UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to __________

Commission File No. 001-39694

IONQ, INC.
(Exact name of registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**85-2992192** **(I.R.S. Employer Identification No.)**

4505 Campus Drive
College Park, MD 20740
(301) 298-7997
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.0001 per share	**IONQ**	**The New York Stock Exchange**
Warrants, each exercisable for one share of common stock for $11.50 per share	**IONQ WS**	**The New York Stock Exchange**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2of the Exchange Act): Yes ☐ No ☒

As of August 8, 2022, there were 199,207,574 shares of common stock, par value $0.0001 per share, issued and outstanding.

IONQ, INC.
QUARTERLY REPORT ON FORM 10-Q
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PART 1-FINANCIAL INFORMATION

Item 1. Unaudited Financial Statements

IONQ, INC.
Condensed Consolidated Balance Sheets
(unaudited)
(in thousands, except share and per share data)

	June 30, 2022	December 31, 2021
Assets:		
Current assets:		
Cash and cash equivalents	$ 43,968	$ 399,025
Short-term investments	379,383	123,443
Accounts receivable	1,782	707
Prepaid expenses and other current assets	5,113	6,442
Total current assets	430,246	529,617
Long-term investments	147,992	80,110
Property and equipment, net	24,872	18,870
Operating lease right-of-use assets	3,894	4,032
Intangible assets, net	6,839	5,841
Other noncurrent assets	3,149	3,558
Total Assets	$ 616,992	$ 642,028
Liabilities and Stockholders' Equity:		
Current liabilities:		
Accounts payable	$ 3,680	$ 1,882
Accrued expenses	4,019	2,647
Current portion of operating lease liabilities	577	568
Unearned revenue	4,885	3,430
Current portion of stock option early exercise liabilities	1,130	1,164
Total current liabilities	14,291	9,691
Operating lease liabilities, net of current portion	3,556	3,643
Unearned revenue, net of current portion	616	1,533
Stock option early exercise liabilities, net of current portion	1,404	1,969
Warrant liabilities	4,447	33,962
Total liabilities	$ 24,314	$ 50,798
Commitments and Contingencies (see Note 7)		
Stockholders' Equity:		
Common stock $0.0001 par value per share; 1,000,000,000 shares authorized; 198,003,162 and 195,630,975 shares issued and outstanding as of June 30, 2022 and December 31, 2021, respectively	20	19
Additional paid-in capital	751,259	737,150
Accumulated deficit	(151,672)	(145,791)
Accumulated other comprehensive loss	(6,929)	(148)
Total stockholders' equity	592,678	591,230
Total Liabilities and Stockholders' Equity	$ 616,992	$ 642,028

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Condensed Consolidated Statements of Operations
(unaudited)
(in thousands, except share and per share amounts)

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Revenue	$ 2,608	$ 93	$ 4,561	$ 218
Costs and expenses:				
Cost of revenue (excluding depreciation and amortization)	742	327	1,310	508
Research and development	9,653	5,477	16,990	9,131
Sales and marketing	2,132	871	4,002	1,098
General and administrative	7,558	2,904	16,752	5,860
Depreciation and amortization	1,451	502	2,717	947
Total operating costs and expenses	**21,536**	**10,081**	**41,771**	**17,544**
Loss from operations	**(18,928)**	**(9,988)**	**(37,210)**	**(17,326)**
Change in fair value of warrant liabilities	16,061	—	29,509	—
Interest income, net	1,259	—	1,867	—
Other income (expense), net	(46)	2	(47)	5
Loss before benefit for income taxes	**(1,654)**	**(9,986)**	**(5,881)**	**(17,321)**
Benefit for income taxes	—	—	—	—
Net loss	**$ (1,654)**	**$ (9,986)**	**$ (5,881)**	**$ (17,321)**
Net loss per share attributable to common stockholders - basic and diluted	$ (0.01)	$ (0.08)	$ (0.03)	$ (0.15)
Weighted average shares used in computing net loss per share attributable to common stockholders - basic and diluted	197,214,022	119,253,873	196,708,008	118,991,152

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Condensed Consolidated Statements of Comprehensive Loss
(unaudited)
(in thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Net loss	$ (1,654)	$ (9,986)	$ (5,881)	$ (17,321)
Other comprehensive loss, net of reclassification adjustments:				
Change in unrealized loss on available-for-sale securities	(2,241)	—	(6,781)	—
Total other comprehensive loss	(2,241)	—	(6,781)	—
Total comprehensive loss	**$ (3,895)**	**$ (9,986)**	**$ (12,662)**	**$ (17,321)**

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Condensed Consolidated Statements of Changes in Stockholders' Equity
(unaudited)
(in thousands, except share data)

	Stockholders' Equity					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, March 31, 2022	**196,393,948**	**$ 20**	**$744,469**	**$ (150,018)**	**$ (4,688)**	**$ 589,783**
Net loss	—	—	—	(1,654)	—	(1,654)
Other comprehensive loss	—	—	—	—	(2,241)	(2,241)
Stock options exercised	1,219,451	—	435	—	—	435
Vesting of restricted common stock	125,341	—	282	—	—	282
Issuance of common stock from the settlement of restricted stock units	264,422	—	473	—	—	473
Stock-based compensation	—	—	5,600	—	—	5,600
Balance, June 30, 2022	**198,003,162**	**$ 20**	**$751,259**	**$ (151,672)**	**$ (6,929)**	**$ 592,678**

	Stockholders' Equity					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, March 31, 2021	**119,027,058**	**$ 3**	**$ 96,803**	**$ (46,940)**	**$ —**	**$ 49,866**
Net loss	—	—	—	(9,986)	—	(9,986)
Equity instruments issued in consideration for intellectual property and research and development arrangements	385,797	—	737	—	—	737
Stock options exercised	101,484	—	29	—	—	29
Vesting of restricted common stock	144,667	—	231	—	—	231
Stock-based compensation	—	—	2,532	—	—	2,532
Balance, June 30, 2021	**119,659,006**	**$ 3**	**$100,332**	**$ (56,926)**	**$ —**	**$ 43,409**

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Condensed Consolidated Statements of Changes in Stockholders' Equity
(unaudited)
(in thousands, except share data)

	Stockholders' Equity					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, December 31, 2021	**195,630,975**	**$ 19**	**$737,150**	**$ (145,791)**	**$ (148)**	**$ 591,230**
Net loss	—	—	—	(5,881)	—	(5,881)
Other comprehensive loss	—	—	—	—	(6,781)	(6,781)
Stock options exercised	1,672,676	1	566	—	—	567
Vesting of restricted common stock	264,852	—	598	—	—	598
Issuance of common stock from the settlement of restricted stock units	433,172	—	473	—	—	473
Stock-based compensation	—	—	12,448	—	—	12,448
Warrants exercised	1,487	—	24	—	—	24
Balance, June 30, 2022	**198,003,162**	**$ 20**	**$751,259**	**$ (151,672)**	**$ (6,929)**	**$ 592,678**

	Stockholders' Equity					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance, December 31, 2020	**118,146,795**	**$ 3**	**$ 93,305**	**$ (39,605)**	**$ —**	**$ 53,703**
Net loss	—	—	—	(17,321)	—	(17,321)
Equity instruments issued in consideration for intellectual property and research and development arrangements	385,797	—	2,381	—	—	2,381
Stock options exercised	904,555	—	223	—	—	223
Vesting of restricted common stock	221,859	—	416	—	—	416
Stock-based compensation	—	—	4,007	—	—	4,007
Balance, June 30, 2021	**119,659,006**	**$ 3**	**$100,332**	**$ (56,926)**	**$ —**	**$ 43,409**

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Condensed Consolidated Statements of Cash Flows
(unaudited)
(in thousands)

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Cash flows from operating activities:		
Net loss	$ (5,881)	$(17,321)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	2,717	947
Non-cash research and development arrangements	260	1,001
Amortization of customer warrant	—	125
Stock-based compensation	12,556	3,874
Change in fair value of warrant liabilities	(29,509)	—
Other, net	(1,618)	122
Changes in operating assets and liabilities:		
Accounts receivable	(801)	(30)
Prepaid expenses and other current assets	3,576	(2,710)
Accounts payable	1,156	3,025
Accrued expenses	484	913
Unearned revenue	264	275
Other assets and liabilities	(133)	(42)
Net cash used in operating activities	(16,929)	(9,821)
Cash flows from investing activities:		
Purchases of property and equipment	(7,022)	(2,994)
Capitalized software development costs	(982)	(764)
Intangible asset acquisition costs	(370)	(241)
Purchases of available-for-sale securities	(403,899)	—
Maturities and sales of available-for-sale securities	73,090	—
Net cash used in investing activities	(339,183)	(3,999)
Cash flows from financing activities:		
Proceeds from stock options exercised	567	5,392
Tax withholding receipts related to vested and released restricted stock units	472	—
Proceeds from public warrants exercised	16	—
Net cash provided by financing activities	1,055	5,392
Net change in cash and cash equivalents	(355,057)	(8,428)
Cash and cash equivalents at the beginning of the period	399,025	36,120
Cash and cash equivalents at the end of the period	$ 43,968	$ 27,692
Supplemental disclosures of non-cash investing and financing transactions:		
Issuance of common stock for intellectual property	$ —	$ 1,567
Issuance of common stock for research and development arrangement	$ —	$ 815
Property and equipment purchases in accounts payable and accrued expenses	$ 1,284	$ 1,121
Intangible asset purchases in accounts payable and accrued expenses	$ 73	$ 121
Noncash reclassification of warrant liabilities to equity upon exercise	$ 8	$ —
Bonus settled in restricted stock units	$ 473	$ —

The accompanying notes are an integral part of these condensed consolidated financial statements.

IONQ, INC.
Notes to Condensed Consolidated Financial Statements
(unaudited)

1. DESCRIPTION OF BUSINESS

IonQ, Inc. ("IonQ" or "the Company"), formerly known as dMY Technology Group, Inc. III ("dMY"), was incorporated in the state of Delaware in September 2020 and formed as a special purpose acquisition company for the purpose of effecting a merger, capital stock exchange, asset acquisition, stock purchase, reorganization, or similar business combination with one or more businesses. IonQ Quantum, Inc. (formerly known as IonQ, Inc., and referred to as "Legacy IonQ" herein), was incorporated in the state of Delaware in March 2015 and is headquartered in College Park, Maryland.

On March 7, 2021, Legacy IonQ entered into an Agreement and Plan of Merger (the "Merger Agreement") with dMY and Ion Trap Acquisition, Inc. ("Merger Sub"), a direct, wholly owned subsidiary of dMY. Pursuant to the Merger Agreement, on September 30, 2021 ("the Closing Date"), the Merger Sub was merged with and into Legacy IonQ with Legacy IonQ continuing as the surviving corporation following the Merger, becoming a wholly owned subsidiary of dMY and the separate corporate existence of the Merger Sub ceased (the "Business Combination"). Commensurate with the Business Combination, dMY changed its name to IonQ, Inc. and Legacy IonQ changed its name to IonQ Quantum, Inc. After the Business Combination, IonQ's common stock and public warrants are traded on the New York Stock Exchange ("NYSE") under the symbols "IONQ" and "IONQ WS," respectively.

Unless otherwise indicated, references in this Quarterly Report on Form 10-Q to the "Company" and "IonQ" refer to the consolidated operations of IonQ, Inc. subsequent to the Business Combination. References to "dMY" refer to the company prior to the consummation of the Business Combination and references to "Legacy IonQ" refer to IonQ, Inc. prior to the consummation of the Business Combination.

IonQ is engaged in quantum computing and develops general-purpose quantum computing systems designed to solve the world's most complex problems, and transform business, society, and the planet for the better. To operate the quantum computing systems, the Company has developed custom hardware, custom firmware, and an operating system to orchestrate the quantum computers. Currently, the Company permits customers to use the quantum computing systems through a quantum-computing-as-a-service ("QCaaS") platform.

Business Combination

While the legal acquirer in the Merger Agreement is dMY, for financial accounting and reporting purposes under accounting principles generally accepted in the United States of America ("U.S. GAAP"), Legacy IonQ is the accounting acquirer and the merger is accounted for as a "reverse recapitalization" (i.e., a capital transaction involving the issuance of stock by dMY for the stock of Legacy IonQ).

For accounting purposes, the Business Combination was treated as the equivalent of Legacy IonQ issuing stock for the net assets of dMY, accompanied by a recapitalization. The net assets of dMY are stated at historical cost, and no goodwill or other intangible assets were recorded. Because Legacy IonQ was deemed the accounting acquirer in the Business Combination, the historical financial statements of Legacy IonQ are the historical financial statements of the Company upon the consummation of the Business Combination. As a result, the condensed consolidated financial statements included in this report reflect (i) the historical operating results of Legacy IonQ prior to the Business Combination; (ii) the combined results of dMY and Legacy IonQ following the close of the Business Combination on September 30, 2021; and (iii) the assets and liabilities of Legacy IonQ stated at their historical cost.

In accordance with guidance applicable to these circumstances, the equity structure has been retroactively restated in all comparative periods to reflect the number of shares of the Company's common stock, $0.0001 par value per share, issued to Legacy IonQ's stockholders in connection with the Business Combination. As such, the shares and corresponding capital amounts and earnings per share related to Legacy IonQ convertible redeemable preferred stock and warrants and Legacy IonQ common stock prior to the Business Combination have been retroactively restated as shares reflecting the exchange ratio established in the Business Combination. Legacy IonQ's convertible redeemable preferred stock and warrants previously classified as mezzanine equity were retroactively adjusted, converted into common stock, and reclassified to permanent equity because of the reverse recapitalization. All exercise prices for stock options and customer warrants have similarly been retroactively restated to reflect the exchange ratio established in the Business Combination.

Segment Reporting

The Company operates as one operating segment as its chief executive officer, who is the chief operating decision maker, reviews financial information on a consolidated basis for purposes of making operating decisions, allocating resources, and evaluating financial performance.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Significant Accounting Policies

The Company's significant accounting policies, which are disclosed in the audited financial statements for the year ended December 31, 2021, and the notes thereto are included in the Company's Annual Report on Form 10-K (the "Annual Report") that was filed with the Securities and Exchange Commission ("SEC") on March 28, 2022. Since the date of that filing, there have been no material changes to the Company's significant accounting policies except as noted below.

Basis of Preparation

The accompanying condensed consolidated financial statements have been prepared in accordance with U.S. GAAP as determined by the Financial Accounting Standards Board ("FASB"). Such condensed consolidated financial statements include the accounts of IonQ and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated in consolidation.

Unaudited Interim Financial Information

The interim condensed consolidated financial statements included in this Quarterly Report on Form 10-Q have been prepared by the Company and are unaudited, pursuant to the rules and regulations of the SEC. Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. However, the Company believes that the disclosures contained in this Quarterly Report on Form 10-Q comply with the requirements of Section 13(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), for a quarterly report and are adequate to make the information presented not misleading. The interim condensed consolidated financial statements included herein reflect all adjustments (consisting of normal recurring adjustments) which are, in the opinion of management, necessary for a fair presentation of the financial position, results of operations and cash flows for the interim periods presented. These interim condensed consolidated financial statements should be read in conjunction with the financial statements and notes thereto for the year ended December 31, 2021, included in the Annual Report. The condensed consolidated statements of operations and the condensed consolidated statements of comprehensive loss for the three and six months ended June 30, 2022, are not necessarily indicative of the results to be anticipated for the entire year ending December 31, 2022, or thereafter. All references to June 30, 2022 and 2021, in the notes to the condensed consolidated financial statements are unaudited.

Emerging Growth Company

The Company is an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act, until such time as those standards apply to private companies.

The Company has elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that it (i) is no longer an emerging growth company or (ii) affirmatively and irrevocably opts out of the extended transition period provided in the JOBS Act. As a result, the Company's condensed consolidated financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

The Company remains an emerging growth company until the earliest of (i) December 31, 2025, (ii) the last day of the fiscal year in which the Company has total annual gross revenue of at least $1.07 billion, (iii) the last day of the fiscal year in which the Company is deemed to be a large accelerated filer, which means the market value of the Company's common stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30th or (iv) the date on which the Company has issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

Use of Estimates

The preparation of condensed consolidated financial statements in conformity with U.S. GAAP and the rules and regulations of the SEC requires management to make estimates and assumptions that affect the amounts reported in these condensed consolidated financial statements and accompanying notes.

Significant estimates and judgments are inherent in the analysis and measurement of items including, but not limited to revenue recognition, capitalization of internally developed software and quantum computing costs, useful lives of long-lived assets, commitments and contingencies, fair value of available-for-sale securities, and forecasts and assumptions used in determining the fair value of historically granted common stock, stock options and warrants prior to the Business Combination. Management bases its estimates and assumptions on historical experience, expectations, forecasts, and on various other factors that are believed to be reasonable under the circumstances. Due to the inherent uncertainty involved in making estimates, actual results reported in future periods may differ and be affected by changes in those estimates.

Fair Value Measurements

The Company evaluates the fair value of certain assets and liabilities using the fair value hierarchy. Fair value is an exit price representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value is estimated by applying the following hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

- Level 1—Observable inputs, which include quoted prices in active markets;
- Level 2—Observable inputs other than the quoted prices in active markets that are observable either directly or indirectly, such as quoted prices in markets that are not active, or other inputs such as broker quotes, benchmark yield curves, credit spreads and market interest rates for similar securities that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities;
- Level 3—Unobservable inputs that are supported by little or no market activity and that are based on management’s assumptions, including fair value measurements determined using pricing models, discounted cash flow methodologies or similar techniques.

The Company’s assessment of the significance of a particular input to the fair value measurements requires judgment and may affect the valuation of the assets and liabilities being measured and their placement within the fair value hierarchy.

For assets that are measured using quoted prices in active markets, the total fair value is the published market price per unit multiplied by the number of units held, without consideration of transaction costs. Assets and liabilities that are measured using significant other observable inputs are primarily valued by reference to quoted prices of similar assets or liabilities in active markets, adjusted for any terms specific to that asset or liability.

Assets and liabilities that are measured at fair value on a non-recurring basis include property and equipment and intangible assets. The Company recognizes these items at fair value when they are considered to be impaired or upon initial recognition when acquired through a business combination or an asset acquisition. The fair value of these assets and liabilities are determined with valuation techniques using the best information available and may include quoted market prices, market comparables and discounted cash flow models.

Due to their short-term nature, the carrying amounts reported in the Company’s condensed consolidated financial statements approximates the fair value for cash and cash equivalents, accounts receivable, accounts payable and accrued expenses.

Cash and Cash Equivalents

Cash and cash equivalents include cash in banks, checking deposits, money market funds, and certain commercial paper and U.S. government and agency securities. The Company considers all short-term highly liquid investments with an original maturity at the date of purchase of three months or less to be cash equivalents.

Accounts Receivable and Allowance for Doubtful Accounts

Accounts receivable are non-interest bearing and represent amounts billed and currently due from customers at the gross invoiced amount as well as unbilled amounts related to unconditional rights for consideration to be received for services performed but not yet invoiced. A receivable is recorded when the Company has an unconditional right to receive payment. Accounts receivable consists of the following (in thousands):

	June 30, 2022	December 31, 2021
Billed accounts receivable	$ 794	$ 261
Unbilled accounts receivable	988	446
Total accounts receivable	$ 1,782	$ 707

On a periodic basis, management evaluates its accounts receivable and determines whether to provide an allowance or if any accounts should be written off. This assessment is based on management's evaluation of past due receivables, collectability of specific accounts, historical loss experience and overall economic conditions. The Company did not have any allowance for doubtful accounts as of June 30, 2022, and December 31, 2021.

Investments

Management determines the appropriate classification of investments at the time of purchase based upon management's intent with regard to such investments. Investments are classified as available-for-sale at the time of purchase if they are available to support either current or future operations. This classification is re-evaluated at each balance sheet date. Investments with remaining contractual maturities of one year or less from the balance sheet date, which are not considered cash equivalents, are classified as short-term investments, and those with remaining contractual maturities greater than one year from the balance sheet date are classified as long-term investments. All investments are recorded at their estimated fair value, and any unrealized gains and losses are recorded in accumulated other comprehensive loss. Realized gains and losses on sales and maturities of investments are determined based on the specific identification method and are recognized in the condensed consolidated statements of operations in other income (expense), net.

The Company performs periodic evaluations to determine whether any declines in the fair value of investments below cost are other-than-temporary. The evaluation consists of qualitative and quantitative factors regarding the severity and duration of the unrealized loss, as well as the Company's ability and intent to hold the investments until a forecasted recovery occurs. The impairments are considered to be other-than-temporary if they are related to deterioration in credit risk or if it is likely that the underlying securities will be sold prior to a full recovery of their cost basis. Other-than-temporary fair value impairments are determined based on the specific identification method and are reported in other income (expense), net in the condensed consolidated statements of operations.

Property and Equipment, Net

Property and equipment, net is stated at cost less accumulated depreciation. Historical cost of fixed assets is the cost as of the date acquired. Hardware and labor costs associated with the building of quantum computing systems are capitalized. Costs to maintain quantum computing systems are expensed as incurred.

Depreciation is calculated using the straight-line method over the estimated useful lives of the assets.

Intangible Assets, Net

The Company's intangible assets include website domain costs, patents, intellectual property and trademarks. Intangible assets with identifiable useful lives such as patents and intellectual property are initially valued at acquisition cost and are amortized over their estimated useful lives, which is generally 20 years, using the straight-line method. With respect to patents, acquisition costs include external legal and patent application costs. Intangible assets with indefinite useful lives are assessed for impairment at least annually. During each of the three months ended June 30, 2022 and 2021, the Company capitalized $0.3 million, and during the six months ended June 30, 2022 and 2021, the Company capitalized $0.4 million and $1.9 million, respectively, of intangible assets primarily related to intellectual property.

Capitalized Internally Developed Software

Capitalized internally developed software, which is included in intangible assets, net, consists of costs to purchase and develop internal-use software, which the Company primarily uses to provide services to its customers. The costs to purchase and develop internal-use software are capitalized from the time that the preliminary project stage is completed, and it is considered probable that the software will be used to perform the function intended, until the time the software is placed in service for its intended use. Any costs incurred during subsequent efforts to upgrade and enhance the functionality of the software are also capitalized. Once this software is ready for its intended use, these costs are amortized on a straight-line basis over the estimated useful life of the software, which is typically assessed to be three years. During the three months ended June 30, 2022 and 2021, the Company capitalized $0.8 million and $0.5 million in internal-use software costs, respectively, and during the six months ended June 30, 2022 and 2021, the Company capitalized $1.3 million and $0.8 million, respectively. The Company amortized $0.3 million and $0.2 million of capitalized internally developed software costs during the three months ended June 30, 2022 and 2021, respectively, and $0.6 million and $0.3 million of capitalized internally developed software costs during the six months ended June 30, 2022 and 2021, respectively.

Warrant Liabilities

The Company evaluates its financial instruments to determine if such instruments are derivatives or contain features that qualify as embedded derivatives in accordance with ASC Topic 815, "Derivatives and Hedging." For derivative financial instruments that are accounted for as liabilities, such as the public warrants, the derivative instrument is initially recorded at its fair value on the grant date and is then re-valued upon exercise or at each reporting date for the unexercised public warrants, with changes in the fair value reported in the condensed consolidated statements of operations. The classification of derivative instruments, including whether such instruments should be recorded as liabilities or as equity, is evaluated at the end of each reporting period. The warrants of dMY assumed in the Business Combination are classified as liabilities and remeasured at each reporting period (as more fully described in Note 10). The determination of the fair value of the warrant liabilities may be subject to change as more current information becomes available and accordingly the actual results could differ significantly. Derivative warrant liabilities are classified as non-current liabilities as their liquidation is not reasonably expected to require the use of current assets or require the creation of current liabilities.

Revenue Recognition

The Company derives revenue from providing access to its QCaaS and consulting services related to co-developing algorithms on the quantum computing systems. The Company applies the provisions of the FASB Accounting Standards Update ("ASU"), Revenue from Contracts with Customers ("ASC 606"), and all related applicable guidance. The core principle of ASC 606 is that an entity shall recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services.

To support this core principle, the Company applies the following five step approach:

1. Identify the contract with the customer
2. Identify the performance obligations
3. Determine the transaction price
4. Allocate the transaction price to the performance obligations
5. Recognize revenue when (or as) the entity satisfies a performance obligation

The Company has determined that its QCaaS contracts represent a combined, stand-ready performance obligation to provide access to its quantum computing systems together with related maintenance and support. The transaction price generally includes a variable fee based on usage of its quantum computing systems and may include a fixed fee for a minimum volume of usage to be made available over a defined period of access. Fixed fee arrangements may also include a variable component whereby customers pay an amount for usage over contractual minimums contained in the contracts. The Company has determined that contracts which contain consulting services related to co-developing quantum computing algorithms and the ability to use our quantum computing systems to run such algorithms represent a combined performance obligation that is satisfied over-time with revenue recognized based on the efforts incurred to date relative to the total expected effort.

For contracts with a fixed transaction price, the fixed fee is recognized on a straight-line basis over the access period or associated measure of progress for our contracts for the co-development of quantum computing algorithms. For contracts without fixed fees, variable usage fees are billed and recognized during the period of such usage. As of June 30, 2022 and 2021, substantially all of the revenue recognized by the Company was recognized based on transfer of service over time. Revenues recognized at a point in time were not material. In arrangements with cloud service providers, the cloud service provider is considered the customer and IonQ does not have any contractual relationships with the cloud service providers' end users. For these arrangements, revenue is recognized at the amount charged to the cloud service provider and does not reflect any mark-up to the end user.

The Company may enter into multiple contracts with a single counterparty at or near the same time. The Company will combine contracts and account for them as a single contract when one or more of the following criteria are met: (i) the contracts are negotiated as a package with a single commercial objective; (ii) consideration to be paid in one contract depends on the price or performance of the other contract; and (iii) goods or services promised are a single performance obligation. Consideration payable to a customer includes cash amounts that an entity pays, or expects to pay, to the customer. For arrangements that contain consideration payable to a customer, the Company determines whether such payments are a reduction of the transaction price or a payment to the customer for a distinct good or service. The Company has entered into one revenue arrangement in which it granted warrants to the counterparty. Refer to Note 9 for further information on the customer warrants.

The variable fees associated with the QCaaS are generally billed a month in arrears. Customers also have the ability to make advance payments. If a contract exists under ASC 606, advance payments are recorded as a contract liability until services are delivered or obligations are met and revenue is earned. Contract liabilities to be recognized in the succeeding 12-month period are classified as current and the remaining amounts are classified as non-current liabilities in the Company's condensed consolidated balance sheets.

As of June 30, 2022, approximately $19.3 million of revenue is expected to be recognized from remaining performance obligations that are unsatisfied (or partially unsatisfied) for non-cancelable contracts. The Company expects to recognize revenue of $4.9 million, $8.0 million and $6.4 million related to these remaining performance obligations in the remaining six months ended December 31, 2022, the year ended December 31, 2023, and thereafter, respectively.

The following table summarizes the changes in unearned revenue for the six months ended June 30, 2022 (in thousands):

	Total
Balance as of December 31, 2021	$ 4,963
Revenue recognized	(2,663)
Payments from customers, net	3,201
Balance as of June 30, 2022	$ 5,501

For contractual arrangements where consideration is paid up-front, the transfer of the quantum computing services is completed at the discretion of the customer as the customer chooses to use the services starting from the date of contract inception. As such, the up-front payment of consideration does not represent a significant financing component.

Cost to Obtain a Contract

Applying the practical expedient, the Company recognizes the incremental costs of obtaining contracts as an expense when incurred if the amortization period of the assets is one year or less. For the three and six months ended June 30, 2022 and 2021, the Company has not incurred any material incremental costs of obtaining contracts.

