



Quantum Computing Inc.

Q3 about inline. We expect strong revenue growth over the next year to be positive for stock. Lowering P/T to \$8.75.

COMPANY UPDATE

Rating: BUY

Ticker: QUBT

Price: \$0.77

Target: \$8.75
(from \$9.00)

Q3 about inline: Quantum recently (on November 13) reported its fiscal Q3 2023 (ending September) results. Revenue was \$0.1 million, compared to our estimate of \$0.2 million. EPS was \$(0.11), compared to our estimate of \$(0.10). There was no consensus estimates or company guidance.

Still early stage, but lots of revenue activities: Quantum's recent financial performance is reflective of its developmental and early commercialization stage though it has commenced commercialization of its technology. It has many proposals in development and is expected to have its first hardware sales in Q4. The company has recently launched several new products and is currently focusing on sales and marketing of them. We believe investors should be focused on its product commercialization, which we believe (and company's guidance) in 2024 that revenue should grow quickly.

Adjusting estimates: We are adjusting our 2023 estimates for revenue to \$0.4 million, from \$0.7 million, and for EPS to \$(0.42) from \$(0.40).

Acquired QPhoton: In June 2022, the company acquired QPhoton, Inc., a privately held company that is a leading innovator in the quantum photonic technology space. QPhoton's quantum photonic system (QPS) operates at room temperature and maintains computational stability in a variety of application environments. This allows it to be easily deployed and at a substantially reduced cost relative to competing (quantum computers).

Focused on quantum computing: Quantum's flagship software solution, Qatalyst, is a ready-to-run quantum and classical software for optimization computations for faster, better, and more diverse business decisions. By being early in this rapidly growing industry, we believe Quantum is well-positioned to capture and drive a meaningful market share and industry growth.

The need for quantum computing: The rapid and widespread adoption of technologies such as the Internet, artificial intelligence, virtual and augmented reality, 3D imaging, and the Internet of Things (IoT), have served to exponentially increase the generation of data. This has driven up the demand for high-performance computing to process all this data.

Large market potential: As quantum computing hardware continues to advance, we expect a corresponding growth in demand for quantum software to run on these computers. The U.S. Government has committed \$1.3 billion to funding quantum information science programs, along with ~\$50 billion for onshoring domestic chip research and manufacturing.

Potential M&A: In May, the company signed a non-binding Letter of Intent (LOI) to acquire up to 100% of the AI firm, millionways, creator of the world's first emotionally-intelligent AI platform. Exact terms have not been disclosed.

Balance sheet: As of Q3, the company has \$7 million in cash and \$5 million in debt. We believe the company has enough cash into mid-2024.

Positive high risks versus rewards: We believe the ~billion dollars market potentials presents high rewards for the risks.

Valuation attractive: We are maintaining our BUY rating, but lowering our 12-month price target to \$8.75 from \$9.00, based on a NPV analysis, representing significant upside from the current share price. We believe this valuation appropriately balances out the company's high risks with the company's high growth prospects and large upside opportunities.

Company Description

Based in Leesburg, VA, Quantum Computing is a software company focused on classical and quantum software for complex optimization computations.

United States
Technology

November 23, 2023

Edward Woo, CFA
(561) 327-9435
ewoo@ascendant.com

Stock Data

Exchange:	NasdaqCM
52-week Range:	0.63 – 3.49
Shares Outstanding (million):	75
Market cap (\$million):	\$58
EV (\$million):	\$56
Debt (\$million):	\$5
Cash (\$million):	\$7
Avg. Daily Trading Vol. (\$million):	\$1
Float (million shares):	48
Short Interest (million shares):	2
Dividend, annual (yield):	\$0 (NA%)

Revenues (US\$ million)

	<u>2023E</u> (Cur.)	<u>2023E</u> (Old)	<u>2024E</u> (Cur.)	<u>2024E</u> (Old)
Q1 Mar	0.1A		0.2E	0.5E
Q2 Jun	0.1A		0.3E	0.6E
Q3 Sep	0.1A	0.2E	0.4E	0.7E
Q4 Dec	<u>0.1E</u>	<u>0.3E</u>	<u>0.7E</u>	<u>1.0E</u>
Total	0.4E	0.7E	1.6E	2.8E
EV/Revs	140x		35x	

