pure-play quantum companies the headcount includes all employees, while for partial-play organizations it accounts only for those engaged in the quantum technology business line. In some instances, headcount was estimated using public data indirectly related to employee numbers, such as job listings or funding announcements.

We estimated the global quantum-engaged headcount value of 200,000 using the Quantum Technology Headcount Estimation Model (QTHEM), a proprietary methodology designed to assess the workforce size within the global quantum technology sector. This model employed statistical analysis of publicly available data from a representative sample of organizations in the industry, examining their respective headcounts. QED-C's analysis of these data was extrapolated to estimate the total workforce across all known organizations involved in quantum technology.

QED-C enhanced publicly available employment data by using a workforce survey conducted by the International Council of Quantum Industry Associations (ICQIA) in Winter 2024–25.[4] The survey respondents were primary contacts at ICQIA member organizations. Respondents were asked to estimate their companies' quantum technology headcount and its country-based distribution. The survey also inquired about the number of employees believed to be in their first quantum technology-related job. We derived insights on role composition by analyzing LinkedIn data to identify employees with "quantum" in their job titles and assessing their self-defined roles.

QED-C gathered data on quantum-related job openings from thousands of public sources, including information aggregation sites, social media posts, organizational websites, and news feeds. The raw data underwent cleaning, relevance filtering, normalization, de-duplication, and classification.

We assembled information on master's degree programs from public releases, news articles, curated education-related lists and publications, and social media. We analyzed quantum-specific master's degree program titles to determine the most frequently mentioned terms among them.

Investment & Intellectual Property

Data presented on government funding investments into the quantum industry are from QURECA's summary, Quantum Initiatives Worldwide 2025.[5] QURECA gathered government investment funding data on 30 countries, analyzing more than 70 publicly available documents and articles. QED-C presented these funding data by World Bank analytical grouping regions for easier global comparison. We gathered data for private venture capital investment related to the quantum industry using the PitchBook database, searching within the dataset on global capital

[4] ICQIA currently includes the European Quantum Industry Consortium, Quantum Industry Canada, the Japan Quantum Strategic Industry Alliance for Revolution (Q-STAR), and QED-C.

[5] Qureca. 2025. "Quantum Initiatives Worldwide 2025," March 7, https://www.qureca.com/quantum-initiatives-worldwide/.

market deals.[6] Search criteria included the *Quantum Computing* and *Quantum Sensing* Emerging Spaces, which were predefined by PitchBook, and "quantum" as a keyword. We manually reviewed results for relevance to the global quantum industry and those deemed not relevant were excluded. 'Early stage' venture capital includes PitchBook deals classified as accelerator/incubator, angel, early stage, seed, and pre-seed. 'Later stage' venture capital includes investments to companies that are five years old or older, or—if a series is specified—Series C or later. 'Other' venture capital includes Pitchbook deals classified as equity crowding and grants. PitchBook tracks global capital deals on an ongoing basis with an extensive quality assurance process to validate and refine data. Investment data reported by PitchBook is subject to revisions over time due to the inherent lag in financial data collection and reporting. As the year progresses, more deals from the previous year are identified and added to the database, leading to an increase in reported investment figures for that year.[7]

QED-C gathered data on intellectual property related to the quantum industry using the global patent intelligence and search platform, Minesoft Origin.[8] Using a customized methodology, we conducted a keyword-driven search on patents filed from 2020 through 2024. The search focused on Quantum 2.0 technologies (e.g., quantum computers and simulators, quantum communication networks, arrays of quantum sensors) and quantum-relevant components in the supply chain, while filtering out unrelated concepts (e.g., display technologies). This approach provided quantum-related patent data by country, assignee, and filing year, in addition to insights into the status of patents over time (active vs. expired).

Data Limitations

While QED-C is confident in the methodologies employed in this report, there are limitations to the robustness and completeness of data related to the quantum industry. Because the industry is still nascent, there are relatively few reliable predefined classifications. For example, a researcher could assess various metrics in the semiconductor industry by relying on existing classifications used—and often created—by federal statistical agencies: The North American Industry Classification System (NAICS) has an industry code for *Semiconductor and Related Device Manufacturing*, the Classification of Instructional Programs (CIP) has a degree program code for *Semiconductor Manufacturing Technology/Technician*, and the Standard Occupational Classification System (SOC) has a job code for *Semiconductor Processing Technicians*. There are also predefined classifications for semiconductor patent activity and publication output.

Without the ability to use existing classifications, QED-C relied heavily on keyword searches to identify organizations, workers, patents, etc. involved in the quantum industry. Though we manually reviewed search results, keyword searches can lead to missed items, especially items written in a language other than English. They can also result in overcounting, in this case by including items that mention "quantum" but aren't truly germane to our report content. With our intention to convey the state of the quantum industry on an annual basis, we expect our collected data to become increasingly reliable as the industry matures and its data become more consistently classified and more easily searchable.

[6] PitchBook Data, Inc. http://www.pitchbook.com/.

[7] Disclaimer: The cited data has not been reviewed by PitchBook analysts and may be inconsistent with PitchBook methodology.

[8] https://origin.minesoft.com.