Stock-Based Compensation

The Company measures and records the expense related to stock-based awards based on the fair value of those awards as determined on the date of grant. The Company recognizes stock-based compensation expense over the requisite service period of the individual grant, generally equal to the vesting period and uses the straight-line method to recognize stock-based compensation. The Company uses the Black-Scholes-Merton ("Black-Scholes") option-pricing model to determine the fair value of stock awards and the estimated fair value for stock options. The Black-Scholes option-pricing model requires the use of subjective assumptions, which determine the fair value of share-based awards, including the fair value of the Company's common stock, the option's expected term, the price volatility of the underlying common stock, risk-free interest rates, and the expected dividend yield of the common stock. The assumptions used to determine the fair value of the stock awards represent management's best estimates. These estimates involve inherent uncertainties and the application of management's judgment. The Company records forfeitures as they occur.

Stock-based compensation cost for restricted stock units is measured based on the fair value of the Company's common stock on the grant date. For awards with a performance-based vesting condition, the Company records stock-based compensation cost if it is probable that the performance condition will be achieved.

The Company records stock-based compensation expense for incentive compensation liabilities based on estimated payments to employees for which the Company expects to settle the liability by granting restricted stock units. For these awards, stock-based compensation expense is accrued commencing at the service inception date, which generally precedes the grant date, through the end of the requisite service period.

The Company obtained third-party valuations to estimate the fair value of its common stock for awards granted prior to the Business Combination, for purposes of measuring stock-based compensation expense. The third-party valuations were prepared using methodologies, approaches, and assumptions consistent with the American Institute of Certified Public Accountants ("AICPA") Accounting & Valuation Guide, Valuation of Privately-Held-Company Equity Securities Issued as Compensation.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash, cash equivalents, investments, and trade accounts receivable. The Company maintains the majority of its cash, cash equivalents and investments with two financial institutions, both of which management believes to be financially sound and with minimal credit risk. The Company's deposits periodically exceed amounts guaranteed by the Federal Deposit Insurance Corporation.

The Company's accounts receivable are derived from customers primarily located in the United States. The Company performs periodic evaluations of its customers' financial condition and generally does not require its customers to provide collateral or other security to support accounts receivable and maintains an allowance for doubtful accounts. Credit losses historically have not been material.

Significant customers are those which represent more than 10% of the Company's total revenue. The Company's revenue was primarily from four significant customers for the three months ended June 30, 2022, and from three significant customers for the six months ended June 30, 2022. The Company's revenue was from three significant customers for the three months ended June 30, 2021, and from two customers for the six months ended June 30, 2021.

Earnings (Loss) Per Share

Basic earnings (loss) per share is computed by dividing net income (loss) by the weighted-average number of shares of common stock outstanding for the period. Diluted earnings per share is computed by dividing net income (loss) by the weighted average number of shares of common stock during the period, plus common stock equivalents, outstanding during the period.

Earnings (loss) per share calculations for the three and six months ended June 30, 2021, have been retroactively restated to reflect the conversion of the Company's convertible redeemable preferred stock and the equivalent number of shares reflecting the exchange ratio established in the Business Combination.

The following table sets forth the computation of basic and diluted loss per share attributable to common stockholders (in thousands, except share and per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
Numerator:	**2022**	**2021**	**2022**	**2021**
Net loss available to common stockholders	$ (1,654)	$ (9,986)	$ (5,881)	$ (17,321)
Denominator:				
Weighted average shares used in computing net loss per share attributable to common stockholders – basic and diluted	197,214,022	119,253,873	196,708,008	118,991,152
Net loss per share attributable to common stockholders – basic and diluted	$ (0.01)	$ (0.08)	$ (0.03)	$ (0.15)

In periods with a reported net loss, the effects of anti-dilutive stock options, unvested restricted stock units, unvested common stock and warrants are excluded and diluted loss per share is equal to basic loss per share. The following is a summary of the weighted average common stock equivalents for the securities outstanding during the respective periods that have been excluded from the computation of diluted net loss per common share, as their effect would be anti-dilutive:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	**2021**	**2022**	**2021**
Common stock options outstanding	20,918,181	24,884,016	21,011,863	24,375,498
Warrants to purchase common stock	8,301,202	8,301,202	8,301,202	8,301,202
Public warrants	5,231,531	—	5,231,999	—
Unvested restricted stock units	2,635,880	—	1,970,311	—
Unvested common stock	1,218,477	2,170,715	1,285,399	1,527,769
Total	38,305,271	35,355,933	37,800,774	34,204,469

Recently Issued Accounting Standards Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, Financial Instruments—Credit Losses, along with various updates and improvements. The standard, including subsequently issued amendments, requires a financial asset measured at amortized cost basis, such as accounts receivable and certain other financial assets, to be presented at the net amount expected to be collected based on relevant information about past events, including historical experience, current conditions and reasonable and supportable forecasts that affect the collectability of the reported amount. ASU 2016-13 is effective for annual reporting periods beginning after December 15, 2022, with early adoption permitted. Based on the composition of the Company's trade receivables and other financial assets, current market conditions and historical credit loss activity, the adoption of this standard is not expected to have a material impact on the Company's consolidated financial statements and related disclosures.

In August 2020, the FASB issued ASU 2020-06, Debt, Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging Contracts in Entity's Own Equity (Subtopic 815-40) Accounting for Convertible Instruments and Contracts in an Entity's Own Equity. The ASU simplifies accounting for convertible instruments by removing major separation models required under current U.S. GAAP. Consequently, more convertible debt instruments will be reported as a single liability instrument with no separate accounting for embedded conversion features. The ASU removes certain settlement conditions that are required for equity contracts to qualify for the derivative scope exception, which will permit more equity contracts to qualify for the exception. The ASU also simplifies the diluted net income per share calculation in certain areas. The new guidance is effective for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years, and early adoption is permitted. The adoption of this standard is not expected to have a material impact on the Company's consolidated financial statements and related disclosures.

3. CASH EQUIVALENTS AND INVESTMENTS

The following table summarizes the Company's unrealized gains and losses and estimated fair value of cash equivalents and investments in available-for-sale securities recorded in the condensed consolidated balance sheets (in thousands):

	As of June 30, 2022				As of December 31, 2021			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Cash and money market funds	$ 43,968	$ —	$ —	$ 43,968	$123,690	$ —	$ —	$123,690
Commercial paper	203,133	—	(924)	202,209	203,628	—	(21)	203,607
Corporate notes and bonds	236,142	—	(4,846)	231,296	80,060	2	(109)	79,953
Municipal bonds	11,846	—	(213)	11,633	2,000	—	—	2,000
US government and agency	83,183	—	(946)	82,237	193,347	1	(20)	193,328
Total cash equivalents and investments	$578,272	$ —	$ (6,929)	$571,343	$602,725	$ 3	$ (150)	$602,578

Unrealized losses related to investments were primarily a result of interest rate fluctuations, and none of the investments held as of June 30, 2022, have been in a continuous unrealized loss position for greater than one year. As of June 30, 2022, the Company did not consider any of its available-for-sale investments to be other-than-temporarily impaired nor does the Company intend, or believe it is more likely than not, that it will be required to sell the investments in an unrealized loss position before the recovery of the associated amortized cost basis.

The estimated fair value of the Company's cash equivalents and investments in available-for-sale securities as of June 30, 2022, aggregated by investment category and classified by contractual maturity date, is as follows (in thousands):

	1 Year or Less	1 Year or Greater	Total
Cash and money market funds	$ 43,968	$ —	$ 43,968
Commercial paper	202,209	—	202,209
Corporate notes and bonds	102,099	129,197	231,296
Municipal bonds	1,997	9,636	11,633
US government and agency	73,078	9,159	82,237
Total	$423,351	$147,992	$571,343

4. FAIR VALUE MEASUREMENTS

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used for such measurements were as follows (in thousands):

	Fair Value Measured as of June 30, 2022			
Assets:	Level 1	Level 2	Level 3	Total
Cash equivalents:				
Cash and money market funds[(1)]	$43,968	$ —	$ —	$ 43,968
Total cash equivalents	43,968	—	—	43,968
Short-term investments:				
Commercial paper	—	202,209	—	202,209
Corporate notes and bonds	—	102,099	—	102,099
Municipal bonds	—	1,997	—	1,997
US government and agency	—	73,078	—	73,078
Total short-term investments	—	379,383	—	379,383
Long-term investments				
Corporate notes and bonds	—	129,197	—	129,197
Municipal bonds	—	9,636	—	9,636
US government and agency	—	9,159	—	9,159
Total long-term investments	—	147,992	—	147,992
Total Assets	$43,968	$527,375	$ —	$571,343
Liabilities:				
Public warrants	$ 4,447	$ —	$ —	$ 4,447

	Fair Value Measured as of December 31, 2021			
Assets:	Level 1	Level 2	Level 3	Total
Cash equivalents:				
Cash and money market funds[(1)]	$123,690	$ —	$ —	$123,690
Commercial paper	—	125,335	—	125,335
US government and agency	—	150,000	—	150,000
Total cash equivalents	123,690	275,335	—	399,025
Short-term investments:				
Commercial paper	—	78,272	—	78,272
Corporate notes and bonds	—	14,818	—	14,818
Municipal bonds	—	2,000	—	2,000
US government and agency	—	28,353	—	28,353
Total short-term investments	—	123,443	—	123,443
Long-term investments				
Corporate notes and bonds	—	65,135	—	65,135
US government and agency	—	14,975	—	14,975
Total long-term investments	—	80,110	—	80,110
Total Assets	$123,690	$478,888	$ —	$602,578
Liabilities:				
Public warrants	$ 33,962	$ —	$ —	$ 33,962

(1) Includes money market funds associated with the Company's overnight investment sweep account.

Transfers to/from Levels 1, 2 and 3 are recognized at the beginning of the reporting period. There were no transfers between levels during the period. On June 30, 2022, the closing trading price of the public warrants was $0.85 per warrant.

5. PROPERTY AND EQUIPMENT, NET

Property and equipment, net is composed of the following (in thousands):

	June 30, 2022	December 31, 2021
Computer equipment and acquired computer software	$ 1,474	$ 840
Machinery, equipment, furniture, and fixtures	7,688	5,497
Leasehold improvements	958	827
Quantum computing systems	20,222	15,151
Gross property and equipment	30,342	22,315
Less: accumulated depreciation	(5,470)	(3,445)
Property and equipment, net	$ 24,872	$ 18,870

Depreciation expense for the three months ended June 30, 2022 and 2021 was $1.1 million and $0.3 million, respectively. Depreciation expense for the six months ended June 30, 2022 and 2021, was $2.0 million and $0.6 million, respectively.

6. AGREEMENTS WITH UNIVERSITY OF MARYLAND AND DUKE UNIVERSITY

Exclusive License Agreement

The Company entered into an exclusive license agreement (“License Agreement”) in July 2016 with the University of Maryland (“UMD”) and Duke University (“Duke”). The License Agreement grants to the Company an exclusive, perpetual license (“Initial Patents”) to certain patents, know-how and other intellectual property utilized in trapped-ion quantum computing systems. The license granted to the Company is exclusive for all patents (and non-exclusive for other types of intellectual property), subject to certain governmental rights and retained rights by UMD and Duke and other non-profit institutions to use and practice the Licensed Patents (as defined below) and technology for internal research and other non-profit purposes. In exchange for the Initial Patents, UMD and Duke received an aggregate of 142,886 common shares after giving effect to the recapitalization.

On February 1, 2021, the Company and UMD executed two amendments to the License Agreement granting exclusive rights to license additional intellectual property in exchange for a total of 257,198 common shares after giving effect to the recapitalization. Management evaluated the amendments and concluded that the arrangements qualify as equity-classified instruments and recorded an intangible asset and additional paid-in capital based on the fair value of the shares at the date the amendments were executed of $1.6 million. The shares for each executed amendment were issued during the year ended December 31, 2021.

Exclusive Option Agreements

The Company also entered into an exclusive option agreement (“Option Agreement”) with each of UMD and Duke in 2016 whereby on the anniversary of the effective date of the License Agreement for a period of 5 years, the Company has the right to exclusively license additional intellectual property developed by UMD and Duke (the “Additional Patents” and together with the Initial Patents, the “Licensed Patents”) by exercising an annual option and issuing common shares each to Duke and UMD in consideration for the Additional Patents. The amount issued to UMD and Duke pursuant to the option over the 5-year term is equal to an aggregate of 642,995 common shares to each university after giving effect to the recapitalization. The Company may elect not to exercise the option if there was not a minimum number of intellectual property developed in a given year and then the Option Agreement would extend another year. In December 2020, the Company and Duke amended the Duke Option Agreement to provide for the issuance of the remaining 1,214,317 shares of common stock after giving effect to the recapitalization in consideration for research and development services through July 15, 2026. Under the terms of the amended Option Agreement, the issuance of shares is a nonrefundable upfront payment in exchange for research and development services by Duke whereby the Company will obtain rights to any potential future intellectual property developed during the term. As such, the fair value of the shares of common stock issued to Duke was recorded as a prepaid expense and is being amortized over the term of the arrangement as services are received. The Company recognized $0.1 million of research and development expense related to the agreement with Duke during each of the three months ended June 30, 2022 and 2021, respectively, and $0.3 million of research and development expense related to the agreement with Duke during each of the six months ended June 30, 2022 and 2021, respectively.

In February 2021, the Company and UMD amended the UMD Option Agreement to provide for the issuance of the remaining 128,599 shares of common stock after giving effect to the recapitalization to UMD as a nonrefundable upfront payment in exchange for research and development services by UMD and rights to any potential future intellectual property developed through July 2021. The fair value of the shares issued to UMD was $0.8 million. The Company recognized $0.5 million and $0.7 million of research and development expense associated with the UMD Option Agreement amendment for the three and six months ended June 30, 2021, respectively. The UMD Option Agreement was fully amortized in 2021 and therefore no research and development expense was recognized for the three and six months ended June 30, 2022.

Additionally, under the terms of the License Agreement and Option Agreement, UMD was provided an exit guarantee if a sale or liquidation of the Company would occur that provides for the following:

- acceleration of the issuance of common stock as if exercised through the License Agreement,
- additional consideration equal to the consideration which a holder of one-half of one percent (0.5%) of the common stock of the Company, on a fully diluted basis, would have received in the sale to the extent it exceeds the amount UMD shall be entitled to as a result of ownership at the time of sale.

The exit guarantee with UMD lapsed as a result of the Business Combination in September 2021.

The useful life of the Licensed Patents derived from the License Agreement and the Option Agreement is the remaining legal life at the time of acquisition. The value of the Licensed Patents is based on the fair value of the common stock given as consideration on the effective date of each agreement and exercise of option. The asset is amortized over the useful life of the Licensed Patents.

7. COMMITMENTS AND CONTINGENCIES

Warranties and Indemnification

The Company's commercial services are typically warranted to perform in a manner consistent with general industry standards that are reasonably applicable and materially in accordance with the Company's documentation under normal use and circumstances.

The Company's arrangements generally include certain provisions for indemnifying customers against liabilities if its products or services infringe third-party intellectual property rights. To date, the Company has not incurred any material costs as a result of such obligations and has not accrued any liabilities related to such obligations in the accompanying condensed consolidated financial statements.

Litigation

Shareholder Lawsuit

In May 2022, a securities class action complaint captioned *Leacock v. IonQ, Inc. et al*., Case No. 8:22-cv-01306, was filed by a stockholder of the Company in the United States District Court for the District of Maryland (the "Leacock Litigation") against the Company and certain of the Company's current officers. In June 2022, a securities class action complaint captioned *Fisher v. IonQ, Inc*., Case No. 8:22-cv-01306-DLB (the "Fisher Litigation") was filed by a stockholder against the Company and certain of the Company's current officers. Both the Leacock Litigation and Fisher Litigation allege violations of Section 10(b) of the Exchange Act, and Rule 10b-5 promulgated thereunder, and Section 20(a) of the Exchange Act and seek unspecified damages. The defendants believe that the allegations in the complaints are without merit and intend to defend the matters vigorously. Given the uncertainty of litigation, the preliminary stage of the cases, and the legal standards that must be met for, among other things, class certification and success on the merits, the Company cannot reasonably estimate the possible loss or range of loss, if any, that may result from the associated suits.

Glatt Litigation

On January 12, 2021, dMY Technology Group, Inc. II, dMY Sponsor II, LLC, dMY, and dMY Sponsor III, LLC ("Sponsor") accepted service of a lawsuit where they were named as counterclaim defendants in an underlying action by and between GTY Technology Holdings, Inc. ("GTY"), dMY Technology Holdings Inc., dMY Sponsor, LLC, dMY Sponsor II, LLC, dMY Technology Group Inc. II, dMY and Sponsor (collectively "dMY Defendants") and Carter Glatt ("Glatt") and Captains Neck Holdings LLC ("Captains Neck"), an entity of which Mr. Glatt is a member. The underlying lawsuit, filed by dMY Technology Group, Inc. and dMY Sponsor, LLC, seeks a declaratory judgment that Glatt and Captains Neck are not entitled to membership units of dMY Sponsor LLC, which was formed by Harry L. You, the co-founder and former President and Chief Financial Officer of GTY when Glatt was still working at GTY. The underlying lawsuit contains claims arising from Glatt's termination of employment from GTY, including theft and misappropriation of confidential GTY information, breach of contract, breach of the duties of loyalty and fiduciary duty and conversion. Glatt responded to the underlying lawsuit by adding members of the Sponsor and officers of dMY as additional counterclaim defendants (collectively with the dMY Defendants Glatt and Captains neck, the "Counterclaim Defendants") and adding Dune Acquisition Holdings LLC, a newly formed special purpose acquisition company, as a counterclaimant and asserting claims for breach of contract, fraudulent misrepresentation, negligent misrepresentation, tortious interference with business relations, quantum meruit and unjust enrichment. dMY, and now the Company, has never employed Glatt and has no business agreements with him. The Counterclaim Defendants have denied the claims against them and have filed a motion to dismiss the suit. Although the outcome of this matter cannot be predicted with certainty and the impact of the final resolution of this matter on the Company's results of operations in a particular subsequent reporting period is not known, management does not believe that the resolution of this matter will have a material adverse effect on the Company's future consolidated financial position, future results of operations or cash flows.

8. INCOME TAX

The Company had no provision for income taxes in any period presented. The effective tax rate for each period differs from the statutory rate primarily as a result of not recognizing a deferred tax asset for losses due to having a full valuation allowance against deferred tax assets.

The realization of tax benefits of deferred tax assets is dependent upon future levels of taxable income, of an appropriate character, in the periods the items are expected to be deductible or taxable. Based on the available objective evidence, the Company does not believe it is more likely than not that the net deferred tax assets will be realizable. Accordingly, the Company has provided a full valuation allowance against the net deferred tax assets as of June 30, 2022, and December 31, 2021. The Company intends to maintain the remaining valuation allowance until sufficient positive evidence exists to support a reversal of, or decrease in, the valuation allowance.

9. WARRANT TRANSACTION AGREEMENT

In November 2019, contemporaneously with a revenue arrangement, the Company entered into a contract, pursuant to which the Company agreed to issue to a customer, warrants to acquire shares of Legacy IonQ Series B-1 preferred stock (the "Warrant Shares"), subject to certain vesting events. Upon closing of the Business Combination, these warrants exercisable for Legacy IonQ Series B-1 preferred stock were assumed by the Company and converted into a warrant to purchase a number of shares of common stock equal to the product (rounded down to the nearest whole number) of (a) the number of shares of Legacy IonQ common stock issuable upon conversion of a share of Legacy IonQ Series B-1 preferred stock and (b) the Exchange Ratio (as defined in the Super 8-K filed with the SEC on October 4, 2021), at an exercise price per share (rounded up to the nearest whole cent) equal to (i) the exercise price per share of such Legacy IonQ Warrant Shares divided by (ii) the Exchange Ratio. Except as specifically provided in the merger agreement, the Warrant Shares will have the same terms and be subject to the same conditions (including applicable vesting conditions) as set forth in the Legacy IonQ warrant agreement. As of June 30, 2022, the contract allows for the customer to acquire up to 8,301,202 shares of common stock in the Company.

As the Warrant Shares were issued in connection with an existing commercial agreement with a customer, the value of the Warrant Shares were determined to be consideration payable to the customer and consequently are treated as a reduction to revenue recognized under the corresponding revenue arrangement.

Approximately 6.5% of the Warrant Shares vested and became immediately exercisable in August 2020. The remaining Warrant Shares will vest and become exercisable upon satisfaction of certain milestones based on revenue generated under the commercial agreement with the customer, to the extent certain prepayments are made by the customer. The exercise price for the Warrant Shares is $1.38 per share and the warrant is exercisable through November 2029. The fair value of the Warrant Shares at the date of issuance was determined to be $8.7 million.

During 2020, Warrant Shares with a fair value of $0.6 million vested. This fair value of the unamortized warrants is recorded within other noncurrent assets and the Warrant Shares are amortized over time as the related customer revenue is earned. During the three and six months ended June 30, 2021, $0.1 million of the warrant amortization was recorded as a reduction of the related customer revenue. As of December 31, 2021, the contract asset was fully amortized, and therefore, no warrant amortization was recorded as a reduction of the related customer revenue during the three and six months ended June 30, 2022.

10. WARRANT LIABILITIES

The Company assumed 7,500,000 of public warrants on September 30, 2021, as part of the Business Combination. As of June 30, 2022, there were 5,231,531 public warrants to purchase common stock outstanding. Each warrant entitles the registered holder to purchase one share of common stock at a price of $11.50 per share.

The public warrants may be exercised on the later of (a) 30 days after the completion of a Business Combination or (b) 12 months from the closing of the Initial Public Offering of dMY; provided in each case that the Company has an effective registration statement under the Securities Act covering the shares of common stock issuable upon exercise of the public warrants and a current prospectus relating to them is available (or the Company permits holders to exercise their public warrants on a cashless basis and such cashless exercise is exempt from registration under the Securities Act). The public warrants became exercisable on November 17, 2021.

Redemption of warrants when the price per share of common stock equals or exceeds $18.00:

Once the warrants become exercisable, the Company may redeem the outstanding warrants for cash:

- in whole and not in part;
- at a price of $0.01 per warrant;
- upon a minimum of 30 days' prior written notice of redemption; and
- if, and only if, the closing price of common stock equals or exceeds $18.00 per share (as adjusted) for any 20 trading days within a 30-trading day period ending on the third trading day prior to the date on which the Company sends the notice of redemption to the warrant holders.

Redemption of warrants for when the price per share of common stock equals or exceeds $10.00:

Once the warrants become exercisable, the Company may redeem the outstanding warrants:

- in whole and not in part;
- at $0.10 per warrant upon a minimum of 30 days' prior written notice of redemption provided that holders will be able to exercise their warrants on a cashless basis prior to redemption and receive that number of shares determined by reference to an agreed table based on the redemption date and the fair market value (as defined within the warrant agreement) of the common stock except as otherwise described within the warrant agreement; and upon a minimum of 30 days' prior written notice of redemption; and
- if, and only if, the closing price of common stock equals or exceeds $10.00 per public share (as adjusted) for any 20 trading days within the 30-trading day period ending three trading days before the Company sends notice of redemption to the warrant holders.

No public warrants had been redeemed by the Company as of June 30, 2022.

11. STOCK-BASED COMPENSATION

Equity Incentive Plans

The Company has a 2015 Equity Incentive Plan (the "2015 Plan") which provided for the grant of share-based compensation to certain officers, directors, employees, consultants, and advisors. Upon the closing of the Business Combination, no further awards were made pursuant to the 2015 Plan and all outstanding Legacy IonQ stock options under the 2015 Plan were assumed by the Company. Each Legacy IonQ stock option issued and outstanding immediately prior to the Business Combination was converted into an option to purchase shares of common stock of the Company equal to the product of (a) the number of shares of Legacy IonQ common stock subject to such Legacy IonQ stock option agreement immediately prior to the Business Combination and (b) the exchange ratio at an exercise price equal to the (i) the exercise price per share of such Legacy IonQ stock option divided by (ii) the exchange ratio. Such stock options will continue to be governed by the terms of the 2015 Plan and the stock option agreements thereunder, until such outstanding options are exercised or until they terminate or expire by their terms. For awards granted under the 2015 Plan, vesting generally occurs over four to five years from the date of grant.

In August 2021, the Company's board of directors adopted the 2021 Equity Incentive Plan (the "2021 Plan") and the stockholders approved the 2021 Plan in September 2021. The 2021 Plan became effective immediately upon the closing of the Business Combination. The 2021 Plan provides for the grant of stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards ("RSU"), performance awards and other forms of awards to employees, directors, and consultants. Initially, a maximum of 26,235,000 shares of common stock may be issued under the 2021 Plan. The number of shares of the Company's common stock reserved for issuance under the 2021 Plan automatically increases on January 1 of each year, beginning on January 1, 2022, and continuing through and including January 1, 2031, by 5% of the Fully Diluted Common Stock (as defined in the 2021 Plan) outstanding on December 31 of the preceding year, or a lesser number of shares determined by the Company's board of directors prior to such increase. As of January 1, 2022, the number of shares reserved for issuance under the 2021 Plan increased by 12,947,703. For awards granted under the 2021 Plan, vesting generally occurs over three to four years from the date of grant. As of June 30, 2022, the Company had 33,644,512 shares available for grant under the 2021 Plan.

Under both equity incentive plans, all options granted have a contractual term of 10 years.

Stock Options

The Company estimates the fair value of stock options on the date of grant using the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires estimates of highly subjective assumptions, which affect the fair value of each stock option.

Expected Volatility—As the Company was privately held until 2021 and there has been no history of a public market for its common stock prior to closing the Business Combination, the expected volatility is based on the average historical stock price volatility of comparable publicly-traded companies in its industry peer group, financial, and market capitalization data.

Expected Term—The expected term of the Company's options represents the period that the stock-based awards are expected to be outstanding.

The Company has estimated the expected term of its employee awards using the SAB Topic 14 Simplified Method allowed by the FASB and SEC, for calculating expected term as it has limited historical exercise data to provide a reasonable basis upon which to otherwise estimate expected term. Certain of the Company's options began vesting prior to the grant date, in which case the Company uses the remaining vesting term at the grant date in the expected term calculation.

Risk-Free Interest Rate—The Company estimates its risk-free interest rate by using the yield on actively traded non-inflation-indexed U.S. treasury securities with contract maturities equal to the expected term.

Dividend Yield—The Company has not declared or paid dividends to date and does not anticipate declaring dividends. As such, the dividend yield has been estimated to be zero.

Fair Value of Underlying Common Stock—For options granted under the 2015 Plan, because the Company's common stock was not yet publicly traded on the date of grant, the Company estimated the fair value of common stock prior to closing the Business Combination. The board of directors considered numerous objective and subjective factors to determine the fair value of the Company's common stock at each meeting in which awards are approved. The factors considered included, but were not limited to: (i) the results of contemporaneous independent third-party valuations of the Company's common stock; (ii) the prices, rights, preferences, and privileges of Legacy IonQ's previously Convertible Redeemable Preferred Stock relative to those of its common stock; (iii) the lack of marketability of the Company's common stock; (iv) actual operating and financial results; (v) current business conditions and projections; (vi) the likelihood of achieving a liquidity event, such as an initial public offering or sale of the Company, given prevailing market conditions; and (vii) precedent transactions involving the Company's shares. For options granted under the 2021 Plan, the Company utilizes the closing stock price on the date of grant as the fair value of the common stock underlying such options.

The assumptions used to estimate the fair value of stock options granted during the three and six months ended June 30, 2022 and 2021, are as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Risk-Free Interest Rate	2.72%	— %	2.12%	0.96%
Expected Term (in years)	5.50	—	5.58	6.26
Expected Volatility	78.40%	— %	77.82%	77.04%
Dividend Yield	— %	— %	— %	— %

The stock option activity is summarized in the following table:

	Number of Option Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2021	22,133,210	$ 0.64	7.84	$ 377.58
Granted	1,544,470	11.98		
Exercised	(1,672,676)	0.34		
Cancelled/Forfeited	(103,540)	0.73		
Outstanding as of June 30, 2022	21,901,464	$ 1.46	7.54	$ 75.63
Exercisable as of June 30, 2022	11,278,172	$ 0.75	7.16	$ 41.34
Exercisable and expected to vest as of June 30, 2022	21,901,464	$ 1.46	7.54	$ 75.63

	Number of Option Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2020	21,863,368	$ 0.34	8.67	$ 44.79
Granted	6,492,540	2.39		
Exercised	(3,239,136)	1.66		
Cancelled/ Forfeited	(342,191)	0.70		
Outstanding as of June 30, 2021	24,774,581	$ 0.70	8.44	$ 204.88

The following table summarizes additional information on stock option grants, vesting and exercises (in millions, except per share amounts):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Total intrinsic value of options exercised	$ 4.9	$ 0.9	$ 6.8	$ 23.7
Aggregate grant-date fair value of options vested	$ 2.7	$ 1.2	$ 4.9	$ 1.9
Weighted-average grant-date fair value per share for options granted	$ 3.82	$ —	$ 8.10	$ 5.83

Early Exercised Stock Options

As of June 30, 2022, and December 31, 2021, there were 1,155,810 and 1,420,662 shares, respectively, subject to repurchase related to stock options early exercised and unvested. These amounts are reclassified to common stock and additional paid-in capital as the underlying shares vest. As of June 30, 2022, and December 31, 2021, the Company recorded a liability related to these shares subject to repurchase in the amount of $2.5 million and $3.1 million, respectively, in its condensed consolidated balance sheets.