Earnings per Share (pro forma)

	<u>2023E</u> (Cur.)	<u>2023E</u> (Old)	<u>2024E</u> (Cur.)	<u>2024E</u> (Old)
Q1 Mar	(0.14)A		(0.10)E	
Q2 Jun	(0.07)A		(0.10)E	
Q3 Sep	(0.11)A	(0.10)E	(0.10)E	
Q4 Dec	<u>(0.10)E</u>		<u>(0.09)E</u>	
Total	(0.42)E	(0.40)E	(0.39)E	(0.38)E
P/E	N/A		N/A	

Important Disclosures

Ascendant Capital Markets LLC seeks to do business with companies covered by its research team. Consequently, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making an investment decision.

For analyst certification and other important disclosures, refer to the Disclosure Section, located at the end of this report, beginning on page 16.

Exhibit 1: Quantum Computing Inc. Overview

Quantum Computing Inc.

NASDAQ: QUBT

Quantum Computing Inc. (QCI) is a nanophotonic quantum technology company on a mission to accelerate the democratization, practicality, and value of quantum computing for real-world business solutions.

Deliver **ready-to-run** quantum systems

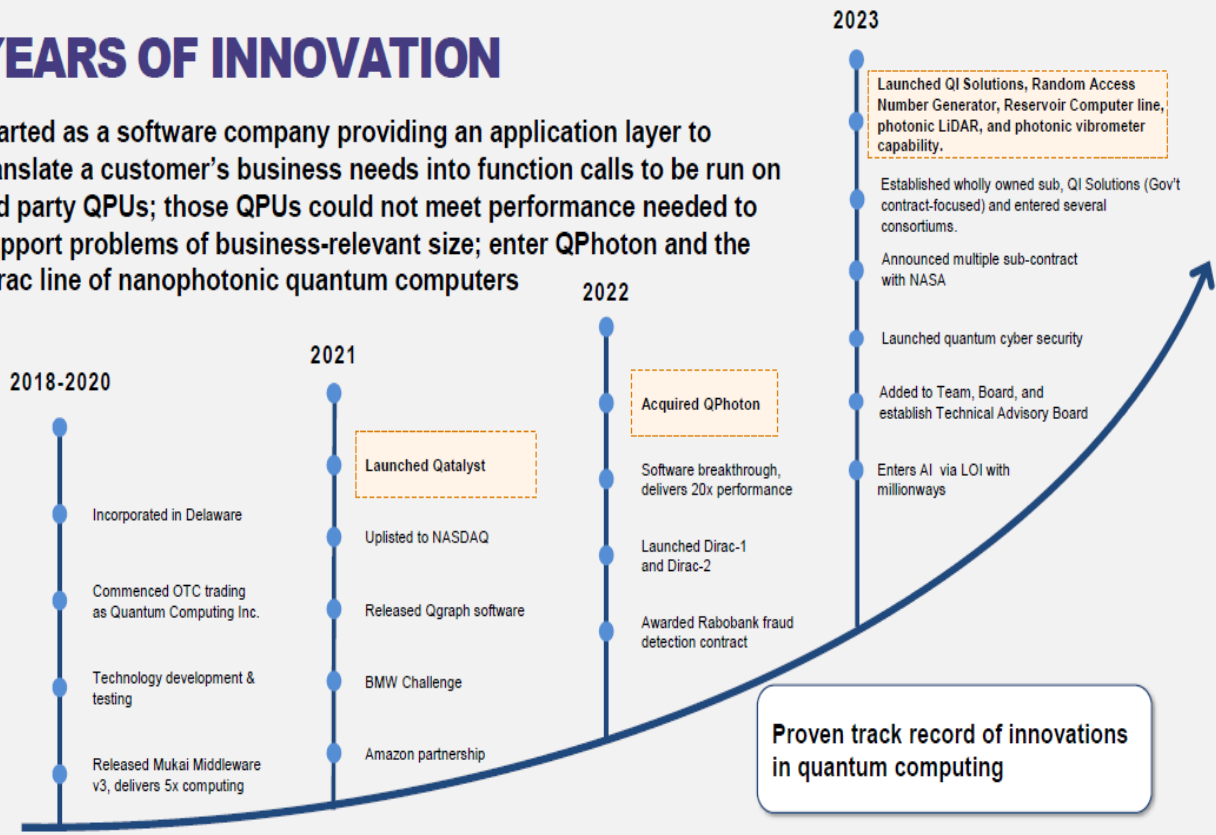
Accelerate and **simplify the adoption** of quantum computing