Restricted Stock Units

The RSU activity is summarized in the following table:

	Number of RSUs	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term (Years)	Aggregate Fair Value (in millions)
Outstanding as of December 31, 2021	—	$ —	—	$ —
Granted	4,021,559	9.58		
Vested	(433,172)	11.16		
Forfeited	(27,838)	12.77		
Outstanding as of June 30, 2022	3,560,549	$ 9.36	3.25	$ 33.33
Expected to vest after June 30, 2022	3,499,049	$ 9.30	3.31	$ 32.54

During the three months ended June 30, 2022, the Company granted 81,134 RSUs related to the settlement of an accrued bonus liability.

Stock-Based Compensation Expense

Total stock-based compensation expense for stock option awards, RSU awards, and unvested restricted common stock which are included in the condensed consolidated financial statements is as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Cost of revenue	$ 247	$ 31	$ 351	$ 31
Research and development	2,368	717	4,066	1,170
Sales and marketing	503	25	576	25
General and administrative	2,766	1,670	7,563	2,648
Stock-based compensation, net of amounts capitalized	5,884	2,443	12,556	3,874
Capitalized stock-based compensation - Intangibles and fixed assets	471	89	647	133
Total stock-based compensation	$ 6,355	$ 2,532	$13,203	$4,007

Unrecognized Stock-Based Compensation

A summary of our remaining unrecognized compensation expense and the weighted-average remaining amortization period at June 30, 2022, related to our non-vested stock options and RSU awards is presented below (in millions, except time period amounts):

	Unrecognized Expense	Weighted-Average Amortization Period (Years)
Restricted stock units	$ 30.1	1.7
Stock options	$ 37.1	1.8

Employee Stock Purchase Plan

In August 2021, the Company's board of directors adopted the Employee Stock Purchase Plan (the "ESPP"), which was subsequently approved by the Company's stockholders in September 2021, and became effective upon the closing of the Business Combination. The ESPP is intended to qualify as an "employee stock purchase plan" within the meaning of Section 423 of the U.S. Internal Revenue Code of 1986, as amended (the "Code"). The number of shares of common stock initially reserved for issuance under the ESPP was 5,354,000 shares. The ESPP provides for an annual increase on January 1 of each year, beginning on January 1, 2022, and continuing through and including January 1, 2031, equal to the lesser of (i) 1% of the fully diluted shares of common stock outstanding on the last day of the prior fiscal year, (ii) 10,708,000 shares, or (iii) a lesser number of shares determined by the Company's board of directors prior to such increase. The board of directors elected not to approve the annual increase of ESPP shares on January 1, 2022.

Under the terms of the ESPP, eligible employees can elect to acquire shares of the Company's common stock through periodic payroll deductions during a series of offering periods. Purchases under the ESPP are affected on the last business day of each offering period at a 15% discount to the lower of closing price on that day or the closing price on the first day of the offering period. As of June 30, 2022, no shares of common stock had been issued under the ESPP and no offering period had been set by the board of directors.

12. OTHER BALANCE SHEET ACCOUNTS

Accrued expenses consisted of the following (in thousands):

	June 30, 2022	December 31, 2021
Accrued payroll expenses and related benefits	$ 2,219	$ 1,025
Accrued expenses - other	1,800	1,622
Total accrued expenses	$ 4,019	$ 2,647

13. RELATED PARTY TRANSACTIONS

Transactions with UMD and Duke

As described in Note 6, the Company entered into a License Agreement and Option Agreement with UMD and Duke whereby the Company, in the normal course of business, has licensed certain intellectual property and, in the case of the Amendments to the Duke and UMD Option Agreements, has purchased research and development services. The Company considers these agreements to be related party transactions because the Company's Co-Founder and Chief Technology Officer served as a professor at Duke and the Company's Co-Founder and Chief Scientist served as a professor at UMD. During 2021, the Company's Chief Scientist moved to Duke and each, in their role as professors at Duke, are leading the research subject to the License Agreement and Option Agreement with Duke as of June 30, 2022.

In addition, the Company has an operating lease for office space with the UMD.

In September 2021, the Company entered into a multiyear deal with UMD to provide certain quantum computing services and facility access related to the National Quantum Lab at UMD in exchange for payments totaling $14.0 million over 3 years. The transaction price is estimated at $12.6 million.

The Company's results from transactions with related parties, as reflected in the condensed consolidated statements of operations are detailed below (in thousands). Except for $0.2 million related to the amortization of a research and development arrangement with Duke in each of the three months ended June 30, 2022 and 2021, respectively, and $0.3 million related to the amortization of a research and development arrangement with Duke in each of the six months ended June 30, 2022 and 2021, respectively, all transactions in the table below relate to the Company's arrangements with UMD (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Revenue	$ 1,002	$ —	$1,994	$ —
Cost of revenue	12	—	26	—
Research and development(1)	269	796	540	1,336
Sales and marketing	37	—	69	—
General and administrative	29	61	58	130

(1) Included in research and development expenses is non-cash amortization associated with the Exclusive Option Agreements with UMD and Duke of $0.2 million and $0.7 million for the three months ended June 30, 2022 and 2021, respectively, and $0.3 million and $1.0 million for the six months ended June 30, 2022 and 2021, respectively. Also included in research and development expenses is $0.1 million in allocated rent expense for each of the three months ended June 30, 2022 and 2021, and $0.3 million in allocated rent expense for each of the six months ended June 30, 2022 and 2021.

The Company has the following balances related to transactions with related parties, as reflected in the condensed consolidated balance sheets (in thousands). Except for $0.5 million in prepaids expenses and other current assets as of each of June 30, 2022 and December 31, 2021, and $1.6 million and $1.8 million in other noncurrent assets as of June 30, 2022 and December 31, 2021, respectively, which relate to prepaid services to Duke under the Option agreement, all transactions in the table below relate to the Company's arrangements with UMD (in thousands):

	June 30, 2022	December 31, 2021
Assets		
Prepaid expenses and other current assets	$ 562	$ 612
Operating lease right-of-use asset	3,894	4,032
Other noncurrent assets	1,585	1,845
Liabilities		
Accounts payable	2	54
Current operating lease liabilities	577	568
Unearned revenue	3,302	2,821
Non-current operating lease liabilities	3,556	3,643

14. GEOGRAPHIC INFORMATION

Revenue generated for customers located in the United States was approximately 85% and 46% of revenue for the three months ended June 30, 2022 and 2021, respectively, and 86% and 54% of revenue for the six months ended June 30, 2022 and 2021, respectively.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

This Quarterly Report on Form 10-Q contains statements that may constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that involve substantial risks and uncertainties. All statements contained in this Quarterly Report on Form 10-Q other than statements of historical fact, including statements regarding our future results of operations and financial position, our business strategy and plans, and our objectives for future operations, are forward-looking statements. The words "believes," "expects," "intends," "estimates," "projects," "anticipates," "will," "plan," "may," "should," or similar language are intended to identify forward-looking statements.

It is routine for our internal projections and expectations to change throughout the year, and any forward-looking statements based upon these projections or expectations may change prior to the end of the next quarter or year. Readers of this Quarterly Report on Form 10-Q are cautioned not to place undue reliance on any such forward-looking statements. As a result of a number of known and unknown risks and uncertainties, our actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Risks and uncertainties are identified under "Risk Factors" in Item 1A herein and in our other filings with the Securities and Exchange Commission (the "SEC"). All forward-looking statements included herein are made only as of the date hereof. Unless otherwise required by law, we do not undertake, and specifically disclaim, any obligation to update any forward-looking statement, whether as a result of new information, future events, or otherwise after the date of such statement.

You should read the following discussion and analysis of our financial condition and results of operations together with our unaudited condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q, and our audited consolidated financial statements and related notes for the year ended December 31, 2021, filed with the SEC on March 28, 2022. Unless the context otherwise requires, the terms "IonQ," "Legacy IonQ" "we," "us," "our" and similar terms refer to IonQ Quantum, Inc. prior to the consummation of the Business Combination and IonQ, Inc. and its wholly owned subsidiaries after the consummation of the Business Combination. References to "dMY" refer to the predecessor company prior to the consummation of the Business Combination.

Overview

We are developing quantum computers designed to solve the world's most complex problems, and transform business, society, and the planet for the better. We believe that our proprietary technology, our architecture, and the technology exclusively available to us through license agreements will offer us advantages both in terms of research and development, as well as the commercial value of our intended product offerings. We sell access to quantum computers, and we are in the process of researching and developing technologies for quantum computers with increasing computational capabilities. We currently make access to our quantum computers available via three major cloud platforms, Amazon Web Services' (AWS) Amazon Braket, Microsoft's Azure Quantum, and Google's Cloud Marketplace, and to select customers via our own cloud service.

We are still in the early stages of generating revenue. We have incurred significant operating losses since our inception. Our net losses were $5.9 million for the six months ended June 30, 2022, and we expect to continue to incur significant losses for the foreseeable future. As of June 30, 2022, we had an accumulated deficit of $151.7 million. We expect to continue to incur losses for the foreseeable future as we prioritize reaching the technical milestones necessary to achieve increasingly higher number of stable qubits and higher levels of fidelity than that which presently exists— prerequisites for quantum computing to reach broad quantum advantage.

The Merger Agreement and Public Company Costs

On March 7, 2021, Legacy IonQ, dMY and Ion Trap Acquisition Inc. (the "Merger Sub") entered into an Agreement and Plan of Merger (the "Merger Agreement"). Pursuant to the Merger Agreement, at the closing, the Merger Sub was merged with and into Legacy IonQ, with Legacy IonQ continuing as the surviving corporation following the merger, being a wholly owned subsidiary of dMY and the separate corporate existence of the Merger Sub ceased. Commensurate with the business combination, dMY changed its name to IonQ, Inc. and Legacy IonQ changed its name to IonQ Quantum, Inc. IonQ became the successor registrant with the SEC, meaning that Legacy IonQ's financial statements for previous periods are disclosed in the registrant's future periodic reports filed with the SEC.

While the legal acquirer in the Merger Agreement is dMY, for financial accounting and reporting purposes under accounting principles generally accepted in the United States of America ("U.S. GAAP"), Legacy IonQ is the accounting acquirer and the merger is accounted for as a "reverse recapitalization" (i.e., a capital transaction involving the issuance of stock by dMY for the stock of Legacy IonQ). A reverse recapitalization does not result in a new basis of accounting, and the financial statements of the Company represent the continuation of the financial statements of Legacy IonQ in many respects. Under this method of accounting, dMY is treated as the "acquired" company for financial reporting purposes.

As a result of the merger, Legacy IonQ is the successor to an SEC registrant and is listed on the New York Stock Exchange ("NYSE"), which will require IonQ to hire additional personnel and implement procedures and processes to address public company regulatory requirements and customary practices. As a public company, we have incurred and expect to continue to incur, expenses for, among other things, directors' and officers' liability insurance, director fees and additional internal and external accounting, legal and administrative resources, including increased audit and legal fees.

Business and Technical Highlights

- IonQ announced a paid contract with Airbus, who is using Aria to explore optimization problems that are core to their aerospace business, such as how to efficiently load cargo on aircraft. IonQ expects that the quantum algorithm it is developing with Airbus will account for a number of critical aviation variables that make this problem particularly difficult for classical algorithms to solve.
- IonQ announced a paid contract with Dow, a global leader in chemistry and material science, who is using Aria to explore the boundaries of quantum computing in materials discovery research. They join other customers who are partnering with IonQ to explore the intersection of quantum machine learning, material science, and chemistry.
- IonQ announced the results of a partnership with GE Research to develop a quantum algorithm that manages financial risk exposure. The work used a large data set to generate risk models across up to four variables and is broadly applicable to industries which have risk-management needs, such as finance, insurance, and supply chain management.
- Aria, which IonQ believes to be the most powerful commercial quantum computer in the world with 23 algorithmic qubits, which will be available tomorrow to all users of Microsoft Azure Quantum. This announcement furthers IonQ's commitment to making its industry-leading hardware publicly accessible to current and future generations of quantum programmers.
- IonQ signed a formal agreement to collaborate with the University of Maryland on a project for the National Science Foundation. For this, IonQ will build and host a quantum router as a part of a new quantum network–the Mid-Atlantic Region Quantum Internet—spanning UMD's campus and surrounding area. The work is not only important for quantum communications, but also continues IonQ's work towards connecting multiple quantum computers together to form even more powerful systems.
- IonQ finalized a subcontract with Zapata Computing to collaborate on a multi-million dollar DARPA project.
- Aria has increased its computational power by approximately 8x, now reaching #AQ 23, up from #AQ 20. Aria will become IonQ's newest cloud offering, representing more than a 130,000x increase in computational power from the existing offering.
- IonQ announced an 8x increase in the computation power of IonQ Harmony, which has achieved up to #AQ 9, up from a previous benchmark of #AQ 6. Harmony systems are available to customers via all three major cloud partners, including Microsoft Azure, Amazon Web Services, and Google Cloud.
- IonQ is investing in cutting-edge research on natural language processing, or NLP. IonQ created quantum NLP algorithms to represent linguistic qualities like ambiguity, vagueness, and novelty which are notoriously difficult to represent in classical compute. No previously published work has demonstrated ambiguity resolution or language generation working on live quantum hardware. IonQ believes quantum techniques of this nature can dramatically improve NLP performance.
- IonQ has identified a facility in Seattle, Washington to host its first assembly lines for manufacturing quantum computers.
- IonQ announced the hire of Dave Mehuys as Vice President of Product Engineering to support its production plans. Dr. Mehuys comes to IonQ after serving as Vice President of Systems Engineering at PsiQuantum and brings with him a deep understanding of quantum hardware.
- IonQ announced the creation of IonQ GmbH and IonQ Israel Ltd in support of growing regional investments in quantum computing.
- IonQ welcomed Kathy Chou to the IonQ Board of Directors in July 2022. Ms. Chou is currently the Senior Vice President of SaaS Engineering at Nutanix, and brings a wealth of experience in go-to-market strategy and developing and deploying SaaS applications.

Impact of COVID-19 on Our Business

In March 2020, the COVID-19 outbreak was declared a pandemic by the World Health Organization. There are many uncertainties regarding the ongoing pandemic, and we are closely monitoring its impact on all aspects of our business, including how it impacts our employees, suppliers, vendors, and business partners. The pandemic has resulted in government authorities implementing numerous measures to try to contain the virus, such as travel bans and restrictions, quarantines, stay-at-home or shelter-in-place orders, and business shutdowns. These measures may adversely impact our employees and operations and the operations of suppliers and business partners. In addition, various aspects of our business cannot be conducted remotely. These measures by government authorities may continue to remain in place for a significant period of time and could adversely affect our development plans, sales and marketing activities, and business operations.

The evolution of the virus is unpredictable at this point and any resurgence may slow down our ability to develop our quantum computing program. The ongoing COVID-19 pandemic could limit the ability of suppliers and business partners to perform, including third-party suppliers' ability to provide components and materials. We may also experience an increase in the cost of raw materials. The full impact of the COVID-19 pandemic continues to evolve. As such, the full magnitude of the pandemic's effect on our financial condition, liquidity and future results of operations is uncertain. Management continues to actively monitor our financial condition, liquidity, operations, suppliers, industry, and workforce.

Key Components of Results of Operations

Revenue

We have generated limited revenues since our inception. We derive revenue from providing access to quantum-computing-as-a-service ("QCaaS") and consulting services related to co-developing algorithms on our quantum computing systems. In arrangements with the cloud service providers, the cloud service provider is considered the customer and we do not have any contractual relationships with the cloud service providers' end users.

We have determined that our QCaaS contracts represent a combined, stand-ready performance obligation to provide access to our quantum computing systems together with related maintenance and support. The transaction price for our contracts generally includes a variable fee based on usage of our quantum computing systems and may include a fixed fee for a minimum volume of usage to be made available over a defined period of access. Fixed fee arrangements may also include a variable component whereby customers pay an amount for usage over contractual minimums contained in the contracts. For contracts with a fixed transaction price, the fixed fee is recognized as QCaaS subscription-based revenues on a straight-line basis over the access period. The Company has determined that contracts which contain consulting services related to co-developing quantum computing algorithms and the ability to use our quantum computing systems to run such algorithms represent a combined performance obligation that is satisfied over-time with revenue recognized based on the efforts incurred to date relative to the total expected effort. For contracts without fixed fees, variable usage fees are billed and recognized during the period of such usage.

We are currently focused on marketing our QCaaS and have entered into, and are continuing to enter into, new contracts with customers.

Operating Costs and Expenses

Cost of revenue

Cost of revenue primarily consists of expenses related to delivering our services, including personnel-related expenses, allocated facility and other costs for customer facing functions, and costs associated with maintaining our in-service quantum computing systems to ensure proper calibration as well as costs incurred for maintaining the cloud on which the QCaaS resides beginning in the period that QCaaS revenue generating activities began. Personnel-related expenses include salaries, benefits, and stock-based compensation. Cost of revenue excludes depreciation and amortization related to our quantum computing systems and related software.

Research and development

Research and development expenses consist of personnel-related expenses, including salaries, benefits and stock-based compensation, and allocated facility and other costs for our research and development functions. Unlike a standard computer, design and development efforts continue throughout the useful life of our quantum computing systems to ensure proper calibration and optimal functionality. Research and development expenses also include purchased hardware and software costs related to quantum computing systems constructed for research purposes that are not probable of providing future economic benefit and have no alternate future use as well as costs associated with third-party research and development arrangements.

Sales and marketing

Sales and marketing expenses consist of personnel-related expenses, including salaries, benefits and stock-based compensation, costs for direct advertising, marketing and promotional expenditures and allocated facility and other costs for our sales and marketing functions. We expect to continue to make the necessary sales and marketing investments to enable us to increase our market penetration and expand our customer base.

General and administrative

General and administrative expenses consist of personnel-related expenses, including salaries, benefits and stock-based compensation, and allocated facility and other costs for our corporate, executive, finance, and other administrative functions. General and administrative expenses also include expenses for outside professional services, including legal, auditing and accounting services, recruitment expenses, information technology, travel expenses and certain non-income taxes, insurance, and other administrative expenses.

We expect our general and administrative expenses to increase for the foreseeable future as we scale headcount with the growth of our business, and as a result of operating as a public company, including compliance with the rules and regulations of the SEC, NYSE, legal, audit, additional insurance expenses, investor relations activities, and other administrative and professional services. As a result, we expect that our general and administrative expenses will increase in absolute dollars but may fluctuate as a percentage of total revenue over time.

Depreciation and amortization

Depreciation and amortization expense results from depreciation and amortization of our property and equipment and intangible assets that is recognized over their estimated lives.

Nonoperating Costs and Expenses

Change in fair value of warrant liabilities

The change in fair value of warrant liabilities consists of mark-to-market fair value adjustments recorded associated with the public warrants assumed as part of the business combination.

Interest income, net

Interest income, net consists of income earned on our money market funds and other available-for-sale investments.

Other income (expense), net

Other income (expense), net consists of realized losses on our available-for-sale investments and certain other expenses.

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Results of Operations

The following table sets forth our statements of operations data for each of the periods indicated:

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
	(in thousands)			
Revenue	$ 2,608	$ 93	$ 4,561	$ 218
Costs and expenses:				
Cost of revenue (excluding depreciation and amortization)(1)	742	327	1,310	508
Research and development(1)	9,653	5,477	16,990	9,131
Sales and marketing(1)	2,132	871	4,002	1,098
General and administrative(1)	7,558	2,904	16,752	5,860
Depreciation and amortization	1,451	502	2,717	947
Total operating costs and expenses	21,536	10,081	41,771	17,544
Loss from operations	(18,928)	(9,988)	(37,210)	(17,326)
Change in fair value of warrant liabilities	16,061	—	29,509	—
Interest income, net	1,259	—	1,867	—
Other income (expense), net	(46)	2	(47)	5
Loss before benefit for income taxes	(1,654)	(9,986)	(5,881)	(17,321)
Benefit for income taxes	—	—	—	—
Net loss	$ (1,654)	$ (9,986)	$ (5,881)	$(17,321)

(1) Cost of revenue, research and development, sales and marketing, and general and administrative expenses for the periods include stock-based compensation expense as follows:

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
	(in thousands)			
Cost of revenue	$ 247	$ 31	$ 351	$ 31
Research and development	2,368	717	4,066	1,170
Sales and marketing	503	25	576	25
General and administrative	2,766	1,670	7,563	2,648

Comparison of the Three Months Ended June 30, 2022 and 2021

Revenue

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Revenue	$ 2,608	$ 93	$2,515	2,704%

Revenue increased by $2.5 million, or 2,704%, to $2.6 million for the three months ended June 30, 2022, from $0.1 million for the three months ended June 30, 2021. The increase was primarily driven by new revenue contracts under which we provided services during the three months ended June 30, 2022, as well as an increase in services provided through our cloud service providers.

Cost of revenue

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Cost of revenue (excluding depreciation and amortization)	$ 742	$ 327	$ 415	127%

Cost of revenue increased by $0.4 million, or 127%, to $0.7 million for the three months ended June 30, 2022, from $0.3 million for the three months ended June 30, 2021. The increase was driven by the increase in costs to service new contracts for the three months ended June 30, 2022.

Research and development

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Research and development	$ 9,653	$ 5,477	$4,176	76%

Research and development expenses increased by $4.2 million, or 76%, to $9.7 million for the three months ended June 30, 2022, from $5.5 million for the three months ended June 30, 2021. The increase was primarily driven by a $2.5 million increase in payroll-related expenses, including stock-based compensation of $1.7 million, as a result of increased headcount, and a $1.5 million increase in materials, supplies and equipment costs.

Sales and marketing

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Sales and marketing	$ 2,132	$ 871	$1,261	145%

Sales and marketing expenses increased by $1.3 million, or 145%, to $2.1 million for the three months ended June 30, 2022, from $0.9 million for the three months ended June 30, 2021. The increase was primarily due to an increase of $1.0 million of payroll-related expenses, including an increase in stock-based compensation of $0.5 million, as a result of increased headcount, and increased costs to promote our services and other marketing initiatives of approximately $0.3 million.

General and administrative

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
General and administrative	$ 7,558	$ 2,904	$4,654	160%

General and administrative expenses increased by $4.7 million, or 160%, to $7.6 million for the three months ended June 30, 2022, from $2.9 million for the three months ended June 30, 2021. The increase was primarily driven by an increase of $1.5 million in payroll-related expenses, including an increase in stock-based compensation of $1.1 million, as a result of increased headcount, and an increase of $1.1 million in director and officer insurance costs. The remaining increase is primarily due to additional costs incurred to operate as a public company and other general and administrative activities as a result of hiring additional personnel.

Depreciation and amortization

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Depreciation and amortization	$ 1,451	$ 502	$ 949	189%

Depreciation and amortization expenses increased by $0.9 million, or 189%, to $1.5 million for the three months ended June 30, 2022, from $0.5 million for the three months ended June 30, 2021. The increase was primarily driven by an increase of $0.1 million due to amortization of capitalized internally developed software and an increase of $0.5 million in depreciation expense associated with capitalized quantum computing system costs.

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Change in fair value of warrant liabilities

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Change in fair value of warrant liabilities	$ 16,061	$ —	$16,061	NM

NM—Not Meaningful

The change in fair value of warrant liabilities increased $16.1 million to $16.1 million for the three months ended June 30, 2022, from zero for the three months ended June 30, 2021, as a result of mark-to-market income adjustments recorded for the public warrants assumed as part of the Business Combination.

Interest income, net

	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Interest income, net	$ 1,259	$ —	$1,259	NM

NM—Not Meaningful

Interest income, net increased by $1.3 million to $1.3 million for the three months ended June 30, 2022, from zero for the three months ended June 30, 2021. The increase was primarily driven by interest income earned on our cash equivalents and available-for-sale investments.

Comparison of the Six Months Ended June 30, 2022 and 2021

Revenue

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Revenue	$ 4,561	$ 218	$4,343	1,992%

Revenue increased by $4.3 million, or 1,992%, to $4.6 million for the six months ended June 30, 2022, from $0.2 million for the six months ended June 30, 2021. The increase was primarily driven by new revenue contracts under which we provided services during the six months ended June 30, 2022.

Cost of revenue

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Cost of revenue (excluding depreciation and amortization)	$ 1,310	$ 508	$ 802	158%

Cost of revenue increased by $0.8 million, or 158%, to $1.3 million for the six months ended June 30, 2022, from $0.5 million for the six months ended June 30, 2021. The increase was driven by the increase in costs to service new contracts for the six months ended June 30, 2022.

Research and development

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Research and development	$ 16,990	$ 9,131	$7,859	86%

Research and development expense increased by $7.9 million, or 86%, to $17.0 million for the six months ended June 30, 2022 from $9.1 million for the six months ended June 30, 2021. The increase was primarily driven by a $4.7 million increase in payroll-related expenses, including an increase in stock-based compensation of $2.9 million, as a result of increased headcount, and a $2.5 million increase in materials, supplies and equipment costs.

Sales and marketing

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Sales and marketing	$ 4,002	$ 1,098	$2,904	264%

Sales and marketing expense increased by $2.9 million, or 264%, to $4.0 million for the six months ended June 30, 2022, from $1.1 million for the six months ended June 30, 2021. The increase was primarily due to an increase of $2.1 million of payroll-related expenses, including an increase in stock-based compensation of $0.6 million, as a result of increased headcount, and increased costs to promote our services and other marketing initiatives of approximately $0.8 million.

General and administrative

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
General and administrative	$ 16,752	$ 5,860	$10,892	186%

General and administrative expenses increased by $10.9 million, or 186%, to $16.8 million for the six months ended June 30, 2022, from $5.9 million for the six months ended June 30, 2021. The increase was primarily driven by an increase of $5.9 million in payroll-related expenses, including an increase in stock-based compensation of $4.9 million, as a result of increased headcount, and an increase of $2.2 million in director and officer insurance costs. The remaining increase is primarily due to additional costs incurred to operate as a public company and other general and administrative activities as a result of hiring additional personnel.

Depreciation and amortization

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Depreciation and amortization	$ 2,717	$ 947	$1,770	187%

Depreciation and amortization expenses increased by $1.8 million, or 187%, to $2.7 million for the six months ended June 30, 2022, from $0.9 million for the six months ended June 30, 2021. The increase was primarily driven by an increase of $0.4 million due to amortization of capitalized internally developed software and an increase of $0.9 million in depreciation expense associated with capitalized quantum computing system costs.

Change in fair value of warrant liabilities

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021	$ Change	% Change
	(in thousands)			
Change in fair value of warrant liabilities	$ 29,509	$ —	$29,509	NM

NM—Not Meaningful

The change in fair value of warrant liabilities increased $29.5 million to $29.5 million for the six months ended June 30, 2022, from zero for the six months ended June 30, 2021, as a result of mark-to-market income adjustments recorded for the public warrants assumed as part of the Business Combination.

Interest income, net

	Six Months Ended June 30, 2022	2021	$ Change	% Change
	(in thousands)			
Interest income, net	$ 1,867	$ —	$1,867	NM

NM—Not Meaningful

Interest income, net increased by $1.9 million to $1.9 million for the six months ended June 30, 2022, from zero for the six months ended June 30, 2021. The increase was primarily driven by interest income earned on our cash equivalents and available-for-sale investments.

Liquidity and Capital Resources

As of June 30, 2022, we had cash, cash equivalents and available-for-sale securities of $571.3 million. We believe that our cash, cash equivalents and investments as of June 30, 2022, will be sufficient to meet our working capital and capital expenditure needs for the next 12 months. We believe we will meet longer term expected future cash requirements and obligations through a combination of cash flows from operating activities and available funds from our cash, cash equivalents and investment balances. However, this determination is based upon internal projections and is subject to changes in market and business conditions. We have incurred losses since our inception, and as of June 30, 2022, we had an accumulated deficit of $151.7 million. During the six months ended June 30, 2022, we incurred net losses of $5.9 million. We expect to incur additional losses and higher operating expenses for the foreseeable future.

Future Funding Requirements

We expect our principal sources of liquidity will continue to be our cash, cash equivalents and investments and any additional capital we may obtain through additional equity or debt financings. Our future capital requirements will depend on many factors, including investments in growth and technology. We may, in the future, enter into arrangements to acquire or invest in complementary businesses, services, and technologies which may require us to seek additional equity or debt financing.

Upon the closing of the business combination, we received approximately $636.0 million of gross proceeds. The proceeds are invested in money market funds, commercial paper, corporate and municipal notes and bonds, and other U.S. government and agency securities as disclosed in Note 3 in our condensed consolidated financial statements. We expect to use these investments to fund our strategic operations.

Our primary uses of cash and investments are to fund our operations as we continue to grow our business. We require a significant amount of cash for expenditures as we invest in ongoing research and development and commercialization of our products. Until such time as we can generate significant revenue from sales of our QCaaS, if ever, we expect to finance our liquidity needs through our cash, cash equivalents and investments, as well as equity or debt financings or other capital sources, including potential collaborations and other similar arrangements. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our stockholders. Debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, or declaring dividends. If we raise funds through collaborations, or other similar arrangements with third parties, we may have to relinquish valuable rights to our quantum computing technology on terms that may not be favorable to us and/or may reduce the value of our common stock. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our quantum computing development efforts. Our future capital requirements and the adequacy of available funds will depend on many factors, including those set forth in the section titled “Risk Factors.”

Other than operating expenses, including our continued investment in our quantum computers, cash requirements for the year ending December 31, 2022, are expected to consist primarily of capital expenditures for corporate facilities.

Our material cash requirements as of June 30, 2022, include operating lease commitments, including the lease of our headquarters in College Park, Maryland. As of June 30, 2022, we have total operating lease obligations of $6.7 million, with $0.7 million payable within 12 months.

Cash flows

The following table summarizes our cash flows for the period indicated:

	Six Months Ended June 30,	
	2022	2021
	(in thousands)	
Net cash used in operating activities	$ (16,929)	$ (9,821)
Net cash used in investing activities	$ (339,183)	$ (3,999)
Net cash provided by financing activities	$ 1,055	$ 5,392

Cash flows from operating activities

Our cash flows from operating activities are significantly affected by the growth of our business primarily related to research and development, sales and marketing, and general and administrative activities. Our operating cash flows are also affected by our working capital needs to support growth in personnel-related expenditures and fluctuations in accounts payable and other current assets and liabilities.

Net cash used in operating activities during the six months ended June 30, 2022, was $16.9 million, primarily resulting from a net loss of $5.9 million, adjusted for non-cash activity, primarily related to the gain recorded as a result of mark-to-market activity for our public warrants offset by stock-based compensation and other working capital activities. The increase in net cash used in operations from the prior year period was primarily related to increased research and development activities, increased compensation costs as a result of hiring personnel and increased costs incurred as a public company.

Net cash used in operating activities during the six months ended June 30, 2021, was $9.8 million, primarily resulting from a net loss of $17.3 million, adjusted for non-cash activity, primarily related to stock-based compensation, costs associated with research and development arrangements and other working capital activities.

Cash flows from investing activities

Net cash used in investing activities during the six months ended June 30, 2022, was $339.2 million, primarily resulting from purchases of available-for-sale investments of $403.9 million, additions of $7.0 million to property and equipment related to the development of our quantum computing systems, offset by cash received from sales and maturities of available-for-sale investments of $73.1 million.

Net cash used in investing activities during the six months ended June 30, 2021, was $4.0 million, primarily resulting from additions of $3.0 million to property and equipment related to the development of our quantum computing systems, $0.8 million of capitalized internal software development costs, and $0.2 million of intangible assets acquisition costs.

Cash flows from financing activities

Net cash provided by financing activities during the six months ended June 30, 2022, was $1.1 million, primarily resulting from proceeds from stock options exercised and tax withholding receipts related to restricted stock units.

Net cash provided by financing activities during the six months ended June 30, 2021, was $5.4 million primarily resulting from proceeds from stock options exercised.

Critical Accounting Estimates

This discussion and analysis of financial condition and results of operations is based upon the Company's condensed consolidated financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities. We also make estimates and assumptions on revenue generated and reported expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances. The results of these estimates form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

There have been no material changes to our critical accounting estimates from those described under "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report.

Critical accounting estimates are defined as those reflective of significant judgments, estimates and uncertainties, which may result in materially different results under different assumptions and conditions. Within our Annual Report, we have disclosed our critical accounting estimates that we believe to have the greatest potential impact on our consolidated financial statements. Historically, our assumptions, judgments and estimates relative to our critical accounting estimates have not differed materially from actual results.

Recently Issued and Adopted Accounting Standards

See Note 2, Summary of Significant Accounting Policies, in the notes to our condensed consolidated financial statements included in Part I, Item I of this Quarterly Report on Form 10-Q for a discussion of recent accounting pronouncements.

Emerging Growth Company and Smaller Reporting Company Status

Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can choose not to take advantage of the extended transition period and comply with the requirements that apply to non-emerging growth companies, and any such election to not take advantage of the extended transition period is irrevocable. During the extended transition period, it may be difficult or impossible to compare our financial results with the financial results of another public company that complies with public company effective dates for accounting standard updates because of the potential differences in accounting standards used.

We will remain an emerging growth company under the JOBS Act until the earliest of (i) December 31, 2025, (ii) the last date of our fiscal year in which we have total annual gross revenue of at least $1.07 billion, (iii) the date on which we are deemed to be a "large accelerated filer" under the rules of the SEC with at least $700.0 million of outstanding securities held by non-affiliates or (iv) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the previous three years.

We are also a smaller reporting company as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as (i) our voting and non-voting common stock held by nonaffiliates is less than $250.0 million measured on the last business day of our second fiscal quarter or (ii) our annual revenue is less than $100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than $700.0 million measured on the last business day of our second fiscal quarter.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Interest rate risk

As of June 30, 2022, we had cash, cash equivalents and available-for-sale securities of $571.3 million. We hold our cash and cash equivalents for working capital purposes. Our cash and cash equivalents are held in cash deposits and money market funds. Our investments are held in commercial paper, corporate notes and bonds, municipal bonds, and U.S. government and agency securities. The primary objective of our investment activities is to preserve principal while at the same time maximizing yields without significantly increased risk. To achieve this object, we invest in highly liquid securities depending on our strategic cash needs. Due to the nature of these instruments, we believe that we do not have any material exposure to changes in the fair value due to changes in interest rates. Declines in interest rates, however, would reduce our future interest income. Further, in the event of a change of such magnitude, we would consider taking actions to further mitigate our exposure to the change.

Concentration of Credit Risk

We deposit our cash, cash equivalents and investments with financial institutions, and, at times, such balances may exceed federally insured limits. Management believes the financial institutions that hold our cash, cash equivalents and investments are financially sound and, accordingly, minimal credit risk exists with respect to cash, cash equivalents and investments.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

We maintain “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is (1) recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms and (2) accumulated and communicated to our management, including our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of June 30, 2022, our disclosure controls and procedures were not effective at a reasonable assurance level as a result of the material weakness that existed in our internal control over financial reporting as described below, and which continues to exist.

Material Weakness in Internal Control over Financial Reporting

In connection with the audit of our financial statements as of and for the fiscal year ended December 31, 2021, we identified a material weakness in our internal control over financial reporting related to our financial statement close process. Specifically,

- Although we recently added accounting and financial reporting personnel with requisite knowledge and experience in the application of U.S. GAAP and SEC rules, the Company is still in process of formalizing its processes and procedures, establishing clear authorities and approvals and segregating duties to facilitate accurate and timely financial reporting.
- Our financial accounting system has limited functionality and does not facilitate effective information technology general controls relevant to financial reporting. Additionally, elements of our close process are managed and processed outside the accounting system, increasing the risk of error.

This material weakness could result in a misstatement of account balances or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected.

Remediation Efforts to Address the Material Weakness

In light of the material weakness identified, we implemented a remediation plan which includes measures designed to improve our internal control over financial reporting. These measures include adding resources (both internal and external) as well as improving the control environment around financial systems and processes. To date, we have completed the following remedial actions:

- hired additional full-time accounting personnel with appropriate levels of experience, and augmented skills gaps with external experts;
- established and implemented policies surrounding the approval of transactions, related to, but not limited to, account reconciliations and journal entries; and
- completed the design and testing phases of our financial accounting system implementation. We selected a system that can support effective information technology general controls as well as the anticipated growth of the business.

Our management believes that these actions, and additional actions to be taken under our remediation plan, are sufficient to remediate the material weakness identified and strengthen our internal control over financial reporting. The actions we are taking are subject to ongoing senior management review, as well as Audit Committee oversight. The material weakness will not be considered remediated until our remediation plan has been fully implemented, the applicable controls operate for a sufficient period of time, and we have concluded, through testing, that the newly implemented and enhanced controls are operating effectively.

Changes in Internal Control over Financial Reporting

Except as described above under Remediation Plan, there were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may become involved in legal proceedings relating to claims arising from the ordinary course of business. Future litigation may be necessary to defend ourselves. The results of any current or future litigation cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

In May 2022, a securities class action complaint captioned *Leacock v. IonQ, Inc. et al.*, Case No. 8:22-cv-01306, was filed by a stockholder of the Company in the United States District Court for the District of Maryland (the "Leacock Litigation") against the Company and certain of the Company's current officers. In June 2022, a securities class action complaint captioned *Fisher v. IonQ, Inc.*, Case No. 8:22-cv-01306-DLB (the "Fisher Litigation") was filed by a stockholder of the Company and certain of the Company's current officers. Both the Leacock Litigation and Fisher Litigation allege violations of Section 10(b) of the Exchange Act, and Rule 10b-5 promulgated thereunder, and Section 20(a) of the Exchange Act and seek unspecified damages.

Please refer to Note 7, Commitments and Contingencies, to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for further details on current legal proceedings.

Item 1A. Risk Factors.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before you make a decision to buy our securities, in addition to the risks and uncertainties described above under "Special Note Regarding Forward Looking Statements," you should carefully consider the risks and uncertainties described below together with all of the other information contained in this Quarterly Report on Form 10-Q. If any of the events or developments described below were to occur, our business, prospects, operating results and financial condition could suffer materially, the trading price of our common stock could decline, and you could lose all or part of your investment. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.

Summary Risk Factors

Our business is subject to a number of risks of which you should be aware before making a decision to invest in our securities. These risks include, among others, the following:

- We are an early-stage company and have a limited operating history, which makes it difficult to forecast our future results of operations.
- We have a history of operating losses and expect to incur significant expenses and continuing losses for the foreseeable future.
- We may not be able to scale our business quickly enough to meet customer and market demand, which could result in lower profitability or cause us to fail to execute on our business strategies.
- We may not manage our growth effectively.
- Our management has limited experience in operating a public company.
- Our estimates of market opportunity and forecasts of market growth may prove to be inaccurate.
- Even if the market in which we compete achieves the forecasted growth, our business could fail to grow at similar rates, if at all.
- Our operating and financial results forecast relies in large part upon assumptions and analyses we developed. If these assumptions or analyses prove to be incorrect, our actual operating results may be materially different from our forecasted results.
- We have identified a material weakness in our internal control over financial reporting. If we are unable to remediate this material weakness, or if we identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal control over financial reporting, this may result in material misstatements of our financial statements or cause us to fail to meet our periodic reporting obligations or cause our access to the capital markets to be impaired.
- We may need additional capital to pursue our business objectives and respond to business opportunities, challenges or unforeseen circumstances, and we cannot be sure that additional financing will be available.
- We have not produced a scalable quantum computer and face significant barriers in our attempts to produce quantum computers.

- The quantum computing industry is competitive on a global scale and we may not be successful in competing in this industry or establishing and maintaining confidence in our long-term business prospects among current and future partners and customers.
- Our business is currently dependent upon our relationship with our cloud providers. There are no assurances that we will be able to commercialize quantum computers from our relationships with cloud providers.
- Even if we are successful in developing quantum computing systems and executing our strategy, competitors in the industry may achieve technological breakthroughs which render our quantum computing systems obsolete or inferior to other products.
- We may be unable to reduce the cost per qubit, which may prevent us from pricing our quantum systems competitively.
- The quantum computing industry is in its early stages and volatile, and if it does not develop, if it develops slower than we expect, if it develops in a manner that does not require use of our quantum computing solutions, if it encounters negative publicity or if our solution does not drive commercial engagement, the growth of our business will be harmed.
- If our computers fail to achieve a broad quantum advantage, our business, financial condition and future prospects may be harmed.
- We could suffer disruptions, outages, defects and other performance and quality problems with our quantum computing systems or with the public cloud and internet infrastructure on which they rely.
- We may face unknown supply chain issues that could delay the introduction of our product and negatively impact our business and operating results.
- If we cannot successfully execute on our strategy or achieve our objectives in a timely manner, our business, financial condition and results of operations could be harmed.
- Our products may not achieve market success, but will still require significant costs to develop.
- We are highly dependent on our co-founders, and our ability to attract and retain senior management and other key employees.
- Our future growth and success depend on our ability to sell effectively to large customers.
- We may not be able to accurately estimate the future supply and demand for our quantum computers, which could result in a variety of inefficiencies in our business and hinder our ability to generate revenue.
- Our systems depend on the use of a particular isotope of an atomic element that provides qubits for our ion trap technology. If we are unable to procure these isotopically enriched atomic samples, or are unable to do so on a timely and cost-effective basis, and in sufficient quantities, we may incur significant costs or delays which could negatively affect our operations and business.
- If our quantum computing systems are not compatible with some or all industry-standard software and hardware in the future, our business could be harmed.
- If we are unable to maintain our current strategic partnerships or we are unable to develop future collaborative partnerships, our future growth and development could be negatively impacted.
- Our future growth and success depend in part on our ability to sell effectively to government entities and large enterprises.
- Contracts with government and state agencies are subject to a number of challenges and risks.
- Our business depends on our customers' abilities to implement useful quantum algorithms and sufficient quantum resources for their business.
- System security and data protection breaches, as well as cyber-attacks, could disrupt our operations, which may damage our reputation and adversely affect our business.
- Unfavorable conditions in our industry or the global economy, could limit our ability to grow our business and negatively affect our results of operations.
- Government actions and regulations, such as tariffs and trade protection measures, may limit our ability to obtain products from our suppliers.
- Public health threats could have an adverse effect on our business and financial results.

- Licensing of intellectual property is of critical importance to our business.
- If we are unable to obtain and maintain patent protection for our products and technology, or if the scope of the patent protection obtained is not sufficiently broad or robust, our competitors could develop and commercialize products and technology similar or identical to ours, and our ability to successfully commercialize our products and technology may be adversely affected. Moreover, our trade secrets could be compromised, which could cause us to lose the competitive advantage resulting from these trade secrets.
- We may face patent infringement and other intellectual property claims that could be costly to defend, result in injunctions and significant damage awards or other costs and limit our ability to use certain key technologies in the future or require development of non-infringing products, services, or technologies.
- Some of our in-licensed intellectual property, including the intellectual property licensed from the University of Maryland and Duke University, has been conceived or developed through government-funded research and thus may be subject to federal regulations providing for certain rights for the U.S. government or imposing certain obligations on us, such as a license to the U.S. government under such intellectual property, "march-in" rights, certain reporting requirements and a preference for U.S.-based companies, and compliance with such regulations may limit our exclusive rights and our ability to contract with non-U.S. manufacturers.

Risks Related to Our Financial Condition and Status as an Early-Stage Company

We are an early-stage company and have a limited operating history, which makes it difficult to forecast our future results of operations.

We were founded in 2015 and first offered our quantum-computing-as-a-service ("QCaaS") and professional services related to training on our quantum computing systems in 2020 and 2019, respectively. As a result of our limited operating history, our ability to accurately forecast our future results of operations is limited and subject to a number of uncertainties, including our ability to plan for and model future growth. Our ability to generate revenues will largely be dependent on our ability to develop and produce quantum computers with increasing numbers of algorithmic qubits. As a result, our scalable business model has not been formed and our technical roadmap may not be realized as quickly as hoped, or even at all. The development of our scalable business model will likely require the incurrence of a substantially higher level of costs than incurred to date, while our revenues will not substantially increase until more powerful, scalable computers are produced, which requires a number of technological advancements which may not occur on the currently anticipated timetable or at all. As a result, our historical results should not be considered indicative of our future performance. Further, in future periods, our growth could slow or decline for a number of reasons, including but not limited to slowing demand for our QCaaS, increased competition, changes to technology, inability to scale up our technology, a decrease in the growth of the overall market, or our failure, for any reason, to continue to take advantage of growth opportunities.

We have also encountered, and will continue to encounter, risks and uncertainties frequently experienced by growing companies in rapidly changing industries. If our assumptions regarding these risks and uncertainties and our future growth are incorrect or change, or if we do not address these risks successfully, our operating and financial results could differ materially from our expectations, and our business could suffer. Our success as a business ultimately relies upon fundamental research and development breakthroughs in the coming years and decade. There is no certainty these research and development milestones will be achieved as quickly as hoped, or even at all.

We have a history of operating losses and expect to incur significant expenses and continuing losses for the foreseeable future.

We have historically experienced net losses from operations. For the six months ended June 30, 2022 we incurred a loss from operations of $5.9 million. As of June 30, 2022, we had an accumulated deficit of $151.7 million. We believe that we will continue to incur losses each quarter until at least the time we begin significant production of our quantum computers, which is not expected to occur until 2025, at the earliest, and may occur later, or never. Even with significant production, such production may never become profitable.

We expect the rate at which we will incur operating losses to be significantly higher in future periods as we, among other things, continue to incur significant expenses in connection with the design, development and manufacturing of our quantum computers, and as we expand our research and development activities, invest in manufacturing capabilities, build up inventories of components for our quantum computers, increase our sales and marketing activities, develop our distribution infrastructure, and increase our general and administrative functions to support our growing operations and being a public company. We may find that these efforts are more expensive than we currently anticipate or that these efforts may not result in revenues, which would further increase our losses. If we are unable to achieve and/or sustain profitability, or if we are unable to achieve the growth that we expect from these investments, it could have a material effect on our business, financial condition or results of operations. Our business model is unproven and may never allow us to cover our costs.

We may not be able to scale our business quickly enough to meet customer and market demand, which could result in lower profitability or cause us to fail to execute on our business strategies.

In order to grow our business, we will need to continually evolve and scale our business and operations to meet customer and market demand. Quantum computing technology has never been sold at large-scale commercial levels. Evolving and scaling our business and operations places increased demands on our management as well as our financial and operational resources to:

- effectively manage organizational change;
- design scalable processes;
- accelerate and/or refocus research and development activities;
- expand manufacturing, supply chain and distribution capacity;
- increase sales and marketing efforts;
- broaden customer-support and services capabilities;
- maintain or increase operational efficiencies;
- scale support operations in a cost-effective manner;
- implement appropriate operational and financial systems; and
- maintain effective financial disclosure controls and procedures.

Commercial production of quantum computers may never occur. We have no experience in producing large quantities of our products and are currently constructing advanced generations of our products. As noted above, there are significant technological and logistical challenges associated with developing, producing, marketing, selling and distributing products in the advanced technology industry, including our products, and we may not be able to resolve all of the difficulties that may arise in a timely or cost-effective manner, or at all. We may not be able to cost-effectively manage production at a scale or quality consistent with customer demand in a timely or economical manner.

Our ability to scale is dependent also upon components we must source from the optical, electronics and semiconductor industries. Shortages or supply interruptions in any of these components will adversely impact our ability to deliver revenues.

The stability of ion traps may prove poorer than hoped, or more difficult to manufacture. It may also prove more difficult or even impossible to reliably entangle/connect ion traps together. Both of these factors would adversely impact scalability and costs of the ion trap system.

If commercial production of our quantum computers commences, our products may contain defects in design and manufacture that may cause them to not perform as expected or that may require repair, recalls and design changes. Our quantum computers are inherently complex and incorporate technology and components that have not been used for other applications and that may contain defects and errors, particularly when first introduced. We have a limited frame of reference from which to evaluate the long-term performance of our products. There can be no assurance that we will be able to detect and fix any defects in our quantum computers prior to the sale to potential consumers. If our products fail to perform as expected, customers may delay deliveries, terminate further orders or initiate product recalls, each of which could adversely affect our sales and brand and could adversely affect our business, prospects and results of operations.

If we cannot evolve and scale our business and operations effectively, we may not be able to execute our business strategies in a cost-effective manner and our business, financial condition, profitability and results of operations could be adversely affected.

We may not manage growth effectively.

If we fail to manage growth effectively, our business, results of operations and financial condition could be harmed. We anticipate that a period of significant expansion will be required to address potential growth. This expansion will place a significant strain on our management, operational and financial resources. Expansion will require significant cash investments and management resources and there is no guarantee that they will generate additional sales of our products or services, or that we will be able to avoid cost overruns or be able to hire additional personnel to support them. In addition, we will also need to ensure our compliance with regulatory requirements in various jurisdictions applicable to the sale, installation and servicing of our products. To manage the growth of our operations and personnel, we must establish appropriate and scalable operational and financial systems, procedures and controls and establish and maintain a qualified finance, administrative and operations staff. We may be unable to acquire the necessary capabilities and personnel required to manage growth or to identify, manage and exploit potential strategic relationships and market opportunities.

Our management has limited experience in operating a public company.

Our executive officers have limited experience in the management of a publicly traded company. Our management team may not successfully or effectively manage our transition to a public company that is subject to significant regulatory oversight and reporting obligations under federal securities laws. Their limited experience in dealing with the increasingly complex laws pertaining to public companies could be a significant disadvantage in that it is likely that an increasing amount of their time may be devoted to these activities, which will result in less time being devoted to our management and growth. We may not have adequate personnel with the appropriate level of knowledge, experience, and training in the accounting policies, practices or internal controls over financial reporting required of public companies in the United States. The development and implementation of the standards and controls necessary for us to achieve the level of accounting standards required of a public company in the United States may require costs greater than expected. It is possible that we will be required to expand our employee base and hire additional employees to support our operations as a public company, which will increase our operating costs in future periods.

Our estimates of market opportunity and forecasts of market growth may prove to be inaccurate.

Market opportunity estimates and growth forecasts, including those we have generated, are subject to significant uncertainty and are based on assumptions and estimates that may not prove to be accurate. The variables that go into the calculation of our market opportunity are subject to change over time, and there is no guarantee that any particular number or percentage of companies covered by our market opportunity estimates will purchase our products at all or generate any particular level of revenue for us. In addition, alternatives to quantum computing may present themselves and if they did, could substantially reduce the market for quantum computing services. Any expansion in our market depends on a number of factors, including the cost, performance, and perceived value associated with quantum computing solutions.

The methodology and assumptions used to estimate market opportunities may differ materially from the methodologies and assumptions previously used to estimate total addressable market. To estimate the size of our market opportunities and our growth rates, we have relied on market reports by leading research and consulting firms. These estimates of total addressable market and growth forecasts are subject to significant uncertainty, are based on assumptions and estimates that may not prove to be accurate and are based on data published by third parties that we have not independently verified. Advances in classical computing may prove more robust for longer than currently anticipated. This could adversely affect the timing of any quantum advantage being achieved, if at all.

Even if the market in which we compete achieves the forecasted growth, our business could fail to grow at similar rates, if at all.

Our success will depend upon our ability to expand, scale our operations, and increase our sales capability. Even if the market in which we compete meets the size estimates and growth forecasted, our business could fail to grow at similar rates, if at all.

Our growth is dependent upon our ability to successfully scale up manufacturing of our products in sufficient quantity and quality, in a timely or cost-effective manner, or at all. Our growth is also dependent upon our ability to successfully market and sell quantum computing technology. We do not have experience with the mass distribution and sale of quantum computing technology. Our growth and long-term success will depend upon the development of our sales and delivery capabilities.

Unforeseen issues associated with scaling up and constructing quantum computing technology at commercially viable levels, and selling our technology, could negatively impact our business, financial condition and results of operations.

Moreover, because of our unique technology, our customers will require particular support and service functions, some of which are not currently available, and may never be available. If we experience delays in adding such support capacity or servicing our customers efficiently, or experience unforeseen issues with the reliability of our technology, it could overburden our servicing and support capabilities. Similarly, increasing the number of our products and services would require us to rapidly increase the availability of these services. Failure to adequately support and service our customers may inhibit our growth and ability to expand computing targets globally. There can be no assurance that our projections on which such targets are based will prove accurate or that the pace of growth or coverage of our customer infrastructure network will meet customer expectations. Failure to grow at rates similar to that of the quantum computing industry may adversely affect our operating results and ability to effectively compete within the industry.

Our operating and financial results forecast relies in large part upon assumptions and analyses we have developed. If these assumptions or analyses prove to be incorrect, our actual operating results may be materially different from our forecasted results.

Our projected financial and operating information reflect current estimates of future performance, which may never occur. Whether actual operating and financial results and business developments will be consistent with our expectations and assumptions as reflected in our forecasts depends on a number of factors, many of which are outside our control, including, but not limited to:

- success and timing of development activity;
- customer acceptance of our quantum computing systems;
- breakthroughs in classical computing or other computing technologies that could eliminate the advantages of quantum computing systems rendering them less practical to customers;
- competition, including from established and future competitors;
- whether we can obtain sufficient capital to sustain and grow our business;
- our ability to manage our growth;
- our ability to retain existing key management, integrate recent hires and attract, retain and motivate qualified personnel; and
- the overall strength and stability of domestic and international economies.

Unfavorable changes in any of these or other factors, most of which are beyond our control, could materially and adversely affect our business, financial condition and results of operations.

We have identified a material weakness in our internal control over financial reporting. If we are unable to remediate this material weakness, or if we identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal control over financial reporting, this may result in material misstatements of our financial statements or cause us to fail to meet our periodic reporting obligations or cause our access to the capital markets to be impaired.

In connection with the preparation of our financial statements as of and for the year ended December 31, 2021, we identified a material weakness in our internal control over financial reporting specifically related to our financial statement close process.

Specifically,

- Although we recently added accounting and financial reporting personnel with requisite knowledge and experience in the application of U.S. GAAP and SEC rules, the Company is still in process of formalizing its processes and procedures, establishing clear authorities and approvals and segregating duties to facilitate accurate and timely financial reporting.

- Our financial accounting system has limited functionality and does not facilitate effective information technology general controls relevant to financial reporting. Additionally, elements of our close process are managed and processed outside the accounting system, increasing the risk of error.

This material weakness could result in a misstatement of account balances or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected.

The material weakness will not be considered remediated until our remediation plan has been fully implemented, the applicable controls operate for a sufficient period of time, and we have concluded, through testing, that the newly implemented and enhanced controls are operating effectively. At this time, we cannot predict the success of such efforts or the outcome of our assessment of the remediation efforts. We can give no assurance that our efforts will remediate this material weakness in our internal control over financial reporting, or that additional material weaknesses will not be identified in the future. Our failure to implement and maintain effective internal control over financial reporting could result in errors in our consolidated financial statements that could result in a restatement of our consolidated financial statements and could cause us to fail to meet our reporting obligations, any of which could diminish investor confidence in us and cause a decline in the price of our common stock. For additional information on the remediation plan and our progress, see the section titled "Controls and Procedures—Remediation Efforts to Address the Material Weakness."