Empower current **non-quantum experts** to access the power of quantum

Deliver the **best performance results:** speed, precision, computing power at less cost and at significantly less energy consumption

YEARS OF INNOVATION


Started as a software company providing an application layer to translate a customer’s business needs into function calls to be run on 3rd party QPUs; those QPUs could not meet performance needed to support problems of business-relevant size; enter QPhoton and the Dirac line of nanophotonic quantum computers



Source: Company reports.


Exhibit 2: Quantum Computing Investment Highlights

HIGHLIGHTS




Large Addressable Market with Favorable Tailwinds

- Massive \$48B+ global addressable market for high-performance computing in 2022, forecasted to grow at 8%
- Little to no competition has commercialized quantum offerings – the majority of industry participants are focused on large university research projects, while QCI is focused on practical immediate uses and democratizing quantum computing




Best-in-Class Platform

- Proprietary quantum capabilities, built from the group up with Nobel Prize winning concepts
- Approach allows for faster processing with boundless data inputs to solve the most complex problems in a cost-effective infrastructure environment with no special temperature controls




Visionary Management Team with Proven Track Record

- Validated by solid relationships with governments, military, tech-focused universities, and state consortiums
- Founder and Board are incentivized, having invested significantly themselves



Multiple Revenue Levers & Operating Leverage

- Leverages a core technology to address a large number of real-world applications
- QCI will realize EBITDA breakeven at ~\$30M in annual revenue and anticipates reaching cash flow breakeven in less than two years



Defensible Barriers to Entry

- Have already invested heavily in R&D
- Numerous international patents, trademarks, registrations, and trade secrets
- Technology requires Ph.D.-level expertise to continue developing

First-to-market, nanophotonic quantum technology computing company

Source: Company reports.

Exhibit 3: Quantum Computer Reality Check

The Quantum Reality Check



QCI
QUANTUM COMPUTING INC.
NASDAQ:QUBT

The Good

- Huge investments by major players are driving quantum momentum.
- Quantum has the potential to deliver faster, better solutions for many critical, real-world enterprise problems.
- QPUs are constantly improving and expanding
- Every day we're learning more about quantum programming, the challenges, and what we really need to think about.

The Bad, i.e., What Needs Work

Hardware

- Quantum processors are still in their infancy.
- Cannot scale to process the large volumes of data and variables created by today real-world problems
- No standard quantum computer architecture.
- Proprietary, unique low-level code required for each vendor

Software

- Requires complex programming with SDK (software development kits)
- SDKs require quantum expertise to understand and use
- Long lead time and costs required to train and develop the skills needed to create quantum programs

Source: Company reports.