We are required to disclose changes made in our internal controls and procedures on a quarterly basis and our management is required to assess the effectiveness of controls annually. Our independent registered public accounting firm is not required to formally attest to the effectiveness of our internal control over financial reporting until after we are no longer an "emerging growth company," as defined in the JOBS Act. At such time, our independent registered public accounting firm may issue a report that is adverse in the event it is not satisfied with the level at which our internal control over financial reporting is documented, designed or operating.

We may need additional capital to pursue our business objectives and respond to business opportunities, challenges or unforeseen circumstances, and we cannot be sure that additional financing will be available.

Our business and our future plans for expansion are capital-intensive and the specific timing of cash inflows and outflows may fluctuate substantially from period to period. Our operating plan may change because of factors currently unknown, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. Such financings may result in dilution to our stockholders, issuance of securities with priority as to liquidation and dividend and other rights more favorable than common stock, imposition of debt covenants and repayment obligations or other restrictions that may adversely affect our business. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe that we have sufficient funds for current or future operating plans. There can be no assurance that financing will be available to us on favorable terms, or at all. The inability to obtain financing when needed may make it more difficult for us to operate our business or implement our growth plans.

Our ability to use net operating loss carryforwards and other tax attributes may be limited.

We have incurred losses during our history, do not expect to become profitable in the near future and may never achieve profitability. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any, until such unused losses expire, if at all. As of December 31, 2021, we had U.S. federal and state net operating loss carryforwards of approximately $14.1 million.

Our net operating loss carryforwards are subject to review and possible adjustment by the IRS, and state tax authorities. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended (the “Code”), our federal net operating loss carryforwards and other tax attributes may become subject to an annual limitation in the event of certain cumulative changes in the ownership of our stock. An “ownership change” pursuant to Section 382 of the Code generally occurs if one or more stockholders or groups of stockholders who own at least 5% of a company’s stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Our ability to utilize our net operating loss carryforwards and other tax attributes to offset future taxable income or tax liabilities may be limited as a result of ownership changes, including changes in connection with our business combination with dMY Technology Group, Inc. III (“dMY”) or other transactions. Similar rules may apply under state tax laws. We have not yet determined the amount of the cumulative change in our ownership resulting from our business combination with dMY or other transactions, or any resulting limitations on our ability to utilize our net operating loss carryforwards and other tax attributes. If we earn taxable income, such limitations could result in increased future income tax liability and our future cash flows could be adversely affected. We have recorded a full valuation allowance related to our net operating loss carryforwards and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Risks Related to Our Business and Industry

We have not produced a scalable quantum computer and face significant barriers in our attempts to produce quantum computers. If we cannot successfully overcome those barriers, our business will be negatively impacted and could fail.

Producing quantum computers is a difficult undertaking. There are significant engineering challenges that we must overcome to build our quantum computers. We are still in the development stage and face significant challenges in completing development of our quantum computers and in producing quantum computers in commercial volumes. Some of the development challenges that could prevent the introduction of our quantum computers include, but are not limited to, failure to find scalable ways to flexibly manipulate qubits, failure to transition quantum systems to leverage low-cost, commodity optical technology, and failure to realize multicore quantum computer technology.

Additional development challenges we face include:

- gate fidelity, error correction and miniaturization may not commercialize from the lab and scale as hoped or at all;
- it could prove more challenging and take materially longer than expected to operate parallel gates within a single ion trap and maintain gate fidelity;
- the photonic interconnect between ion traps could prove more challenging and take longer to perfect than currently expected. This would limit our ability to scale to a sufficiently large number of algorithmic qubits in a single system;
- it could take longer to tune the qubits in a single ion trap, as well as preserve the stability of the qubits within a trap as we seek to maximize the total number of qubits within one trap;
- the gate speed in our technology could prove more difficult to improve than expected; and
- the scaling of fidelity with qubit number could prove poorer than expected, limiting our ability to achieve larger quantum volume.

In addition, we will need to develop the manufacturing process necessary to make these quantum computers in high volume. We have not yet validated a manufacturing process or acquired the tools or processes necessary to produce high volumes of our quantum computers that meet all commercial requirements. If we are not able to overcome these manufacturing hurdles in building our quantum computers, our business is likely to fail.

Even if we complete development and achieve volume production of our quantum computers, if the cost, performance characteristics or other specifications of the quantum computer fall short of our projections, our business, financial condition and results of operations would be adversely affected.

The quantum computing industry is competitive on a global scale and we may not be successful in competing in this industry or establishing and maintaining confidence in our long-term business prospects among current and future partners and customers.

The markets in which we operate are rapidly evolving and highly competitive. As these markets continue to mature and new technologies and competitors enter such markets, we expect competition to intensify. Our current competitors include:

- large, well-established tech companies that generally compete in all of our markets, including Honeywell, Google, Microsoft, Amazon, Intel and IBM;
- countries such as China, Russia, Canada, Australia and the United Kingdom, and those in the European Union and we believe additional countries in the future;

- less-established public and private companies with competing technology, including companies located outside the United States; and
- new or emerging entrants seeking to develop competing technologies.

We compete based on various factors, including technology, performance, multi-cloud availability, brand recognition and reputation, customer support and differentiated capabilities, including ease of administration and use, scalability and reliability, data governance and security. Many of our competitors have substantially greater brand recognition, customer relationships, and financial, technical and other resources, including an experienced sales force and sophisticated supply chain management. They may be able to respond more effectively than us to new or changing opportunities, technologies, standards, customer requirements and buying practices. In addition, many countries are focused on developing quantum computing solutions either in the private or public sector and may subsidize quantum computers which may make it difficult for us to compete. Many of these competitors do not face the same challenges we do in growing our business. In addition, other competitors might be able to compete with us by bundling their other products in a way that does not allow us to offer a competitive solution.

Additionally, we must be able to achieve our objectives in a timely manner or quantum computing may lose ground to competitors, including competing technologies. Because there are a large number of market participants, including certain sovereign nations, focused on developing quantum computing technology, we must dedicate significant resources to achieving any technical objectives on the timelines established by our management team. Any failure to achieve objectives in a timely manner could adversely affect our business, operating results and financial condition.

For all of these reasons, competition may negatively impact our ability to maintain and grow consumption of our platform or put downward pressure on our prices and gross margins, any of which could materially harm our reputation, business, results of operations, and financial condition.

Our business is currently dependent upon our relationship with our cloud providers. There are no assurances that we will be able to commercialize quantum computers from our relationships with cloud providers.

Cloud computing partnerships could be terminated, or not scale as anticipated, or even at all. We currently offer our QCaaS on public clouds provided by Amazon Web Services' ("AWS"), Microsoft's Azure Quantum ("Azure"), and the Google Cloud Marketplace. The companies that own these public clouds have internal quantum computing efforts that are competitive to our technology. There is risk that one or more of these public cloud providers could use their respective control of their public clouds to embed innovations or privileged interoperating capabilities in competing products, bundle competing products, provide us with unfavorable pricing, leverage their public cloud customer relationships to exclude us from opportunities, and treat us and our customers differently with respect to terms and conditions or regulatory requirements than they would treat their similarly situated customers. Further, they have the resources to acquire or partner with existing and emerging providers of competing technology and thereby accelerate adoption of those competing technologies. All of the foregoing could make it difficult or impossible for us to provide products and services that compete favorably with those of the public cloud providers.

Further, if our contractual and other business relationships with our public cloud providers are terminated, either by the counterparty or by us, suspended or suffer a material change to which we are unable to adapt, such as the elimination of services or features on which we depend, we would be unable to provide our QCaaS at the same scale and would experience significant delays and incur additional expense in transitioning customers to a different public cloud provider.

Any material change in our contractual and other business relationships with our public cloud providers could result in reduced use of our systems, increased expenses, including service credit obligations, and harm to our brand and reputation, any of which could have a material adverse effect on our business, financial condition and results of operations.

Even if we are successful in developing quantum computing systems and executing our strategy, competitors in the industry may achieve technological breakthroughs that render our quantum computing systems obsolete or inferior to other products.

Our continued growth and success depend on our ability to innovate and develop quantum computing technology in a timely manner and effectively market these products. Without timely innovation and development, our quantum computing solutions could be rendered obsolete or less competitive by changing customer preferences or because of the introduction of a competitor's newer technologies. We believe that many competing technologies will require a technological breakthrough in one or more problems related to science, fundamental physics or manufacturing. While it is uncertain whether such technological breakthroughs will occur in the next several years, that does not preclude the possibility that such technological breakthroughs could eventually occur. Any technological breakthroughs which render our technology obsolete or inferior to other products could have a material effect on our business, financial condition or results of operations.

We may be unable to reduce the cost per qubit, which may prevent us from pricing our quantum systems competitively.

Our projections are dependent on the cost per qubit decreasing over the next several years as our quantum computers advance. These cost projections are based on economies of scale due to demand for our computer systems, technological innovation and negotiations with third-party parts suppliers. If these cost savings do not materialize, the cost per qubit may be higher than projected, making our quantum computing solution less competitive than those produced by our competitors, which could have a material effect on our business, financial condition or results of operations.

The quantum computing industry is in its early stages and volatile, and if it does not develop, if it develops slower than we expect, if it develops in a manner that does not require use of our quantum computing solutions, if it encounters negative publicity or if our solution does not drive commercial engagement, the growth of our business will be harmed.

The nascent market for quantum computers is still rapidly evolving, characterized by rapidly changing technologies, competitive pricing and competitive factors, evolving government regulation and industry standards, and changing customer demands and behaviors. If the market for quantum computers in general does not develop as expected, or develops more slowly than expected, our business, prospects, financial condition and operating results could be harmed.

In addition, our growth and future demand for our products is highly dependent upon the adoption by developers and customers of quantum computers, as well as on our ability to demonstrate the value of quantum computing to our customers. Delays in future generations of our quantum computers or technical failures at other quantum computing companies could limit market acceptance of our solution. Negative publicity concerning our solution or the quantum computing industry as a whole could limit market acceptance of our solution. We believe quantum computing will solve many large-scale problems. However, such problems may never be solvable by quantum computing technology. If our clients and partners do not perceive the benefits of our solution, or if our solution does not drive member engagement, then our market may not develop at all, or it may develop slower than we expect. If any of these events occur, it could have a material adverse effect on our business, financial condition or results of operations. If progress towards quantum advantage ever slows relative to expectations, it could adversely impact revenues and customer confidence to continue to pay for testing, access and "quantum readiness." This would harm or even eliminate revenues in the period before quantum advantage.

If our computers fail to achieve a broad quantum advantage, our business, financial condition and future prospects may be harmed.

Quantum advantage refers to the moment when a quantum computer can compute faster than traditional computers, while quantum supremacy is achieved once quantum computers are powerful enough to complete calculations that traditional supercomputers cannot perform at all. Broad quantum advantage is when quantum advantage is seen in many applications and developers prefer quantum computers to a traditional computer. No current quantum computers, including our quantum hardware, have reached a broad quantum advantage, and they may never reach such advantage. Achieving a broad quantum advantage will be critical to the success of any quantum computing company, including us. However, achieving quantum advantage would not necessarily lead to commercial viability of the technology that accomplished such advantage, nor would it mean that such system could outperform classical computers in tasks other than the one used to determine a quantum advantage. Quantum computing technology, including broad quantum advantage, may take decades to be realized, if ever. If we cannot develop quantum computers that have quantum advantage, customers may not continue to purchase our products and services. If other companies' quantum computers reach a broad quantum advantage prior to the time ours reaches such capabilities, it could lead to a loss of customers. If any of these events occur, it could have a material adverse effect on our business, financial condition or results of operations.

We could suffer disruptions, outages, defects and other performance and quality problems with our quantum computing systems or with the public cloud and internet infrastructure on which they rely.

Our business depends on our quantum computing systems to be available. We have experienced, and may in the future further experience, disruptions, outages, defects and other performance and quality problems with our systems. We have also experienced, and may in the future further experience, disruptions, outages, defects and other performance and quality problems with the public cloud and internet infrastructure on which our systems rely. These problems can be caused by a variety of factors, including failed introductions of new functionality, vulnerabilities and defects in proprietary and open-source software, hardware components, human error or misconduct, capacity constraints, design limitations or denial of service attacks or other security-related incidents. We do not have a contractual right with our public cloud providers that compensates us for any losses due to availability interruptions in the public cloud.

Any disruptions, outages, defects and other performance and quality problems with our quantum computing system or with the public cloud and internet infrastructure on which it relies, could result in reduced use of our systems, increased expenses, including service credit obligations, and harm to our brand and reputation, any of which could have a material adverse effect on our business, financial condition and results of operations.

We may face unknown supply chain issues that could delay the introduction of our product and negatively impact our business and operating results.

We are reliant on third-party suppliers for components necessary to develop and manufacture our quantum computing solutions. As our business grows, we must continue to scale and adapt our supply chain or it could have an adverse impact on our business. Any of the following factors (and others) could have an adverse impact on the availability of these components necessary to our business:

- our inability to enter into agreements with suppliers on commercially reasonable terms, or at all;
- difficulties of suppliers ramping up their supply of materials to meet our requirements;
- a significant increase in the price of one or more components, including due to industry consolidation occurring within one or more component supplier markets or as a result of decreased production capacity at manufacturers;
- any reductions or interruption in supply, including disruptions on our global supply chain as a result of the COVID-19 pandemic, which we have experienced, and may in the future experience;
- any supply chain disruptions due to the Russia-Ukraine war and any indirect effects thereof which could further complicate existing supply chain constraints;
- financial problems of either manufacturers or component suppliers;

- significantly increased freight charges, or raw material costs and other expenses associated with our business;
- other factors beyond our control or which we do not presently anticipate, could also affect our suppliers' ability to deliver components to us on a timely basis;
- a failure to develop our supply chain management capabilities and recruit and retain qualified professionals;
- a failure to adequately authorize procurement of inventory by our contract manufacturers; or
- a failure to appropriately cancel, reschedule, or adjust our requirements based on our business needs.

If any of the aforementioned factors were to materialize, it could cause us to halt production of our quantum computing solutions and/or entail higher manufacturing costs, any of which could materially adversely affect our business, operating results, and financial condition and could materially damage customer relationships.

If we cannot successfully execute on our strategy, including in response to changing customer needs and new technologies and other market requirements, or achieve our objectives in a timely manner, our business, financial condition and results of operations could be harmed.

The quantum computing market is characterized by rapid technological change, changing user requirements, uncertain product lifecycles and evolving industry standards. We believe that the pace of innovation will continue to accelerate as technology changes and different approaches to quantum computing mature on a broad range of factors, including system architecture, error correction, performance and scale, ease of programming, user experience, markets addressed, types of data processed, and data governance and regulatory compliance. Our future success depends on our ability to continue to innovate and increase customer adoption of our quantum computer. If we are unable to enhance our quantum computing system to keep pace with these rapidly evolving customer requirements, or if new technologies emerge that are able to deliver competitive products at lower prices, more efficiently, with better functionality, more conveniently, or more securely than our platform, our business, financial condition and results of operations could be adversely affected.

Our products may not achieve market success, but will still require significant costs to develop.

We believe that we must continue to dedicate significant resources to our research and development efforts before knowing whether there will be market acceptance of our quantum computing technologies. Furthermore, the technology for our products is new, and the performance of these products is uncertain. Our quantum computing technologies could fail to attain sufficient market acceptance, if at all, for many reasons, including:

- pricing and the perceived value of our systems relative to its cost;
- delays in releasing quantum computers with sufficient performance and scale to the market;
- failure to produce products of consistent quality that offer functionality comparable or superior to existing or new products;
- ability to produce products fit for their intended purpose;
- failures to accurately predict market or customer demands;
- defects, errors or failures in the design or performance of our quantum computing system;
- negative publicity about the performance or effectiveness of our system;
- strategic reaction of companies that market competitive products; and
- the introduction or anticipated introduction of competing technology.

To the extent we are unable to effectively develop and market a quantum computing system to address these challenges and attain market acceptance, our business, operating results and financial condition may be adversely affected.

We are highly dependent on our co-founders, and our ability to attract and retain senior management and other key employees, such as quantum physicists and other key technical employees, is critical to our success. If we fail to retain talented, highly-qualified senior management, engineers and other key employees or attract them when needed, such failure could negatively impact our business.

Our future success is highly dependent on our ability to attract and retain our executive officers, key employees and other qualified personnel, including our co-founders, Jungsang Kim, our Chief Technology Officer, and Christopher Monroe, our Chief Scientist. As we build our brand and become more well known, there is increased risk that competitors or other companies may seek to hire our personnel. The loss of the services provided by these individuals will adversely impact the achievement of our business strategy. These individuals could leave our employment at any time, as they are “at will” employees. A loss of the co-founders, a member of senior management, or an engineer or other key employee particularly to a competitor, could also place us at a competitive disadvantage. Effective succession planning is also important to our long-term success. Failure to ensure effective transfer of knowledge and smooth transitions involving key employees could hinder our strategic planning and execution.

Our future success also depends on our continuing ability to attract, develop, motivate and retain highly qualified and skilled employees. The market for highly skilled workers and leaders in the quantum computing industry is extremely competitive. In particular, hiring qualified personnel specializing in engineering, software development and sales, as well as other technical staff and research and development personnel is critical to our business and the development of our quantum computing systems. Some of these professionals are hard to find and we may encounter significant competition in our efforts to hire them. Many of the other companies with which we compete for qualified personnel have greater financial and other resources than we do. The effective operation of our supply chain, including the acquisition of critical components and materials, the development of our quantum computing technologies, the commercialization of our quantum computing technologies and the effective operation of our managerial and operating systems all depend upon our ability to attract, train and retain qualified personnel in the aforementioned specialties. Additionally, changes in immigration and work permit laws and regulations or the administration or interpretation of such laws or regulations could impair our ability to attract and retain highly qualified employees. If we cannot attract, train and retain qualified personnel, including our co-founders, in this competitive environment, we may experience delays in the development of our quantum computing technologies and be otherwise unable to develop and grow our business as projected, or even at all.

Our future growth and success depend on our ability to sell effectively to large customers.

Our potential customers tend to be large enterprises. Therefore, our future success will depend on our ability to effectively sell our products to such large customers. Sales to these end-customers involve risks that may not be present (or that are present to a lesser extent) with sales to smaller customers. These risks include, but are not limited to, (i) increased purchasing power and leverage held by large customers in negotiating contractual arrangements with us and (ii) longer sales cycles and the associated risk that substantial time and resources may be spent on a potential end-customer that elects not to purchase our solutions.

Large organizations often undertake a significant evaluation process that results in a lengthy sales cycle. In addition, product purchases by large organizations are frequently subject to budget constraints, multiple approvals and unanticipated administrative, processing and other delays. Finally, large organizations typically have longer implementation cycles, require greater product functionality and scalability, require a broader range of services, demand that vendors take on a larger share of risks, require acceptance provisions that can lead to a delay in revenue recognition and expect greater payment flexibility. All of these factors can add further risk to business conducted with these potential customers.

We may not be able to accurately estimate the future supply and demand for our quantum computers, which could result in a variety of inefficiencies in our business and hinder our ability to generate revenue. If we fail to accurately predict our manufacturing requirements, we could incur additional costs or experience delays.

It is difficult to predict our future revenues and appropriately budget for our expenses, and we may have limited insight into trends that may emerge and affect our business. We anticipate being required to provide forecasts of our demand to our current and future suppliers prior to the scheduled delivery of products to potential customers. Currently, there is no historical basis for making judgments on the demand for our quantum computers or our ability to develop, manufacture, and deliver quantum computers, or our profitability, if any, in the future. If we overestimate our requirements, our suppliers may have excess inventory, which indirectly would increase our costs. If we underestimate our requirements, our suppliers may have inadequate inventory, which could interrupt manufacturing of our products and result in delays in shipments and revenues. In addition, lead times for materials and components that our suppliers order may vary significantly and depend on factors such as the specific supplier, contract terms and demand for each component at a given time. If we fail to order sufficient quantities of product components in a timely manner, the delivery of quantum computers and related compute time to our potential customers could be delayed, which would harm our business, financial condition and operating results.

Our systems depend on the use of a particular isotope of an atomic element that provides qubits for our ion trap technology. If we are unable to procure these isotopically enriched atomic samples, or are unable to do so on a timely and cost-effective basis, and in sufficient quantities, we may incur significant costs or delays which could negatively affect our operations and business.

There are limited suppliers to sources of isotopically enriched materials which may be necessary for the production of our ion trap technology. We currently purchase such materials through the National Isotope Development Center managed by the U.S. Department of Energy Isotope Program. We do not have any supplier agreements with the U.S. Department of Energy, and purchase the materials through a standard ordering process. While we are currently looking to engage additional suppliers, there is no guarantee we will be able to establish or maintain relationships with such additional suppliers on terms satisfactory to us. Reliance on any single supplier increases the risks associated with being unable to obtain the necessary atomic samples because the supplier may have laboratory constraints, can be subject to unanticipated shutdowns and/or may be affected by natural disasters and other catastrophic events. Some of these factors may be completely out of our and our suppliers' control. Failure to acquire sufficient quantities of the necessary isotopically enriched atomic samples in a timely or cost-effective manner could materially harm our business.

If our quantum computing systems are not compatible with some or all industry-standard software and hardware in the future, our business could be harmed.

Programming for quantum computing requires unique tools, software, hardware, and development environments. We have focused our efforts on creating quantum computing hardware, the operating system for such hardware and a suite of low-level software programs that optimize execution of quantum algorithms on our hardware. Further up the software stack, we rely on third parties to create higher level quantum programming languages, software development kits (SDKs), and application libraries. Such third-party software and programming is essential to operating our quantum computing products and services. Our quantum computing solutions are designed today to be compatible with most major quantum software development kits, including Qiskit, Cirq, Q# QDK, and OpenQASM, all of which are open source. If a proprietary (not open source) software toolset became the standard for quantum application development in the future by a competitor, usage of our hardware might be limited as a result which would have a negative impact on us. Similarly, if a piece of hardware or other quantum tool became a necessary component for quantum computing (for instance, quantum networking) and we cannot integrate with it (as we have thus far), the result might have a negative impact on us and our anticipated growth.

If our customers are unable to achieve compatibility between other software and hardware and our hardware, it could impact our relationships with such customers or with customers, generally, if the incompatibility is more widespread. In addition, the mere announcement of an incompatibility problem relating to our products with higher level software tools could cause us to suffer reputational harm and/or lead to a loss of customers. Any adverse impacts from the incompatibility of our quantum computing solutions could adversely affect our business, operating results and financial condition.

If we are unable to maintain our current strategic partnerships or we are unable to develop future collaborative partnerships, our future growth and development could be negatively impacted.

We have entered into, and may enter into, strategic partnerships to develop and commercialize our current and future research and development programs with other companies to accomplish one or more of the following:

- obtain expertise in relevant markets;
- obtain sales and marketing services or support;
- obtain equipment and facilities;
- develop relationships with potential future customers; and
- generate revenue.

We may not be successful in establishing or maintaining suitable partnerships, and we may not be able to negotiate collaboration agreements having terms satisfactory to us, or at all. Failure to make or maintain these arrangements or a delay or failure in a collaborative partner’s performance under any such arrangements could harm our business and financial condition.

Our business depends on our customers’ abilities to implement useful quantum algorithms and sufficient quantum resources for their business. If they are unable to do so due to the nature of their algorithmic challenge or other technical or personnel dilemmas, our growth may be negatively impacted.

We have entered into, and may enter into, partnerships and other contractual arrangements with customers to develop, test and run quantum algorithms specific to their business. The success of these contracts and partnerships is dependent on our customer’s ability to implement useful and scalable algorithms for their portfolio. These arrangements are also dependent on the availability of time and resources to develop and optimize these algorithms. The development and optimization of these algorithms is reliant on employing sufficient talent familiar with quantum computing, a unique skill that requires special training and education. If the market fails to train a sufficient number of engineers, researchers and other key quantum personnel, our customers may not find sufficient talent to partner with us to solve these problems. To the extent our customers are unable to effectively develop or utilize resources to advance algorithmic-use cases, our business, operating results and financial condition may be adversely impacted.

Our future growth and success depends in part on our ability to sell effectively to government entities and large enterprises.

Our potential customers include government agencies and large enterprises. Therefore, our future success will depend on our ability to effectively sell our products to such customers. Sales to these end-customers involve risks that may not be present (or that are present to a lesser extent) with sales to non-governmental agencies or smaller customers. These risks include, but are not limited to, (i) increased purchasing power and leverage held by such customers in negotiating contractual arrangements with us and (ii) longer sales cycles and the associated risk that substantial time and resources may be spent on a potential end-customer that elects not to purchase our solutions. Sales to government agencies are typically under fixed fee development contracts, which involve additional risks. In addition, government contracts generally include the ability of government agencies to terminate early which, if exercised, would result in a lower contract value and lower than anticipated revenues generated by such arrangement.

Government agencies and large organizations often undertake a significant evaluation process that results in a lengthy sales cycle. Our contracts with government agencies are typically structured in phases, with each phase subject to satisfaction of certain conditions. As a result, the actual scope of work performed pursuant to any such contracts, in addition to related contract revenue, could be less than total contract value. In addition, product purchases by such organizations are frequently subject to budget constraints, multiple approvals and unanticipated administrative, processing and other delays. Finally, these organizations typically have longer implementation cycles, require greater product functionality and scalability, require a broader range of services, demand that vendors take on a larger share of risks, require acceptance provisions that can lead to a delay in revenue recognition and expect greater payment flexibility. All of these factors can add further risk to business conducted with these potential customers and could lead to lower revenue results than originally anticipated.

Contracts with government and state agencies are subject to a number of challenges and risks.

Contracts with government and state agencies are subject to a number of challenges and risks. The bidding process for government contracts can be highly competitive, expensive and time-consuming, often requiring significant upfront time and expense without any assurance that these efforts will generate revenue. We also must comply with laws and regulations relating to the formation, administration, and performance of contracts, which provide public sector customers rights, many of which are not typically found in commercial contracts. In addition, our perceived relationship with the U.S. government could adversely affect our business prospects in certain non-U.S. geographies or with certain non-U.S. governments.

Accordingly, our business, financial condition, results of operations, and growth prospects may be adversely affected by certain events or activities, including, but not limited to:

- changes in government fiscal or procurement policies, or decreases in government funding available for procurement of goods and services generally, or for our federal government contracts specifically;
- changes in government programs or applicable requirements;
- restrictions in the grant of personnel security clearances to our employees;
- ability to maintain facility clearances required to perform on classified contracts for U.S. federal government and foreign government agencies, as applicable;
- changes in the political environment, including before or after a change to the leadership within the government administration, and any resulting uncertainty or changes in policy or priorities and resultant funding;
- changes in the government's attitude towards us as a company or our technology;
- appeals, disputes, or litigation relating to government procurement, including but not limited to bid protests by unsuccessful bidders on potential or actual awards of contracts to us or our partners by the government;
- the adoption of new laws or regulations or changes to existing laws or regulations;
- budgetary constraints, including automatic reductions as a result of "sequestration" or similar measures and constraints imposed by any lapses in appropriations for the federal government or certain of its departments and agencies;
- influence by, or competition from, third parties with respect to pending, new, or existing contracts with government customers;
- changes in legal obligations or political or social attitudes with respect to security or data privacy issues;
- potential delays or changes in the government appropriations or procurement processes, including as a result of events such as war, incidents of terrorism, natural disasters, and public health concerns; and
- increased or unexpected costs or unanticipated delays caused by other factors outside of our control.

Any such event or activity, among others, could cause governments and governmental agencies to delay or refrain entering into contracts with us and/or purchasing our computers in the future, reduce the size or timing of payment with respect to our services to or purchases from existing or new government customers, or otherwise have an adverse effect on our business, results of operations, financial condition, and growth prospects.

System security and data protection breaches, as well as cyber-attacks, could adversely impact our information technology systems, data, intellectual property, proprietary or confidential information or operations, or those of third parties upon which we rely, which may damage our reputation and adversely affect our business, as well as other adverse consequences.

Cyber-attacks, malicious internet-based activity, online and offline fraud, denial-of-service attacks, ransomware attacks, business email compromises, computer malware, viruses, and social engineering (including phishing) are prevalent (and continue to rise) in the technology industry and our customers' industries. In addition, we may experience attacks to our information technology systems or data, unavailable information technology systems or data, ransomware and cyber extortion attacks, unauthorized access, theft or misuse or disclosure of our data or intellectual property (including due to employee theft, misuse or errors), denial-of-service attacks, attacks by sophisticated nation-state and nation-state supported actors, and advanced persistent threat intrusions. The techniques may be used to sabotage or to obtain unauthorized access to our platform, information technology systems, data, intellectual property, networks, or physical facilities where our quantum computers are stored, and we may be unable to implement adequate preventative and responsive measures or stop and mitigate security breaches before or while they are occurring. U.S. law enforcement agencies have indicated to us that quantum computing technology is of particular interest to certain malicious cyber threat actors, including nation-state and other malicious actors who may steal our intellectual property, or proprietary or confidential information, including our trade secrets.

Our platform is built to be accessed through third-party public cloud providers such as AWS, Azure and the Google Cloud Marketplace. These providers, and other third-party providers and suppliers upon which we rely, may also experience breaches and attacks to their products, information technology systems and data, which may adversely impact our systems, data, intellectual property, and operations. Data security breaches may also result from non- technical means, such as misuse or errors by employees or contractors with access to our systems. While we and our third-party cloud providers have implemented security measures designed to protect against security breaches, these measures could fail or may be insufficient, resulting in the unauthorized disclosure, modification, misuse, destruction, or loss of intellectual property, sensitive, proprietary or confidential information.

Actual or perceived breaches of our security measures or the accidental loss, inadvertent disclosure or unapproved dissemination of proprietary information, intellectual property or sensitive or confidential data about us, our partners, our customers or third parties could expose the company and the parties affected to a risk of loss or misuse of this information, resulting in litigation and potential liability, paying damages, regulatory inquiries or actions, damage to the our brand and reputation or other harm to the our business. Our efforts to prevent and overcome these challenges could increase our expenses and may not be successful. If we fail to detect or remediate a security breach in a timely manner, or a breach otherwise affects our customers, or if we suffer a cyber- attack that impacts our ability to operate our platform, or results in the exposure of our data, intellectual property, or confidential or proprietary information we may suffer material damage to our reputation, customer relationships, business, financial condition and results of operations.

Unfavorable conditions in our industry or the global economy, could limit our ability to grow our business and negatively affect our results of operations.

Our results of operations may vary based on the impact of changes in our industry or the global economy on the company or our customers and potential customers. The global economy, including credit and financial markets, has experienced extreme volatility and disruptions, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, increases in inflation rates, higher interest rates and uncertainty about economic stability. For example, the ongoing COVID-19 pandemic resulted in widespread unemployment, economic slowdown and extreme volatility in the capital markets. Similarly, the Russia-Ukraine war has created extreme volatility in the global capital markets and is expected to have further global economic consequences, including disruptions of the global supply chain and energy markets. Increased inflation rates can adversely affect us by increasing our costs, including labor and employee benefit costs. Employee salaries and benefits expenses have increased as a result of economic growth, increased demand for business services, increased competition for trained and talented employees, among other wage-inflationary pressures and we cannot assure that they will not continue to rise. In addition, higher inflation also could increase our customers' operating costs, which could result in reduced budgets for our customers and potentially less demand for our platform and the development of quantum technologies. Any significant increases in inflation and related increase in interest rates could have a material adverse effect on our business, results of operations and financial condition.

In addition, in challenging economic times, our current or potential future customers may experience cash flow problems and as a result may modify, delay or cancel plans to purchase our products and services. Additionally, if our customers are not successful in generating sufficient revenue or are unable to secure financing, they may not be able to pay, or may delay payment of, accounts receivable due to us. Moreover, our key suppliers may reduce their output or become insolvent, thereby adversely impacting our ability to manufacture our products. Furthermore, uncertain economic conditions may make it more difficult for us to raise funds through borrowings or private or public sales of debt or equity securities. We cannot predict the timing, strength or duration of any economic slowdown, instability or recovery, generally or within any particular industry.

Government actions and regulations, such as tariffs and trade protection measures, may limit our ability to obtain products from our suppliers.

Political challenges between the United States and countries in which our suppliers are located, including China, and changes to trade policies, including tariff rates and customs duties, trade relations between the United States and China and other macroeconomic issues could adversely impact our business. Specifically, United States-China trade relations remain uncertain. The United States administration has announced tariffs on certain products imported into the United States with China as the country of origin, and China has imposed tariffs in response to the actions of the United States. There is also a possibility of future tariffs, trade protection measures or other restrictions imposed on our products or on our customers by the United States, China or other countries that could have a material adverse effect on our business. Our technology may be deemed a matter of national security and as such our customer base may be tightly restricted. We may accept government grants that place restrictions on our ability to operate.

Acquisitions, divestitures, strategic investments and strategic partnerships could disrupt our business and harm our financial condition and operating results.

We may pursue growth opportunities by acquiring complementary businesses, solutions or technologies through strategic transactions, investments or partnerships. The identification of suitable acquisition, strategic investment or strategic partnership candidates can be costly and time consuming and can distract our management team from our current operations. If such strategic transactions require us to seek additional debt or equity financing, we may not be able to obtain such financing on terms favorable to us or at all, and such transactions may adversely affect our liquidity and capital structure. Any strategic transaction might not strengthen our competitive position, may increase some of our risks, and may be viewed negatively by our customers, partners or investors. Even if we successfully complete a strategic transaction, we may not be able to effectively integrate the acquired business, technology, systems, control environment, solutions, personnel or operations into our business. We may experience unexpected changes in how we are required to account for strategic transactions pursuant to U.S. GAAP and may not achieve the anticipated benefits of any strategic transaction. We may incur unexpected costs, claims or liabilities that we incur during the strategic transaction or that we assume from the acquired company, or we may discover adverse conditions post acquisition for which we have limited or no recourse.

Public health threats could have an adverse effect on our business and financial results.

We face various risks related to epidemics, pandemics, and other outbreaks, including the ongoing COVID-19 pandemic, including newly discovered and/or vaccine-resistant strains of the virus. In response to the ongoing COVID-19 pandemic, governments have implemented significant measures, including, but not limited to, business closures, quarantines, travel restrictions, shelter-in-place, stay-at-home and other social distancing directives, intended to control the spread of the virus. Companies have also taken precautions, such as requiring employees to work remotely, imposing travel restrictions and temporarily closing businesses. To the extent that these restrictions remain, or are put back, in place, additional prevention and mitigation measures are implemented in the future, or there is uncertainty about the effectiveness of these or any other measures or the likelihood of achieving widespread global vaccination rates as part of the broadscale efforts to contain or treat COVID-19 or future pandemics, there is likely to be an adverse impact on our potential customers, our employees and global economic conditions, and consumer confidence and spending, which could materially and adversely affect our operations and demand for our products.

The spread of COVID-19 has and may continue to impact our suppliers by disrupting the manufacturing, delivery and the overall supply chain of parts required to manufacture our quantum computers. In addition, various aspects of our business cannot be conducted remotely, such as the assembly of our quantum computers. These measures by government authorities may remain in place for a significant period of time and they are likely to continue to adversely affect our future manufacturing plans, sales and marketing activities, business and results of operations. We may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, suppliers, vendors and business partners.

Due to the fluid nature of the COVID-19 pandemic and uncertainties regarding the related economic impact are likely to result in sustained market turmoil, which could also negatively impact the company's business, financial condition and cash flows. The extent of COVID-19's effect on our operational and financial performance will depend on future developments, including the duration, spread and intensity of the pandemic, all of which are uncertain and difficult to predict considering the rapidly evolving landscape. As a result, it is not currently possible to ascertain the overall impact of COVID-19 on our business. However, if the pandemic continues to persist as a severe worldwide health crisis, the disease could negatively impact our business, financial condition results of operations and cash flows, and may also have the effect of heightening many of the other risks described in this "Risk Factors" section.

Even after the COVID-19 pandemic has subsided, we may continue to experience an adverse impact to our business as a result of COVID-19's global economic impact, including any recession that has occurred or may occur in the future and the uncertainty of the timing of the broader economic recovery to pre-pandemic levels.

Risks Related to Our International Expansion and Future Operations

Because our success depends, in part, on our ability to expand sales internationally, our business will be susceptible to risks associated with international operations.

We currently maintain offices and/or have personnel in the United States and Canada, and recently expanded operations to Germany and Israel, and we intend to expand our international operations by developing a sales presence in other international markets. We expect to continue to expand our international operations, which may include opening offices in new jurisdictions. Any additional international expansion efforts that we are undertaking and may undertake may not be successful. In addition, conducting international operations subjects us to new risks, some of which we have not generally faced in the United States or other countries where we currently operate. These risks include, among other things:

- lack of familiarity and burdens of complying with foreign laws, legal standards, privacy and cybersecurity standards, regulatory requirements, tariffs and other barriers, and the risk of penalties to our customers and individual members of management or employees if our practices are deemed to not be in compliance;
- practical difficulties of enforcing intellectual property rights in countries with varying laws and standards and reduced or varied protection for intellectual property rights in some countries;
- an evolving legal framework and additional legal or regulatory requirements for data privacy and cybersecurity, which may necessitate the establishment of systems to maintain data in local markets, requiring us to invest in additional data centers and network infrastructure, and the implementation of additional employee data privacy documentation (including locally compliant data privacy notice and policies), all of which may involve substantial expense and may cause us to need to divert resources from other aspects of our business, all of which may adversely affect our business;
- unexpected changes in regulatory requirements, taxes, trade laws, tariffs, export quotas, custom duties or other trade restrictions;
- difficulties in managing systems integrators and partners;
- differing technology standards;
- different pricing environments, longer sales cycles, longer accounts receivable payment cycles and difficulties in collecting accounts receivable;
- increased financial accounting and reporting burdens and complexities;
- difficulties in managing and staffing international operations including the proper classification of independent contractors and other contingent workers, differing employer/employee relationships and local employment laws;
- increased costs involved with recruiting and retaining an expanded employee population outside the United States through cash and equity-based incentive programs and unexpected legal costs and regulatory restrictions in issuing our shares to employees outside the United States;

- global political and regulatory changes that may lead to restrictions on immigration and travel for our employees;
- fluctuations in exchange rates that may decrease the value of our foreign-based revenue;
- potentially adverse tax consequences, including the complexities of foreign value added tax (or other tax) systems, restrictions on the repatriation of earnings, and transfer pricing requirements; and
- permanent establishment risks and complexities in connection with international payroll, tax and social security requirements for international employees.

Additionally, operating in international markets also requires significant management attention and financial resources. We cannot be certain that the investment and additional resources required in establishing operations in other countries will produce desired levels of revenue or profitability.

Compliance with laws and regulations applicable to our global operations also substantially increases our cost of doing business in foreign jurisdictions. We have limited experience in marketing, selling and supporting our platform outside of the United States. Our limited experience in operating our business internationally increases the risk that any potential future expansion efforts that we may undertake will not be successful. If we invest substantial time and resources to expand our international operations and are unable to do so successfully and in a timely manner, our business, financial condition, revenues, results of operations or cash flows will suffer. We may be unable to keep current with changes in government requirements as they change from time to time. Failure to comply with these regulations could harm our business. In many countries, it is common for others to engage in business practices that are prohibited by our internal policies and procedures or other regulations applicable to us. Although we have implemented policies and procedures designed to ensure compliance with these laws and policies, there can be no assurance that all of our employees, contractors, partners and agents will comply with these laws and policies. Violations of laws or key control policies by our employees, contractors, partners or agents could result in delays in revenue recognition, financial reporting misstatements, enforcement actions, reputational harm, disgorgement of profits, fines, civil and criminal penalties, damages, injunctions, other collateral consequences or the prohibition of the importation or exportation of our solutions and could harm our business, financial condition, revenues, results of operations or cash flows.

Our international sales and operations subject us to additional risks and costs, including the ability to engage with customers in new geographies and exposure to foreign currency exchange rate fluctuations, that can adversely affect our business, financial condition, revenues, results of operations or cash flows.

We are continuing to expand our international operations as part of our growth strategy. However, there are a variety of risks and costs associated with our international sales and operations, which include making investments prior to the sales or use of quantum computers, the cost of conducting our business internationally and hiring and training international employees and the costs associated with complying with local law. Furthermore, we cannot predict the rate at which our quantum computers will be accepted in international markets by potential customers.

We have started the process of establishing a sales presence in Germany and Israel; however, our sales, support and engineering organization outside the United States is substantially smaller than our U.S. sales organization. We believe our ability to attract new customers to subscribe to our platform or to attract existing customers to renew or expand their use of our platform is directly correlated to the level of engagement we obtain with the customer. To the extent we are unable to effectively engage with non-U.S. customers due to our limited sales force capacity, we may be unable to effectively grow in international markets.

As our international operations expand, our exposure to the effects of fluctuations in currency exchange rates grows. While we have primarily transacted with customers in U.S. dollars, historically, we expect to continue to expand the number of transactions with our customers that are denominated in foreign currencies in the future. Additionally, fluctuations in the value of the U.S. dollar and foreign currencies may make our subscriptions more expensive for international customers, which could harm our business. Additionally, we incur expenses for employee compensation and other operating expenses for our non-U.S. employees in the local currency for such locations. Fluctuations in the exchange rates between the U.S. dollar and other currencies could result in an increase to the U.S. dollar equivalent of such expenses. These fluctuations could cause our results of operations to differ from our expectations or the expectations of our investors. Additionally, such foreign currency exchange rate fluctuations could make it more difficult to detect underlying trends in our business and results of operations.

Our international operations may subject us to greater than anticipated tax liabilities.

The amount of taxes we may pay in different jurisdictions depends on the application of the tax laws of various jurisdictions, including the United States, to our international business activities, changes in tax rates, new or revised tax laws or interpretations of existing tax laws and policies, and our ability to operate our business in a manner consistent with our corporate structure and intercompany arrangements. The taxing authorities of the jurisdictions in which we operate may challenge our methodologies for pricing intercompany transactions pursuant to any future intercompany arrangement or disagree with our determinations as to the income and expenses attributable to specific jurisdictions. If such a challenge or disagreement were to occur, and our position was not sustained, we could be required to pay additional taxes, interest and penalties, which could result in one-time tax charges, higher effective tax rates, reduced cash flows, and lower overall profitability of our operations. Our financial statements could fail to reflect adequate reserves to cover such a contingency. Similarly, a taxing authority could assert that we are subject to tax in a jurisdiction where we believe we have not established a taxable connection, often referred to as a “permanent establishment” under international tax treaties, and such an assertion, if successful, could increase our expected tax liability in one or more jurisdictions.

Risks Related to Litigation and Government Regulation

Contracts with U.S. government entities subject us to risks, including early termination, audits, investigations, sanctions and penalties.

As part of our business strategy, we may enter into contracts with state and government entities, which subjects our business to statutes and regulations applicable to companies doing business with the government, including the Federal Acquisition Regulation. These government contracts customarily contain provisions that give the government substantial rights and remedies, many of which are not typically found in commercial contracts and which are unfavorable to contractors. For instance, most U.S. government agencies include provisions that allow the government to unilaterally terminate or modify contracts for convenience, and in that event, the counterparty to the contract may generally recover only its incurred or committed costs and settlement expenses and profit on work completed prior to the termination. If the government terminates a contract for default, the defaulting party may be liable for any extra costs incurred by the government in procuring undelivered items from another source.

In addition, government contracts normally contain additional requirements that may increase our costs of doing business, reduce our profits, and expose us to liability for failure to comply with these terms and conditions. These requirements include, for example:

- specialized disclosure and accounting requirements unique to government contracts;
- financial and compliance audits that may result in potential liability for price adjustments, recoupment of government funds after such funds have been spent, civil and criminal penalties, or administrative sanctions such as suspension or debarment from doing business with the U.S. government;
- public disclosures of certain contract and company information; and
- mandatory socioeconomic compliance requirements, including labor requirements, non-discrimination and affirmative action programs and environmental compliance requirements.

Government contracts are also generally subject to greater scrutiny by the government, which can initiate reviews, audits and investigations regarding our compliance with government contract requirements. In addition, if we fail to comply with government contracting laws, regulations and contract requirements, our contracts may be subject to termination, and we may be subject to financial and/or other liability under our contracts, the Federal Civil False Claims Act (including treble damages and other penalties), or criminal law. In particular, the False Claims Act's "whistleblower" provisions also allow private individuals, including present and former employees, to sue on behalf of the U.S. government. Any penalties, damages, fines, suspension, or damages could adversely affect our ability to operate our business and our financial results.

State, federal and foreign laws and regulations, and other obligations, related to privacy, data protection and security could adversely affect us.

We are subject to state and federal laws and regulations related to privacy, data protection and security. In addition, in recent years, there has been a heightened legislative and regulatory focus on privacy and data security, including requiring consumer notification in the event of a data breach and providing consumers with additional rights with respect to their personal data. Legislation has been introduced in Congress and there have been several Congressional hearings addressing privacy and data security. From time to time, Congress has considered, and may do so again, legislation establishing requirements for privacy, data security and response to data breaches that, if implemented, could affect us by increasing our costs of doing business. In addition, several states have enacted comprehensive privacy laws or security breach legislation. For example, the California Consumer Privacy Act ("CCPA"), which enhances consumer protection and privacy rights by granting consumers resident in California new rights with respect to the collection of their personal data and imposing new operational requirements on businesses, went into effect in January 2020. The CCPA includes a statutory damages framework and private rights of action against businesses that fail to comply with certain CCPA terms or implement reasonable security procedures and practices to prevent data breaches. Several other states have passed or are considering similar legislation. Foreign governments are raising similar privacy and data security concerns. In particular, the European Union enacted a General Data Protection Regulation ("GDPR") in May 2018 which imposes strict requirements on how we and third parties with whom we contract collect, share, export or otherwise process personal information, and provide for significant penalties for noncompliance. China, Russia, Japan and other countries in Latin America and Asia are also strengthening their privacy laws and the enforcement of privacy and data security requirements. Complying with such laws and regulations may be time-consuming and require additional resources, and could therefore harm our business, financial condition and results of operations.

We are subject to U.S. and foreign anti-corruption, anti-bribery and similar laws, and non-compliance with such laws can subject us to criminal or civil liability and harm our business.

We are subject to the U.S. Foreign Corrupt Practices Act of 1977, as amended, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, and other anti-bribery, and anti-corruption laws in countries in which we conduct activities. Anti-corruption and anti-bribery laws have been enforced aggressively in recent years and are interpreted broadly to generally prohibit companies, their employees, and their third-party intermediaries from authorizing, promising, offering, providing, soliciting, or accepting, directly or indirectly, improper payments or benefits to or from any person whether in the public or private sector. We may engage with partners and third-party intermediaries to market our services and to obtain necessary permits, licenses, and other regulatory approvals. In addition, we or our third-party intermediaries may have direct or indirect interactions with officials and employees of government agencies or state-owned or affiliated entities. We can be held liable for the corrupt or other illegal activities of these third-party intermediaries, and of our employees, representatives, contractors, partners, and agents, even if we do not explicitly authorize such activities. We cannot provide any assurance that all of our employees and agents will not take actions in violation of our policies and applicable law, for which we may be ultimately held responsible.

Detecting, investigating, and resolving actual or alleged violations of anti-corruption laws can require a significant diversion of time, resources, and attention from senior management. In addition, noncompliance with anti-corruption or anti-bribery laws could subject us to whistleblower complaints, investigations, sanctions, settlements, prosecution, enforcement actions, fines, damages, other civil or criminal penalties, injunctions, suspension or debarment from contracting with certain persons, reputational harm, adverse media coverage, and other collateral consequences.

We are subject to governmental export and import controls that could impair our ability to compete in international markets due to licensing requirements and subject us to liability if we are not in compliance with applicable laws.

Our products and technologies are subject to U.S. export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls. U.S. export control and economic sanctions laws include restrictions or prohibitions on the sale or supply of certain products, technologies, and services to U.S. Government embargoed or sanctioned countries, governments, persons and entities. In addition, certain products and technology may be subject to export licensing or approval requirements. Exports of our products and technology must be made in compliance with export control and sanctions laws and regulations. If we fail to comply with these laws and regulations, we and certain of our employees could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges; fines, which may be imposed on us and responsible employees or managers; and, in extreme cases, the incarceration of responsible employees or managers.

In addition, changes in our products or technologies or changes in applicable export or import laws and regulations may create delays in the introduction and sale of our products and technologies in international markets or, in some cases, prevent the export or import of our products and technologies to certain countries, governments or persons altogether. Any change in export or import laws and regulations, shift in the enforcement or scope of existing laws and regulations, or change in the countries, governments, persons or technologies targeted by such laws and regulations, could also result in decreased use of our products and technologies, or in our decreased ability to export or sell our products and technologies to existing or potential customers. Any decreased use of our products and technologies or limitation on our ability to export or sell our products and technologies would likely adversely affect our business, financial condition and results of operations.

We expect to incur significant costs in complying with these regulations. Regulations related to quantum computing are currently evolving and we may face additional risks associated with changes to these regulations.

Our business is exposed to risks associated with litigation, investigations and regulatory proceedings.

We may face legal, administrative and regulatory proceedings, claims, demands and/or investigations involving stockholder, consumer, competition and/or other issues relating to our business. Litigation and regulatory proceedings are inherently uncertain, and adverse rulings could occur, including monetary damages, or an injunction stopping us from engaging in certain business practices, or requiring other remedies, such as compulsory licensing of patents. For example, on January 12, 2021, dMY Technology Group, Inc. II, dMY Sponsor II, LLC, dMY and dMY Sponsor III, LLC (“Sponsor”) accepted service of a lawsuit where we are named as counterclaim defendants in an underlying action by and between GTY Technology Holdings, Inc. (“GTY”), dMY Technology Group, Inc. and dMY Sponsor, LLC, dMY Sponsor II, LLC, dMY Technology Group Inc. II, dMY and Sponsor (collectively, “dMY Defendants”) and Carter Glatt (“Glatt”) and Captains Neck Holdings LLC (“Captains Neck”), an entity of which Mr. Glatt is a member. The underlying lawsuit, filed by dMY Technology Group, Inc. and dMY Sponsor, LLC, seeks a declaratory judgment that Glatt and Captains Neck are not entitled to membership units of dMY Sponsor LLC, which was formed by Harry L. You, the co-founder and former President and Chief Financial Officer of GTY when Glatt was still working at GTY. The underlying lawsuit contains claims arising from Glatt’s termination of employment from GTY, including theft and misappropriation of confidential GTY information, breach of contract, breach of the duties of loyalty and fiduciary duty and conversion. Glatt has responded to the underlying lawsuit by adding members of the Sponsor and officers of dMY as additional counterclaim defendants (collectively with the dMY Defendants, Glatt and Captains Neck, the “Counterclaim Defendants”) and adding Dune Acquisition Holdings LLC, a newly formed special purpose acquisition company, as a counterclaimant and asserting claims for breach of contract, fraudulent misrepresentation, negligent misrepresentation, tortious interference with business relations, quantum meruit and unjust enrichment. The Counterclaim Defendants have denied the claims against them and have a motion to dismiss the suit.

In May 2022, a securities class action complaint captioned *Leacock v. IonQ, Inc. et al.,* Case No. 8:22-cv-01306, was filed by a stockholder of the Company in the United States District Court for the District of Maryland (the “Leacock Litigation”) against the Company and certain of the Company’s current officers. In June 2022, a securities class action complaint captioned *Fisher v. IonQ, Inc.,* Case No. 8:22-cv-01306-DLB (the “Fisher Litigation”) was filed by a stockholder against the Company and certain of the Company’s current officers. Both the Leacock Litigation and Fisher Litigation allege violations of Section 10(b) of the Exchange Act, and Rule 10b-5 promulgated thereunder, and Section 20(a) of the Exchange Act and seeking unspecified damages.

These proceedings and any additional investigations, inquiries or litigation by various regulators may harm our reputation regardless of the outcome of any such action. The outcome of any litigation, regardless of its merits, is inherently uncertain. Any claims and lawsuits, and the disposition of such claims and lawsuits, could be time-consuming and expensive to resolve, divert management attention and resources, and lead to attempts on the part of other parties to pursue similar claims. Negative perceptions of our business may result in additional regulation, enforcement actions by the government and increased litigation, or harm to our ability to attract or retain customers or strategic partners, any of which may affect our business. Any damage to our reputation, including from publicity from legal proceedings against us or companies that work within our industry, governmental proceedings, unfavorable media coverage or class action could adversely affect our business, financial condition and results of operations.

An unfavorable outcome or settlement in the Leacock or Fisher Litigation or any other legal, administrative and regulatory proceeding may result in a material adverse impact on our business, results of operations, financial position and overall trends. In addition, regardless of the outcome, litigation can be costly, time-consuming, and disruptive to our operations. Any claims or litigation, even if fully indemnified or insured, could damage our reputation and make it more difficult to compete effectively or to obtain adequate insurance in the future. In addition, the laws and regulations our business is subject to are complex and change frequently. We may be required to incur significant expense to comply with changes in, or remedy violations of, these laws and regulations.

Furthermore, while we maintain insurance for certain potential liabilities, such insurance does not cover all types and amounts of potential liabilities and is subject to various exclusions as well as caps on amounts recoverable. Even if we believe a claim is covered by insurance, insurers may dispute our entitlement to recovery for a variety of potential reasons, which may affect the timing and, if the insurers prevail, the amount of our recovery.

We may become subject to product liability claims, which could harm our financial condition and liquidity if we are not able to successfully defend or insure against such claims.

We may become subject to product liability claims, even those without merit, which could harm our business prospects, operating results, and financial condition. We may face inherent risk of exposure to claims in the event our quantum computers do not perform as expected or malfunction. A successful product liability claim against us could require us to pay a substantial monetary award. Moreover, a product liability claim could generate substantial negative publicity about our quantum computers and business and inhibit or prevent commercialization of other future quantum computers, which would have material adverse effects on our brand, business, prospects and operating results. Any insurance coverage might not be sufficient to cover all potential product liability claims. Any lawsuit seeking significant monetary damages either in excess of our coverage, or outside of our coverage, may have a material adverse effect on our reputation, business and financial condition. We may not be able to secure additional product liability insurance coverage on commercially acceptable terms or at reasonable costs when needed, particularly if we do face liability for our products and are forced to make a claim under our policy.

We are subject to requirements relating to environmental and safety regulations and environmental remediation matters which could adversely affect our business, results of operation and reputation.

We are subject to numerous federal, state and local environmental laws and regulations governing, among other things, solid and hazardous waste storage, treatment and disposal, and remediation of releases of hazardous materials. There are significant capital, operating and other costs associated with compliance with these environmental laws and regulations. Environmental laws and regulations may become more stringent in the future, which could increase costs of compliance or require us to manufacture with alternative technologies and materials.

Federal, state and local authorities also regulate a variety of matters, including, but not limited to, health, safety and permitting in addition to the environmental matters discussed above. New legislation and regulations may require us to make material changes to our operations, resulting in significant increases to the cost of production.

Our manufacturing process will have hazards such as but not limited to hazardous materials, machines with moving parts, and high voltage and/or high current electrical systems typical of large manufacturing equipment and related safety incidents. There may be safety incidents that damage machinery or product, slow or stop production, or harm employees. Consequences may include litigation, regulation, fines, increased insurance premiums, mandates to temporarily halt production, workers' compensation claims, or other actions that impact the company brand, finances, or ability to operate.

Risks Related to our Intellectual Property

Licensing of intellectual property is of critical importance to our business. For example, we license patents (some of which are foundational patents) and other intellectual property from the University of Maryland and Duke University on an exclusive basis. If the license agreement with these universities terminates, or if any of the other agreements under which we acquired or licensed, or will acquire or license, material intellectual property rights is terminated, we could lose the ability to develop and operate our business.

We are heavily reliant upon licenses to certain patent rights and other intellectual property from third parties that are important or necessary to the development of our products. In particular, our quantum computing technology is dependent on our license agreement with University of Maryland and Duke University (the "Universities"). Significant intellectual property developed by our co-founders, Jungsang Kim, our Chief Technology Officer, and Christopher Monroe, our Chief Scientist, has been and is required to be assigned to the Universities as a result of Dr. Kim and Dr. Monroe's employment by the Universities, and certain such intellectual property is licensed pursuant to the license agreement with the Universities. Pursuant to the license agreement with the Universities, we were granted an exclusive, worldwide, royalty-free, sublicenseable license for certain patents, know-how (on a non-exclusive basis) and other intellectual property to develop, manufacture and commercialize products for use in certain licensed fields, the scope of which includes the application of the licensed intellectual property in ion trap quantum computing.

Our existing license agreement with the Universities imposes, and we expect that any future license agreements will impose, upon us various commercial and development obligations. If we fail to comply with our obligations under these agreements, or we are subject to an insolvency-related event, the licensor may have the right to terminate these agreements, in which event we would not be able to develop, market or otherwise commercialize products covered by these agreements, including if any of the foregoing were to occur with respect to our license agreement with the Universities. Our business could significantly suffer, for example, if any current or future licenses terminate, if the licensors fail to abide by the terms of the license, if the licensed patents or other rights are found to be invalid or unenforceable, or if we are unable to enter into necessary licenses on acceptable terms.

Licensing of intellectual property is of critical importance to our business and involves complex legal, business and scientific issues, and certain provisions in intellectual property license agreements may be susceptible to multiple interpretations. Disputes may arise between us and our licensors regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patent and other rights to third parties;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product and technology, and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and the company;
- our right to transfer or assign the license; and
- the effects of termination.

The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could harm our business, financial condition and results of operations. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize our products or technology.

While we would expect to exercise all rights and remedies available to us, including seeking to cure any breach by us, and otherwise seek to preserve our rights under the license agreement, we may not be able to do so in a timely manner, at an acceptable cost or at all.

If we are unable to obtain and maintain patent protection for our products and technology, or if the scope of the patent protection obtained is not sufficiently broad or robust, our competitors could develop and commercialize products and technology similar or identical to ours, and our ability to successfully commercialize our products and technology may be adversely affected. Moreover, our trade secrets could be compromised, which could cause us to lose the competitive advantage resulting from these trade secrets.

Our success depends, in significant part, on our ability to obtain, maintain, enforce and defend patents and other intellectual property rights, including trade secrets, with respect to our products and technology and to operate our business without infringing, misappropriating, or otherwise violating the intellectual property rights of others. We may not be able to prevent unauthorized use of our intellectual property. We rely upon a combination of the intellectual property protections afforded by patent, copyright, trademark and trade secret laws in the United States and other jurisdictions, as well as license agreements and other contractual protections, to establish, maintain and enforce rights in our proprietary technologies. In addition, we seek to protect our intellectual property rights through nondisclosure and invention assignment agreements with our employees and consultants, and through non-disclosure agreements with business partners and other third parties. Our trade secrets may also be compromised which could cause us to lose the competitive advantage from such trade secrets. Despite our efforts to protect our proprietary rights, third parties may attempt to copy or otherwise obtain and use our intellectual property. Monitoring unauthorized use of our intellectual property is difficult and costly, and the steps we have taken or will take to prevent misappropriation may not be sufficient. Any enforcement efforts we undertake, including litigation, could be time-consuming and expensive and could divert management’s attention, which could harm our business, results of operations and financial condition. In addition, existing intellectual property laws and contractual remedies may afford less protection than needed to safeguard our intellectual property portfolio.

Patent, copyright, trademark and trade secret laws vary significantly throughout the world. A number of foreign countries do not protect intellectual property rights to the same extent as do the laws of the United States. Therefore, our intellectual property rights may not be as strong or as easily enforced outside of the United States and efforts to protect against the unauthorized use of our intellectual property rights, technology and other proprietary rights may be more expensive and difficult outside of the United States. Failure to adequately protect our intellectual property rights could result in our competitors using our intellectual property to offer products, potentially resulting in the loss of some of our competitive advantage and a decrease in our revenue which, would adversely affect our business, financial condition and operating results.

Our patent applications may not result in issued patents or our patent rights may be contested, circumvented, invalidated or limited in scope, any of which could have a material adverse effect on our ability to prevent others from interfering with our commercialization of our products.

Our patent applications may not result in issued patents, which may have a material adverse effect on our ability to prevent others from commercially exploiting products similar to ours. The status of patents involves complex legal and factual questions and the breadth of claims allowed is uncertain. As a result, we cannot be certain that the patent applications that we file will result in patents being issued, or that our patents and any patents that may be issued to us will afford protection against competitors with similar technology. Numerous patents and pending patent applications owned by others exist in the fields in which we have developed and are developing our technology. In addition to those who may have patents or patent applications directed to relevant technology with an effective filing date earlier than any of our existing patents or pending patent applications, any of our existing or pending patents may also be challenged by others on the basis that they are otherwise invalid or unenforceable. Furthermore, patent applications filed in foreign countries are subject to laws, rules and procedures that differ from those of the United States, and thus we cannot be certain that foreign patent applications related to issued U.S. patents will be issued.

Even if our patent applications succeed and we are issued patents in accordance with them, it is still uncertain whether these patents will be contested, circumvented, invalidated or limited in scope in the future. The rights granted under any issued patents may not provide us with meaningful protection or competitive advantages, and some foreign countries provide significantly less effective patent enforcement than in the United States. In addition, the claims under any patents that issue from our patent applications may not be broad enough to prevent others from developing technologies that are similar or that achieve results similar to ours. The intellectual property rights of others could also bar us from licensing and exploiting any patents that issue from our pending applications. In addition, patents issued to us may be infringed upon or designed around by others and others may obtain patents that it needs to license or design around, either of which would increase costs and may adversely affect our business, prospects, financial condition and operating results.

We may face patent infringement and other intellectual property claims that could be costly to defend, result in injunctions and significant damage awards or other costs (including indemnification of third parties or costly licensing arrangements (if licenses are available at all)) and limit our ability to use certain key technologies in the future or require development of non-infringing products, services, or technologies, which could result in a significant expenditure and otherwise harm our business.

We may become subject to intellectual property disputes. Our success depends, in part, on our ability to develop and commercialize our products, services and technologies without infringing, misappropriating or otherwise violating the intellectual property rights of third parties. However, we may not be aware that our products, services or technologies are infringing, misappropriating or otherwise violating third-party intellectual property rights and such third parties may bring claims alleging such infringement, misappropriation or violation. For example, there may be issued patents of which we are unaware, held by third parties that, if found to be valid and enforceable, could be alleged to be infringed by our current or future products, services or technologies. There also may be pending patent applications of which we are not aware that may result in issued patents, which could be alleged to be infringed by our current or future products, services or technologies. Because patent applications can take years to issue and are often afforded confidentiality for some period of time there may currently be pending applications, unknown to us, that later result in issued patents that could cover our current or future products, services or technologies. Lawsuits can be time-consuming and expensive to resolve, and they divert management's time and attention. Numerous patents and pending patent applications owned by others exist in the fields in which we have developed and are developing our technology. Companies that have developed and are developing technology are often required to defend against litigation claims based on allegations of infringement, misappropriation or other violations of intellectual property rights. Our products, services or technologies may not be able to withstand any third-party claims against their use. In addition, many companies have the capability to dedicate substantially greater resources to enforce their intellectual property rights and to defend claims that may be brought against them. In a patent infringement claim against us, we may assert, as a defense, that we do not infringe the relevant patent claims, that the patent is invalid or both. The strength of our defenses will depend on the patents asserted, the interpretation of these patents, and our ability to invalidate the asserted patents. However, we could be unsuccessful in advancing non-infringement and/or invalidity arguments in our defense. In the United States, issued patents enjoy a presumption of validity, and the party challenging the validity of a patent claim must present clear and convincing evidence of invalidity, which is a high burden of proof. Conversely, the patent owner need only prove infringement by a preponderance of the evidence, which is a lower burden of proof. Our patent portfolio may not be large enough to deter patent infringement claims, and our competitors and others may now and in the future have significantly larger and more mature patent portfolios. Any litigation may also involve patent holding companies or other adverse patent owners that have no relevant solution revenue, and therefore, our patent portfolio may provide little or no deterrence as we would not be able to assert our patents against such entities or individuals. If a third party is able to obtain an injunction preventing us from accessing such third-party intellectual property rights, or if we cannot license or develop alternative technology for any infringing aspect of our business, we may be forced to limit or stop sales of our products, services or technologies or cease business activities related to such intellectual property.

Although we carry general liability insurance, our insurance may not cover potential claims of this type or may not be adequate to indemnify us for all liability that may be imposed. We cannot predict the outcome of lawsuits and cannot ensure that the results of any such actions will not have an adverse effect on our business, financial condition or results of operations. Any intellectual property litigation to which we might become a party, or for which we are required to provide indemnification, regardless of the merit of the claim or our defenses, may require us to do one or more of the following:

- cease selling or using solutions or services that incorporate the intellectual property rights that allegedly infringe, misappropriate or violate the intellectual property of a third party;
- make substantial payments for legal fees, settlement payments or other costs or damages;
- obtain a license, which may not be available on reasonable terms or at all, to sell or use the relevant technology;
- redesign the allegedly infringing solutions to avoid infringement, misappropriation or violation, which could be costly, time-consuming or impossible; or
- indemnify organizations using our platform or third-party service providers.

Even if the claims do not result in litigation or are resolved in our favor, these claims, and the time and resources necessary to resolve them, could divert the resources of our management and harm our business and operating results. Moreover, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. The occurrence of infringement claims may grow as the market for our products, services and technologies grows. Accordingly, our exposure to damages resulting from infringement claims could increase and this could further exhaust our financial and management resources.

Some of our in-licensed intellectual property, including the intellectual property licensed from the Universities, has been conceived or developed through government-funded research and thus may be subject to federal regulations providing for certain rights for the U.S. government or imposing certain obligations on us, such as a license to the U.S. government under such intellectual property, "march-in" rights, certain reporting requirements and a preference for U.S.-based companies, and compliance with such regulations may limit our exclusive rights and our ability to contract with non-U.S. manufacturers.

Certain intellectual property rights that have been in-licensed pursuant to the license agreement with the Universities have been generated through the use of U.S. government funding and are therefore subject to certain federal regulations. As a result, the U.S. government may have certain rights to intellectual property embodied in our current or future product candidates pursuant to the Bayh-Dole Act of 1980, or the Patent and Trademark Law Amendment. These U.S. government rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right, under certain limited circumstances, to require the licensor to grant exclusive, partially exclusive or non-exclusive licenses to any of these inventions to a third party if it determines that: (1) adequate steps have not been taken to commercialize the invention, (2) government action is necessary to meet public health or safety needs or (3) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if the licensor fails to disclose the invention to the government or fails to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us to expend substantial resources. In addition, the U.S. government requires that any products embodying any of these inventions or produced through the use of any of these inventions be manufactured substantially in the U.S., and the license agreement with the Universities requires that we comply with this requirement. This preference for U.S. industry may be waived by the federal agency that provided the funding if the owner or assignee of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture the products substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. To the extent any of our owned or licensed future intellectual property is also generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

Risks Related to an Investment in our Securities and Other General Matters

The market price of shares of our common stock or public warrants may be volatile, which could cause the value of your investment to decline.

If you purchase shares of our common stock, you may not be able to resell those shares at or above the price you paid. The market price of our common stock may be highly volatile and may fluctuate or decline significantly in response to numerous factors, some of which are beyond our control. The securities markets have experienced and continue to experience significant volatility. Market volatility, as well as general economic, market or political conditions, could reduce the market price of shares of our common stock regardless of our operating performance. Our operating results could be below the expectations of public market analysts and investors due to a number of potential factors, including:

- variations in quarterly operating results or dividends, if any, to stockholders;
- additions or departures of key management personnel;
- publication of research reports about our industry;

- rumors and market speculation involving us or other companies in our industry, which may include short seller reports;
- litigation and government investigations;
- changes or proposed changes in laws or regulations or differing interpretations or enforcement of laws or regulations affecting our business;
- adverse market reaction to any indebtedness incurred or securities issued in the future;
- changes in market valuations of similar companies;
- announcements by competitors of significant contracts, acquisitions, dispositions, strategic partnerships, joint ventures, or capital commitments;
- the impact of the COVID-19 pandemic or other geopolitical events such as Russia's incursion into Ukraine; and
- the impact of any of the foregoing on our management, employees, partners, customers, and operating results.

Following periods of volatility in the overall market and the market price of a company's securities, securities class action litigation has often been instituted against such company. Such litigation could result in substantial costs and a diversion of management's attention and resources. See also "*— Risks Related to Litigation and Government Regulation — Our business is exposed to risks associated with litigation, investigations and regulatory proceedings*."

Short sellers may engage in manipulative activity intended to drive down the market price of our common stock, which could also result in related regulatory and governmental scrutiny, among other effects.

Short selling is the practice of selling securities that the seller does not own but rather has borrowed or intends to borrow from a third party with the intention of later buying lower priced identical securities to return to the lender. Accordingly, it is in the interest of a short seller of our common stock for the price to decline. At any time, short sellers may publish, or arrange for the publication of, opinions or characterizations that are intended to create negative market momentum. Issuers, like us, whose securities have historically had limited trading history or volumes and/or have been susceptible to relatively high volatility levels can be vulnerable to such short seller attacks. Short selling reports can cause increased volatility in an issuer's stock price, and result in regulatory and governmental inquiries. On May 3, 2022, a short seller report was published about us, which contained certain allegations against us. Any inquiry or formal investigation from a governmental organization or other regulatory body, including any inquiry from the SEC or the U.S. Department of Justice, could result in a material diversion of our management's time and could have a material adverse effect on our business and results of operations.

There may not be an active trading market for our common stock or public warrants, which may make it difficult to sell such securities.

It is possible that an active trading market will not develop or, if developed, that any market will not be sustained. This would make it difficult for you to sell shares of our common stock or public warrants at an attractive price or at all.

Our ability to timely raise capital in the future may be limited, or may be unavailable on acceptable terms, if at all. The failure to raise capital when needed could harm our business, operating results and financial condition. Debt or equity issued to raise additional capital may reduce the value of our common stock.

We cannot be certain when or if the operations of our business will generate sufficient cash to fund our ongoing operations or the growth of our business. We intend to make investments to support our current business and may require additional funds to respond to business challenges, including the need to develop or enhance our technology, improve our operating infrastructure or acquire complementary businesses and technologies. Additional financing may not be available on favorable terms, if at all. If adequate funds are not available on acceptable terms, we may be unable to invest in future growth opportunities, which could harm our business, operating results and financial condition. If we incur debt, the debt holders could have rights senior to holders of our common stock to make claims on our assets. The terms of any debt could restrict our operations, including our ability to pay dividends on our common stock. If we issue additional equity securities, stockholders will experience dilution, and the new equity securities could have rights senior to those of our common stock. Because the decision to issue securities in the future offering will depend on numerous considerations, including factors beyond our control, we cannot predict or estimate the amount, timing or nature of any future issuances of debt or equity securities. As a result, stockholders will bear the risk of future issuances of debt or equity securities reducing the value of their common stock and diluting their interest.

A small number of stockholders will continue to have substantial control over us, which may limit other stockholders' ability to influence corporate matters and delay or prevent a third party from acquiring control over us.

As of June 30, 2022, our directors and executive officers of, and beneficial owners of 5% or more of our voting securities and their respective affiliates beneficially own, in the aggregate, approximately 25% of our outstanding common stock. This significant concentration of ownership may have a negative impact on the trading price for our common stock because investors often perceive disadvantages in owning stock in companies with controlling stockholders. In addition, these stockholders will be able to exercise influence over all matters requiring stockholder approval, including the election of directors and approval of corporate transactions, such as a merger or other sale of us or our assets. This concentration of ownership could limit stockholders' ability to influence corporate matters and may have the effect of delaying or preventing a change in control, including a merger, consolidation or other business combination, or discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control, even if that change in control would benefit the other stockholders.

There can be no assurance that we will be able to comply with the continued listing standards of the New York Stock Exchange ("NYSE").

If we fail to satisfy the continued listing requirements of NYSE, such as the corporate governance requirements or the minimum share price requirement, NYSE may take steps to delist our securities. Such a delisting would likely have a negative effect on the price of the securities and would impair your ability to sell or purchase the securities when you wish to do so. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our securities to become listed again, stabilize the market price or improve the liquidity of our securities, prevent our securities from dropping below the NYSE minimum share price requirement or prevent future non-compliance with NYSE's listing requirements. Additionally, if our securities are not listed on, or become delisted from the NYSE, for any reason, and are quoted on the OTC Bulletin Board, an inter-dealer automated quotation system for equity securities that is not a national securities exchange, the liquidity and price of our securities may be more limited than if we were quoted or listed on the NYSE or another national securities exchange. You may be unable to sell your securities unless a market can be established or sustained.

If we are unable to implement and maintain effective internal control over financial reporting in the future, investors may lose confidence in the accuracy and completeness of financial reports, and the market price of our common stock may decline.

We are required to maintain internal controls over financial reporting and to report any material weaknesses in such internal controls. The process of designing, implementing, and testing the internal control over financial reporting required to comply with this obligation is time-consuming, costly, and complicated. If we are unable to remediate any existing material weaknesses or if we identify additional material weaknesses in our internal control over financial reporting, if we are unable to comply with the requirements of Section 404 of Sarbanes-Oxley in a timely manner, or if we are unable to assert that our internal control over financial reporting is effective, we will be unable to certify that our internal control over financial reporting is effective. We cannot assure you that there will not be additional material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition or results of operations. If we are unable to conclude that our internal control over financial reporting is effective, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could decline. We could become subject to investigations by the NYSE, the SEC or other regulatory authorities, which could require additional financial and management resources.

If our operating and financial performance in any given period does not meet the guidance provided to the public or the expectations of investment analysts, the market price of our common stock may decline.

We may, but are not obligated to, provide public guidance on our expected operating and financial results for future periods. Any such guidance will consist of forward-looking statements, subject to the risks and uncertainties described in this filing and in our other public filings and public statements. The ability to provide this public guidance, and the ability to accurately forecast our results of operations, may be impacted by the COVID-19 pandemic. Our actual results may not always be in line with or exceed any guidance we have provided, especially in times of economic uncertainty, such as the current global economic uncertainty being experienced as a result of the COVID-19 pandemic. If, in the future, our operating or financial results for a particular period do not meet any guidance provided or the expectations of investment analysts, or if we reduce our guidance for future periods, the market price of our common stock may decline as well. Even if we do issue public guidance, there can be no assurance that we will continue to do so in the future.

Our quarterly operating results may fluctuate significantly and could fall below the expectations of securities analysts and investors due several factors, some of which are beyond our control, resulting in a decline in our stock price.

Our quarterly operating results may fluctuate significantly because of several factors, including:

- labor availability and costs for hourly and management personnel;
- profitability of our products, especially in new markets;
- changes in interest rates;
- impairment of long-lived assets;
- macroeconomic conditions, both nationally and locally;
- size and scope of our revenue arrangements with our customers;
- negative publicity relating to products we serve;
- changes in consumer preferences and competitive conditions;
- expansion to new markets; and
- fluctuations in commodity prices.

We will incur significant increased expenses and administrative burdens as a public company, which could negatively impact our business, financial condition and results of operations.

We face increased legal, accounting, administrative and other costs and expenses as a public company that we did not incur as a private company. Sarbanes-Oxley, including the requirements of Section 404, as well as rules and regulations subsequently implemented by the SEC, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and the rules and regulations promulgated and to be promulgated thereunder, the PCAOB and the securities exchanges, impose additional reporting and other obligations on public companies. Compliance with public company requirements will increase costs and make certain activities more time-consuming. A number of those requirements require us to carry out activities we have not done previously. For example, we have created new board committees and adopted new internal controls and disclosure controls and procedures.

If any issues in complying with SEC reporting requirements are identified (for example, if we identify an additional material weakness or significant deficiency or fail to remediate any existing material weaknesses in the internal control over financial reporting), we could incur additional costs rectifying those issues, and the existence of those issues could harm our reputation or investor perceptions of us. Further, the costs to maintain our director and officer liability insurance may continue to rise to unprecedented levels. Risks associated with our status as a public company may make it more difficult to attract and retain qualified persons to serve on our board of directors or as executive officers. The additional reporting and other obligations imposed by these rules and regulations will increase legal and financial compliance costs and the costs of related legal, accounting and administrative activities. These increased costs will require us to divert a significant amount of money that could otherwise be used to expand our business and achieve strategic objectives. Advocacy efforts by stockholders and third parties may also prompt additional changes in governance and reporting requirements, which could further increase costs.

We qualify as an emerging growth company as well as a smaller reporting company. The reduced public company reporting requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We qualify as an emerging growth company under SEC rules. As an emerging growth company, we are permitted and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These provisions include: (1) presenting only two years of audited financial statements; (2) presenting only two years of related selected financial data and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” disclosure; (3) an exemption from compliance with the auditor attestation requirement in the assessment of internal control over financial reporting pursuant to Section 404 of Sarbanes-Oxley; (4) not being required to comply with any requirement that may be adopted by the PCAOB regarding mandatory audit firm rotation or a supplement to the auditor’s report providing additional information about the audit and the financial statements; (5) reduced disclosure obligations regarding executive compensation arrangements in periodic reports, registration statements, and proxy statements; and (6) exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. As a result, the information we provide will be different than the information that is available with respect to other public companies that are not emerging growth companies. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock, and the market price of our common stock may be more volatile. We will remain an emerging growth company until the earliest of: (1) December 31, 2025; (2) the last day of the fiscal year in which we have gross revenue exceeding $1.07 billion; (3) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three year period; and (4) the last day of the year in which we are deemed to be a large accelerated filer, which means the market value of our common stock held by non-affiliates exceeds $700 million as of the prior June 30th.

Additionally, we qualify as a “smaller reporting company” as defined in Item 10(f)(1) of Regulation S-K. Smaller reporting companies may take advantage of certain reduced disclosure obligations, including, among other things, providing only two years of audited financial statements. We will remain a smaller reporting company until the last day of the fiscal year in which (i) the market value of common stock held by non-affiliates exceeds $250 million as of the end of that year’s second fiscal quarter, or (ii) our annual revenues exceeded $100 million during such completed fiscal year and the market value of common stock held by non-affiliates equals or exceeds $700 million as of the end of that year’s second fiscal quarter. To the extent we take advantage of such reduced disclosure obligations, we may also make comparison of our financial statements with other public companies difficult or impossible.

A significant portion of our total outstanding shares of common stock are restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of common stock to drop significantly, even if our business is doing well.

Shares of our common stock that are currently restricted from immediate resale may be sold into the market in the near future. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of common stock. We are unable to predict the effect that sales may have on the prevailing market price of our common stock or our public warrants.

To the extent our warrants, additional shares of common stock will be issued, which will result in dilution to the holders of common stock and increase the number of shares eligible for resale in the public market. Sales, or the potential sales, of substantial numbers of shares in the public market by the securityholders, subject to certain restrictions on transfer until the termination of applicable lock-up periods, could increase the volatility of the market price of common stock or adversely affect the market price of our common stock.

We may issue additional shares of common stock or other equity securities without your approval, which would dilute your ownership interests and may depress the market price of our common stock.

We have warrants outstanding to purchase an aggregate of 13,532,733 shares of common stock. Pursuant to our employee benefit plans, we may issue an aggregate of up to 33,644,512 shares of common stock, which amount may be subject to increase from time to time. We may also issue additional shares of common stock or other equity securities of equal or senior rank in the future in connection with, among other things, future acquisitions or repayment of outstanding indebtedness, without stockholder approval, in a number of circumstances.

The issuance of additional shares or other equity securities of equal or senior rank would have the following effects:

- existing stockholders' proportionate ownership interest in us will decrease;
- the amount of cash available per share, including for payment of dividends, if any, may decrease;
- the relative voting strength of each previously outstanding common stock may be diminished; and
- the market price of our common stock may decline.

There is no guarantee that the public warrants will be in the money, and they may expire worthless.

The exercise price for our public warrants is $11.50 per share of common stock. There is no guarantee that the public warrants will be in the money prior to their expiration, and as such, the public warrants may expire worthless. The public warrants expire on September 30, 2026.

We may amend the terms of the public warrants in a manner that may be adverse to holders with the approval by the holders of at least 50% of the then-outstanding public warrants. As a result, the exercise price of your public warrants could be increased, the exercise period could be shortened and the number of shares of our common stock purchasable upon exercise of a public warrant could be decreased, all without your approval.

Our public warrants are issued in registered form under the Warrant Agreement between the warrant agent and us. The Warrant Agreement provides that the terms of the public warrants may be amended without the consent of any holder to cure any ambiguity or correct any defective provision, but requires the approval by the holders of at least 50% of the then-outstanding public warrants to make any change that adversely affects the interests of the registered holders of public warrants. Accordingly, we may amend the terms of the public warrants in a manner adverse to a holder if holders of at least 50% of the then-outstanding public warrants approve of such amendment. Although our ability to amend the terms of the public warrants with the consent of at least 50% of the then- outstanding public warrants is unlimited, examples of such amendments could be amendments to, among other things, increase the exercise price of the warrants, convert the public warrants into cash or stock (at a ratio different than initially provided), shorten the exercise period or decrease the number of shares of our common stock purchasable upon exercise of a public warrant.

We may redeem unexpired public warrants prior to their exercise at a time that is disadvantageous to warrantholders, thereby making such warrants worthless.

We have the ability to redeem outstanding public warrants prior to their expiration, at a price of $0.01 per warrant, provided that the last reported sales price of our common stock equals or exceeds $18.00 per share (as adjusted for stock splits, stock dividends, reorganizations, recapitalizations and the like) for any 20 trading days within a 30-trading day period ending on the third trading day prior to the date on which we give proper notice of such redemption and provided certain other conditions are met. If and when the public warrants become redeemable by us, we may exercise our redemption right even if we are unable to register or qualify the underlying securities for sale under all applicable state securities laws. Redemption of the outstanding public warrants could force you (a) to exercise your public warrants and pay the exercise price therefor at a time when it may be disadvantageous for you to do so, (b) to sell your public warrants at the then-current market price when you might otherwise wish to hold your public warrants or (c) to accept the nominal redemption price which, at the time the outstanding public warrants are called for redemption, is likely to be substantially less than the market value of your public warrants.

In addition, we may redeem your public warrants after they become exercisable for a number of shares of common stock determined based on the redemption date and the fair market value of our common stock. Any such redemption may have similar consequences to a cash redemption described above. In addition, such redemption may occur at a time when the public warrants are "out-of-the-money," in which case, you would lose any potential embedded value from a subsequent increase in the value of our common stock had your public warrants remained outstanding.

We have no current plans to pay cash dividends on our common stock; as a result, stockholders may not receive any return on investment unless they sell their common stock for a price greater than the purchase price.

We have no current plans to pay dividends on our common stock. Any future determination to pay dividends will be made at the discretion of our board of directors, subject to applicable laws. It will depend on a number of factors, including our financial condition, results of operations, capital requirements, contractual, legal, tax and regulatory restrictions, general business conditions, and other factors that the board of directors may deem relevant. In addition, the ability to pay cash dividends may be restricted by the terms of debt financing arrangements, as any future debt financing arrangement likely will contain terms restricting or limiting the amount of dividends that may be declared or paid on our common stock. As a result, stockholders may not receive any return on an investment in our common stock unless they sell their shares for a price greater than that which they paid for them.

Provisions in our organizational documents and certain rules imposed by regulatory authorities may delay or prevent an acquisition by a third party that could otherwise be in the interests of stockholders.

Our second amended and restated certificate of incorporation ("Certificate of Incorporation") and amended and restated bylaws ("Bylaws") contain several provisions that may make it more difficult or expensive for a third party to acquire control of us without the approval of the board of directors. These provisions, which may delay, prevent or deter a merger, acquisition, tender offer, proxy contest, or other transaction that stockholders may consider favorable, include the following:

- a classified board;
- advance notice for nominations of directors by stockholders and for stockholders to include matters to be considered at our annual meetings;

- certain limitations on convening special stockholder meetings;
- limiting the persons who may call special meetings of stockholders;
- limiting the ability of stockholders to act by written consent;
- restrictions on business combinations with interested stockholder;
- in certain cases, the approval of holders representing at least 66 2/3% of the total voting power of the shares entitled to vote generally in the election of directors will be required for stockholders to adopt, amend or repeal the Bylaws, or amend or repeal certain provisions of the Certificate of Incorporation;
- no cumulative voting;
- the required approval of holders representing at least 66 2/3% of the total voting power of the shares entitled to vote at an election of the directors to remove directors; and
- the ability of the board of directors to designate the terms of and issue new series of preferred stock without stockholder approval, which could be used, among other things, to institute a rights plan that would have the effect of significantly diluting the stock ownership of a potential hostile acquirer, likely preventing acquisitions.

These provisions of our Certificate of Incorporation and Bylaws could discourage potential takeover attempts and reduce the price that investors might be willing to pay for shares of our common stock in the future, which could reduce the market price of our common stock.

The provision of our Certificate of Incorporation requiring exclusive venue in the Court of Chancery in the State of Delaware and the federal district courts of the United States for certain types of lawsuits may have the effect of discouraging lawsuits against directors and officers.

Our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for:

- any derivative action or proceeding brought on behalf of us;
- any action asserting a claim of breach of fiduciary duty owed by any director, officer, agent or other employee or stockholder to us or our stockholders;
- any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law (the “DGCL”), the Certificate of Incorporation or Bylaws or as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware;
- any claim or cause of action seeking to interpret, apply, enforce or determine the validity of the Certificate of Incorporation or the Bylaws; or
- any action asserting a claim governed by the internal affairs doctrine, in each case subject to such Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein. It further provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolutions of any complaint asserting a cause of action arising under the Securities Act. The exclusive forum clauses described above shall not apply to suits brought to enforce a duty or liability created by the Securities Exchange Act of 1934, or any other claim for which the federal courts have exclusive jurisdiction. Although these provisions are expected to benefit us by providing increased consistency in the application of applicable law in the types of lawsuits to which they apply, the provisions may have the effect of discouraging lawsuits against directors and officers. The enforceability of similar choice of forum provisions in other companies’ certificates of incorporation have been challenged in legal proceedings and there is uncertainty as to whether a court would enforce such provisions. In addition, investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder. It is possible that, in connection with any applicable action brought against us, a court could find the choice of forum provisions contained in our Certificate of Incorporation to be inapplicable or unenforceable in such action. If so, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, financial condition or results of operations.

These provisions of our Certificate of Incorporation and Bylaws could discourage lawsuits against directors and officers, which could reduce the market price of our common stock.

Table of Contents

Item 6. Exhibits.

(a) Exhibits.

The exhibits listed below are filed as part of this Quarterly Report on Form 10-Q.

Exhibit	Description	Incorporated by Reference Form	File Number	Exhibit	Filing Date
2.1+	Agreement and Plan of Merger, dated as of March 7, 2021, by and among dMY Technology Group, Inc. III, IonQ, Inc. and IonQ Trap Acquisition Inc.	8-K	001-39694	2.1	March 8, 2021
3.1	Amended and Restated Certificate of Incorporation of IonQ, Inc.	8-K	001-39694	3.1	October 4, 2021
3.2	Amended and Restated Bylaws of IonQ, Inc.	8-K	001-39694	3.2	October 4, 2021
10.1#	Forms of Restricted Stock Unit Grant Notice and Award Agreement under the 2021 Equity Incentive Plan				
31.1	Certification of Principal Executive Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15(d)-14(a), as adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				
31.2	Certification of Principal Financial and Accounting Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15(d)-14(a), as adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				
32.1*	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				
101.INS	Inline XBRL Instance Document.				
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.				
101.SCH	Inline XBRL Taxonomy Extension Schema Document.				
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.				
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document.				
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.				
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).				

\+ Certain of the exhibits and schedules to this Exhibit have been omitted in accordance with Regulation S-K Item 601. The Registrant agrees to furnish a copy of all omitted exhibits and schedules to the SEC upon its request.

\# Indicates a management contract or compensatory plan, contract or arrangement.

* Furnished herewith and not deemed to be "filed" for purposes of Section 18 of the Exchange Act and shall not be deemed to be incorporated by reference into any filing under the Securities Act or the Exchange Act (whether made before or after the date of this Quarterly Report on Form 10-Q), irrespective of any general incorporation language contained in such filing.

SIGNATURES

Pursuant to the requirements of Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

IonQ, Inc.

Date: August 15, 2022	/s/ Peter Chapman Name: Peter Chapman Title: President and Chief Executive Officer *(Principal Executive Officer)*
Date: August 15, 2022	/s/ Thomas Kramer Name: Thomas Kramer Title: Chief Financial Officer *(Principal Financial and Accounting Officer)*

IonQ, Inc.
RSU Award Grant Notice
(2021 Equity Incentive Plan)

IonQ, Inc. (the "***Company***") has awarded to you (the "***Participant***") the number of restricted stock units specified and on the terms set forth below in consideration of your services (the "***RSU Award***"). Your RSU Award is subject to all of the terms and conditions as set forth herein and in the IonQ, Inc. 2021 Equity Incentive Plan (the "***Plan***") and the Award Agreement, including any appendices attached thereto (the "***Award Agreement***"), which are attached hereto and incorporated herein in their entirety. Capitalized terms not explicitly defined herein but defined in the Plan or the Award Agreement shall have the meanings set forth in the Plan or the Award Agreement.

Participant:	
Date of Grant:	
Vesting Commencement Date:	
Number of Restricted Stock Units:	
Vesting Schedule:	[ ] Notwithstanding the foregoing, vesting shall terminate upon the Participant's termination of Continuous Service.
Issuance Schedule:	One share of Common Stock will be issued at the time set forth in Section 5 of the Award Agreement for each restricted stock unit which vests.
Participant Acknowledgements:	By the Participant's signature below or by electronic acceptance or authentication in a form authorized by the Company, the Participant understands and agrees that:

- The RSU Award is governed by this Restricted Stock Unit Grant Notice, and the provisions of the Plan and the Award Agreement, all of which are made a part of this document. Unless otherwise provided in the Plan, this Restricted Stock Unit Grant Notice and the Award Agreement (together, the "***Agreement***") may not be modified, amended or revised except in a writing signed by the Participant and a duly authorized officer of the Company.
- To the fullest extent permitted under the Plan and applicable law, any Withholding Taxes (as defined in the Award Agreement) applicable to the RSU Award will be satisfied through the sale of a number of the shares of Common Stock issuable in settlement of the RSU Award as determined in accordance with Section 4 of the Award Agreement and the remittance of the cash proceeds to the Company. Under the Agreement, the Company or, if different, the Participant's employer is authorized and directed by the Participant to make payment from the cash proceeds of this sale directly to the appropriate tax or social security authorities in an amount equal to the taxes required to be remitted. ***The Participant acknowledges and agrees that, as a result of the Participant's authorization, the Company will have the authority to administer the Mandatory Sell to Cover (as defined in the Award Agreement) in connection with the Participant's receipt of this RSU Award.***
- You acknowledge that you are familiar with and agree to continued compliance with the mutual promises and covenants contained in the Employee Confidential Information, Inventions, Non-Solicitation and Non-Competition Agreement that you were required, as a condition of your employment by the Company, to execute.
- The Agreement sets forth the entire understanding between the Participant and the Company regarding the acquisition of Common Stock and supersedes all prior oral and written agreements, promises and/or representations on that subject with the exception of (i) other equity awards previously granted to you, and (ii) any written employment agreement, offer letter, severance agreement, written severance plan or policy, or other written agreement between the Company and you in each case that specifies the terms that should govern this RSU Award.

By accepting this RSU Award, the Participant acknowledges having received and read the Restricted Stock Unit Grant Notice, the Award Agreement and the Plan and agrees to all of the terms and conditions set forth in these documents. The Participant consents to receive Plan and related documents by electronic delivery and to participate in the Plan through an on-line or electronic system established and maintained by the Company or another third party designated by the Company.

IONQ, INC.:		**PARTICIPANT:**	
By:	______________________ Signature		______________________ Signature
Title:	______________________	Date:	______________________
Date:	______________________		

ATTACHMENTS: Award Agreement, 2021 Equity Incentive Plan

ATTACHMENT I

IONQ, INC.
AWARD AGREEMENT
(2021 EQUITY INCENTIVE PLAN)

As reflected by your RSU Award Grant Notice (“***Grant Notice***”), IonQ, Inc. (the “***Company***”) has granted you a RSU Award under the IonQ, Inc. 2021 Equity Incentive Plan (the “***Plan***”) for the number of restricted stock units as indicated in your Grant Notice (the “***RSU Award***”). The terms of your RSU Award as specified in this Award Agreement, including any appendices attached hereto, for your RSU Award (this “***Award Agreement***”) and the Grant Notice constitute your “***Agreement***.” Defined terms not explicitly defined in this Award Agreement but defined in the Grant Notice or the Plan shall have the same definitions as in the Grant Notice or Plan, as applicable.

The general terms applicable to your RSU Award are as follows:

1. GOVERNING PLAN DOCUMENT. Your RSU Award is subject to all the provisions of the Plan, including but not limited to the provisions in:

(a) Section 6 of the Plan regarding the impact of a Capitalization Adjustment, dissolution, liquidation, or Corporate Transaction on your RSU Award;

(b) Section 9(e) of the Plan regarding the Company’s retained rights to terminate your Continuous Service notwithstanding the grant of the RSU Award; and

(c) Section 8 of the Plan regarding the tax consequences of your RSU Award.

Your RSU Award is further subject to all interpretations, amendments, rules and regulations, which may from time to time be promulgated and adopted pursuant to the Plan. In the event of any conflict between the Agreement and the provisions of the Plan, the provisions of the Plan shall control.

2. GRANT OF THE RSU AWARD. This RSU Award represents your right to be issued on a future date the number of shares of the Company’s Common Stock that is equal to the number of restricted stock units indicated in the Grant Notice as modified to reflect any Capitalization Adjustment and subject to your satisfaction of the vesting conditions set forth therein (the “***Restricted Stock Units***”). Any additional Restricted Stock Units that become subject to the RSU Award pursuant to Capitalization Adjustments as set forth in the Plan and the provisions of Section 3 below, if any, shall be subject, in a manner determined by the Board, to the same forfeiture restrictions, restrictions on transferability, and time and manner of delivery as applicable to the other Restricted Stock Units covered by your RSU Award.

3. NO STOCKHOLDER RIGHTS. Unless and until such time as shares of Common Stock are issued in settlement of vested RSUs, you will have no ownership of the shares allocated to the RSUs and will have no right to vote such shares. You shall receive no benefit or adjustment to this RSU Award with respect to any cash dividend, stock dividend or other distribution that does not result from a Capitalization Adjustment; provided, however, that this sentence will not apply with respect to any shares of Common Stock that are delivered to you in connection with your RSU Award after such shares have been delivered to you.

4. WITHHOLDING OBLIGATION.

(a) You acknowledge that, regardless of any action taken by the Company, or if different, the Affiliate employing or engaging you (the “***Employer***”), the ultimate liability for all income tax (including U.S. federal, state, and local taxes and/or non-U.S. taxes), social insurance, payroll tax, fringe benefits tax, payment on account or other tax-related items related to your participation in the Plan and legally applicable to you (the “***Tax-Related Items***”) is and remains your responsibility and may exceed the amount, if any, actually withheld by the Company or the Employer. You further acknowledge that the Company and/or the Employer (i) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the RSU Award, including, but not limited to, the grant of the RSU Award, the vesting of the RSU Award, the issuance of shares in settlement of vesting of the RSU Award, the subsequent sale of any shares of Common Stock acquired pursuant to the RSU Award and the receipt of any dividends or dividend equivalent; and (ii) do not commit to and are under no obligation to reduce or eliminate your liability for Tax-Related Items. Further, if you become subject to taxation in more than one country, you acknowledge that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one country.

(b) On or before the time you receive a distribution of the shares underlying your Restricted Stock Units, and at any other time as reasonably requested by the Company in accordance with applicable law, you agree to make adequate provision for any sums required to satisfy the withholding obligations of the Company, the Employer or any Affiliate in connection with any Tax-Related Items that arise in connection with the RSU Award (the "***Withholding Taxes***"). The Company shall arrange a mandatory sale (on your behalf pursuant to your authorization under this section and without further consent) of the shares of Common Stock issued in settlement upon the vesting of your Restricted Stock Units in an amount necessary to satisfy the Withholding Taxes and shall satisfy the Withholding Taxes by withholding from the proceeds of such sale (the "***Mandatory Sell to Cover***"). You hereby acknowledge and agree that the Company shall have the authority to administer the Mandatory Sell to Cover arrangement in its sole discretion with a registered broker-dealer that is a member of the Financial Industry Regulatory Authority as the Company may select as the agent (the "***Agent***") who will sell on the open market at the then prevailing market price(s), as soon as practicable on or after each date on which your Restricted Stock Units vest and the shares underlying such Restricted Stock Units are distributed, the number (rounded up to the next whole number) of the shares of Common Stock to be delivered to you in connection with the vesting and settlement of the Restricted Stock Units sufficient to generate proceeds to cover (i) the Withholding Taxes that you are required to pay pursuant to the Plan and this Agreement as a result of the vesting and settlement of the Restricted Stock Units and (ii) all applicable fees and commissions due to, or required to be collected by, the Agent with respect thereto any remaining funds shall be remitted to you.

(c) If, for any reason, such Mandatory Sell to Cover does not result in sufficient proceeds to satisfy the Withholding Taxes, or if such Mandatory Sell to Cover is not permitted by applicable law, the Company or an Affiliate may, in its sole discretion, satisfy all or any portion of the Withholding Taxes relating to the RSU Award by any of the following means or by a combination of such means: (i) withholding from any compensation otherwise payable to you by the Company or the Employer; (ii) causing you to tender a cash payment (which may be in the form of a check, electronic wire transfer or other method permitted by the Company); or (iii) withholding shares of Common Stock from the shares of Common Stock issued or otherwise issuable to you in connection with your Restricted Stock Units with a fair market value (measured as of the date shares of Common Stock are issued to you) equal to the amount of such Withholding Taxes; provided, however, that shares of Common Stock shall not be withheld with a value exceeding the maximum amount of tax required to be withheld by applicable law (or such lesser amount as may be necessary to avoid classification of the RSU Award as a liability for financial accounting purposes); and to the extent necessary to qualify for an exemption from application of Section 16(b) of the Exchange Act, if applicable, such share withholding procedure will be subject to the express prior approval of the Board or Compensation Committee of the Board.

(d) Unless the tax withholding obligations of the Company and/or any Affiliate with respect to the Tax-Related Items are satisfied, the Company shall have no obligation to deliver to you any Common Stock.

(e) In the event the Company's obligation to withhold arises prior to the delivery to you of Common Stock or it is determined after the delivery of Common Stock to you that the amount of the Tax-Related Items was greater than the amount withheld by the Company or your Employer, you agree to indemnify and hold the Company and your Employer harmless from any failure by the Company or your Employer to withhold the proper amount.

(f) You acknowledge and agree that, as a result of your authorization under this section and without further consent, the Company will have the authority to administer the Mandatory Sell to Cover pursuant to the terms of the RSU Award.

(g) The Company may withhold or account for Tax-Related Items by considering applicable minimum statutory withholding amounts, or other applicable withholding rates, including maximum applicable rates in your jurisdiction(s). If the maximum rate is used, any over-withheld amount may be refunded to you in cash by the Company or Employer (with no entitlement to the equivalent in shares of Common Stock), or if not refunded, you may seek a refund from the local tax authorities. You must pay to the Company and/or the Employer any amount of Tax-Related Items that the Company and/or the Employer may be required to withhold or account for as a result of your participation in the Plan that cannot be satisfied by the means previously described.

5. DATE OF ISSUANCE.

(a) The issuance of shares in respect of the Restricted Stock Units is intended to comply with Treasury Regulations Section 1.409A-1(b)(4) and will be construed and administered in such a manner. Subject to the satisfaction of the Tax-Related Items set forth in Section 4 of this Award Agreement, in the event one or more Restricted Stock Units vests, the Company shall issue to you one (1) share of Common Stock for each Restricted Stock Unit that vests on the applicable vesting date(s) (subject to any different provisions in the Grant Notice). Each issuance date determined by this paragraph is referred to as an "***Original Issuance Date***."

(b) Notwithstanding the foregoing, if (i) selling shares of the Common Stock in the public market on the Original Issuance Date to satisfy your tax withholding obligation in accordance with Section 4 of this Award Agreement is prohibited for any reason, and (ii) the Company elects not to instead satisfy its tax withholding obligations by withholding shares from your distribution, then such shares shall not be delivered on such Original Issuance Date and shall instead be delivered to you on the earliest of: (1) the first date that you are not prohibited from selling shares of the Common Stock in the open market, or (2) such earlier date that the Company elects to satisfy its tax withholding obligation by withholding shares from your distribution; provided, however, that notwithstanding the foregoing, in no event will the shares be delivered to you any later than: (A) December 31 of the calendar year in which the Original Issuance Date occurs (that is, the last day of your taxable year in which the Original Issuance Date occurs), or (B) if and only if permitted in a manner that complies with Treasury Regulations Section 1.409A-1(b)(4), no later than the date that is the 15th day of the third calendar month of the applicable year following the year in which the shares of Common Stock under this Award are no longer subject to a "substantial risk of forfeiture" within the meaning of Treasury Regulations Section 1.409A-1(d).

(c) In addition and notwithstanding the foregoing, no shares of Common Stock issuable to you under this Section 5 as a result of the vesting of one or more Restricted Stock Units will be delivered to you until any filings that may be required pursuant to the Hart-Scott-Rodino ("***HSR***") Act in connection with the issuance of such shares have been filed and any required waiting period under the HSR Act has expired or been terminated (any such filings and/or waiting period required pursuant to HSR, the "***HSR Requirements***"). If the HSR Requirements apply to the issuance of any shares of Common Stock issuable to you under this Section 5 upon vesting of one or more Restricted Stock Units, such shares of Common Stock will not be issued on the Original Issuance Date and will instead be issued on the first business day on or following the date when all such HSR Requirements are satisfied and when you are permitted to sell shares of Common Stock on an established stock exchange or stock market, as determined by the Company in accordance with the Company's then-effective policy on trading in Company securities. Notwithstanding the foregoing, the issuance date for any shares of Common Stock delayed under this Section 5(c) shall in no event be later than December 31 of the calendar year in which the Original Issuance Date occurs (that is, the last day of your taxable year in which the Original Issuance Date occurs), unless a later issuance date is permitted without incurring adverse tax consequences under Section 409A of the Code or other applicable law.

(d) The form of delivery (e.g., a stock certificate or electronic entry evidencing such shares) shall be determined by the Company.

6. TRANSFERABILITY. Except as otherwise provided in the Plan, your RSU Award is not transferable, except by will or by the applicable laws of descent and distribution.

7. CORPORATE TRANSACTION. Your RSU Award is subject to the terms of any agreement governing a Corporate Transaction involving the Company, including, without limitation, a provision for the appointment of a stockholder representative that is authorized to act on your behalf with respect to any escrow, indemnities and any contingent consideration.

8. No Liability for Taxes. As a condition to accepting the RSU Award, you hereby (a) agree to not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates related to tax liabilities arising from the RSU Award or other Company compensation and (b) acknowledge that you were advised to consult with your own personal tax, financial and other legal advisors regarding the tax consequences of the RSU Award and have either done so or knowingly and voluntarily declined to do so.

9. Severability. If any part of this Award Agreement or the Plan is declared by any court or governmental authority to be unlawful or invalid, such unlawfulness or invalidity will not invalidate any portion of this Award Agreement or the Plan not declared to be unlawful or invalid. Any Section of this Award Agreement (or part of such a Section) so declared to be unlawful or invalid will, if possible, be construed in a manner which will give effect to the terms of such Section or part of a Section to the fullest extent possible while remaining lawful and valid.

10. Other Documents. You hereby acknowledge receipt of or the right to receive a document providing the information required by Rule 428(b)(1) promulgated under the Securities Act, which includes the Prospectus. In addition, you acknowledge receipt of the Company's Trading Policy.

11. Questions. If you have questions regarding these or any other terms and conditions applicable to your RSU Award, including a summary of the applicable federal income tax consequences please see the Prospectus.

Appendix – Canada

This Appendix includes special terms and conditions that govern the RSU Award granted to you under the Plan and Agreement if you reside and/or work in Canada.

The information contained herein is general in nature and may not apply to your particular situation. Accordingly, you are advised to seek appropriate professional advice as to how the relevant Canadian laws may apply to your situation.

Withholding Obligations. Section 4(c)(iii) of the Agreement shall have no application.

Data Privacy. You hereby authorize the Company and its representatives to discuss with and obtain all relevant information from all personnel, professional or not, involved in the administration and operation of the Plan. You further authorize the Company, its Affiliates and any stock plan service provider that may be selected by the Company to assist with the Plan to disclose and discuss the Plan with their respective advisors. You further authorize the Company and its Affiliates to record such information and to keep such information in your employee file.

Language Consent. The parties to the Agreement acknowledge that it is their express wish that the Agreement, as well as all documents, notices, and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English.

Consentement relatif à la langue utilisée

Les parties reconnaissent avoir exigé que cette convention («Agreement») soit rédigée en anglais, ainsi que tous les documents, avis et procédures judiciaires, éxécutés, donnés ou intentés en vertu de, ou liés directement ou indirectement à la présente.

Continuous Service. Notwithstanding anything else in the Plan or the Agreement, your Continuous Service will be deemed to end on the date when you cease to be actively providing services to the Company or an Affiliate (or your employer, if different), regardless of whether the cessation of your employment was lawful, and shall not include any period of statutory, contractual, common law, civil law or other reasonable notice of termination of employment or any period of salary continuance or deemed employment; *provided, however*, that where any greater period is expressly required by applicable employment or labor standards legislation (if such legislation is applicable), your Continuous Service will be deemed to end immediately following the minimum prescribed period under that legislation. As a result, if you receive notice of termination, and the Company or its Affiliate (or your employer, if different) does not require you to continue to attend at work and/or elects to provide you with a payment in lieu of notice, your Continuous Service will end on the date you receive such notice, as opposed any later date when severance payments to you cease, unless otherwise expressly required by applicable employment or labour standards legislation (if such legislation is applicable).

Employment Matters.

The definition of "Cause" is modified such that the following supersedes the existing definition in the Plan:

"***Cause***" has the meaning ascribed to such term in any written agreement between a Participant and the Company defining such term and, in the absence of such agreement, such term means, with respect to a Participant, the occurrence of any of the following events: (i) the Participant's dishonest statements or acts with respect to the Company or any Affiliate of the Company, or any current or prospective customers, suppliers, vendors or other third parties with which such entity does business; (ii) the Participant's commission of: (A) a felony or indictable offence, or (B) any misdemeanor or summary conviction offence involving moral turpitude, deceit, dishonesty or fraud; (iii) the Participant's failure to perform the Participant's assigned duties and responsibilities to the reasonable satisfaction of the Company which failure continues, in the reasonable judgment of the Company, after written notice given to the Participant by the Company; (iv) the Participant's gross negligence, willful misconduct or insubordination with respect to the Company or any affiliate of the Company; (v) the Participant's material violation of any provision of any agreement(s) between the Participant and the Company relating to noncompetition, nonsolicitation, nondisclosure and/or assignment of inventions; or (vi) any other serious act or omission that amounts to just cause at law; *provided, however*, that for Employees in Ontario, "***Cause***" means wilful misconduct, disobedience or wilful neglect of duty that is not trivial and has not been condoned. The determination that a termination of the Participant's Continuous Service is either for Cause or without Cause will be made by the Board with respect to Participants who are executive officers of the Company and by the Company's Chief Executive Officer with respect to Participants who are not executive officers of the Company. Any determination by the Company that the Continuous Service of a Participant was terminated with or without Cause for the purposes of outstanding Awards held by such Participant will have no effect upon any determination of the rights or obligations of the Company or such Participant for any other purpose.

References to "at will" employment in the Plan are deleted.

No Fractions. No fractional shares of Common Stock shall be issued under the Agreement and no cash amount shall be payable in respect thereof.

Voluntary Participation. Participant's participation in the Plan is voluntary.

Securities Law Information.

The following definitions in Section 14 of the Plan are modified such that the following modifications supplement the existing definitions as follows:

- "***Affiliate***" - For purposes of issuances of securities under the Plan to Employees and Consultants in Canada, an Affiliate means a person (which includes a corporation) that controls the Company or is controlled by the Company or is controlled by the same person that controls the Company. For this purpose, a person (first person) is considered to control a person (second person) if the first person, directly or indirectly, has the power to direct the management and policies of the second person by virtue of ownership of or direction over voting securities in the second person (over 50%); or a written agreement or indenture; and
- "***Consultant***" - For purposes of issuances of securities under the Plan to Consultants in Canada, a Consultant means a person, other than an employee, executive officer or director of the Company or an Affiliate that (a) is engaged to provide services to the Company, Parent, Subsidiary or an Affiliate, other than services provided in relation to a distribution; (b) provides the services under a written contract with the Company or an Affiliate; and (c) spends or will spend a significant amount of time and attention on the affairs and business of the Company or an Affiliate and includes (d) for an individual consultant, a corporation of which the individual consultant is an employee or shareholder, and a partnership of which the individual consultant is an employee or partner, and (e) for a consultant that is not an individual, an employee, executive officer, or director of the consultant, provided that the individual employee, executive officer, or director spends or will spend a significant amount of time and attention on the affairs and business of the Company or an Affiliate.

Participant understands that, subject to any applicable contractual restrictions, Participant is permitted to sell shares of Common Stock acquired pursuant to the Plan, provided that the Company is a "foreign issuer" that is not a public company in any jurisdiction of Canada and the sale of the shares of Common Stock acquired pursuant to the Plan takes place: (i) through an exchange, or a market, outside of Canada on the distribution date; or (ii) to a person or company outside of Canada. For purposes hereof, in addition to not being a reporting issuer in any jurisdiction of Canada, a "foreign issuer" is an issuer that: (i) is not incorporated or existing pursuant to the laws of Canada or any jurisdiction of Canada; (ii) does not have its head office in Canada; and (iii) does not have a majority of its executive officers or directors ordinarily resident in Canada. If any designated broker is appointed under the Plan, Participant shall sell such securities through the designated broker.

Foreign Asset/Account Reporting Information. Canadian residents are required to report any "foreign property" on form T1135 (Foreign Income Verification Statement) if the total cost of such property exceeds a certain threshold (CDN$100,000) at any time in the year. It is Participant's responsibility to comply with these reporting obligations, and Participant should consult with Participant's own personal tax advisor in this regard.

Right to acquire shares of Common Stock. Section 10(a) of the Plan shall only have application in the event applicable laws prohibit, in the reasonable opinion of the Company, any particular action or transaction contemplated in the Agreement or Plan. Furthermore, and notwithstanding any other provision of the Agreement or Plan, Participant's RSU Award shall entitle Participant, upon fulfillment of the requisite conditions, to acquire newly issued shares of Common Stock, and may not be cash-settled (or otherwise settled) without Participant's consent.

Attachment II

2021 EQUITY INCENTIVE PLAN

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Peter Chapman, certify that:

1. I have reviewed this Form 10-Q of IonQ, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 15, 2022

By: /s/ Peter Chapman

Peter Chapman
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

**CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Thomas Kramer, certify that:

1. I have reviewed this Form 10-Q of IonQ, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

    (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: August 15, 2022

By: /s/ Thomas Kramer
Thomas Kramer
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Peter Chapman, President and Chief Executive Officer of IonQ, Inc. (the "Company"), and Thomas Kramer, Chief Financial Officer of the Company, each hereby certifies that, to the best of his or her knowledge:

1. The Company's Quarterly Report on Form 10-Q for the period ended June 30, 2022, to which this Certification is attached as Exhibit 32.1 (the "Periodic Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2. The information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 15, 2022

/s/ Peter Chapman	/s/ Thomas Kramer
Peter Chapman	**Thomas Kramer**
President and Chief Executive Officer	**Chief Financial Officer**
(Principal Executive Officer)	*(Principal Financial Officer)*