Exhibit 4: Quantum Computing's Solutions

QCI'S BREAKTHROUGH TECHNOLOGY SOLVES FOR INDUSTRY CONCERNS

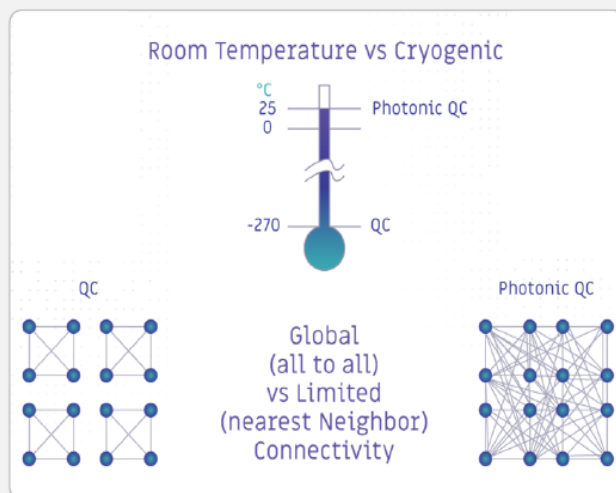
Quantum Computing Myths	QCi Solutions
Too expensive	Cost of a departmental server
Quantum is 5-10 years away	Available today - Already solving complex problems
Not practical to operate and energy intensive	Slots into a common server rack at room temperature and consumes a fraction of the power
Limited applications	Solving multi-variable optimization use cases today as well as predictive capabilities
Scalability	Connects all available qubits regardless of superposition for unprecedented and hyper-scalable processing power
Unstable and no solution for error correction	Actually utilizes the noise that creates those errors rather than avoiding it and having to correct for them

QCI OFFERS READY-TO-USE QUANTUM TECHNOLOGY, ACCESSIBLE TO BUSINESS TEAMS

Our Quantum Nanophotonics Systems delivers quantum **nanophotonic power at room temperature**, in a **highly stable, coherent system**

We enable **full connectivity of all qubits to accelerate and scale processing power**

The result is a suite of **highly scalable systems and technologies that can be deployed and used virtually anywhere, by anyone**



Source: Company reports.

Exhibit 5: Quantum Computing's Solutions


MARKET LEADING SOFTWARE

QATALYST: Cloud-based service that allows users to solve different types of optimization problems on a variety of quantum computers or quantum simulators.

- Users formulate their problem once and submit that problem to different quantum systems without needing to re-formulate their problem specifically for each different quantum system.
- Allows focus on their optimization problem domain, rather than the detailed and machine-specific programming needed to allow their optimization problem to run on different quantum machines.

2

EXAMPLE QPU VENDORS



3

EXAMPLE PROBLEMS

- ✓ GRAPH PARTITIONING
- ✓ COMMUNITY DETECTION
- ✓ OPTIMIZATION PROBLEMS

SOLUTION-LED PROFESSIONAL SERVICES QUANTUM SOLUTIONS

QCI's Quantum Solutions team helps clients solve high-value business problems using quantum hardware and software technologies.



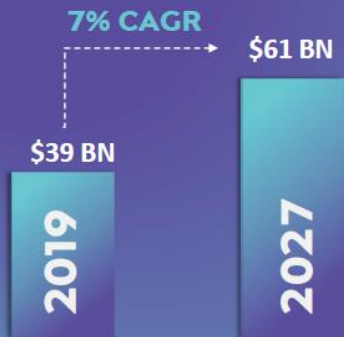
PHASE 1	PHASE 2	PHASE 3	PHASE 4
<p>Identify Expectations</p> <ul style="list-style-type: none"> • Goals • Needs • PoC Process <p>Evaluate Current</p> <ul style="list-style-type: none"> • Applications • Use Cases • New Opportunities <p style="color: #00a6c8; font-weight: bold;">Define Quantum Opportunities</p>	<p>Explore Quantum Options</p> <ul style="list-style-type: none"> • QPU Hardware • Quantum-Ready Classical • Software Development • Compare to Qatalyst or other ready-to-run quantum software <p style="color: #00a6c8; font-weight: bold;">Define Quantum Infrastructure</p>	<p>Quantum Testing</p> <p>1st use cases</p> <ul style="list-style-type: none"> • Evaluate hybrid • Evaluate pure quantum • Evaluate quantum classical • Tune problems • Identify plan and first production steps <p style="color: #00a6c8; font-weight: bold;">Measure Quantum Potential</p>	<p>Initial Quantum</p> <p>Appropriate use cases applied to best approach</p> <ul style="list-style-type: none"> • 1st hybrid runs • Pure quantum runs (if practical) • ID potential for quantum advantage/value <p style="color: #00a6c8; font-weight: bold;">First Production Quantum Results</p>

Source: Company reports.

Exhibit 6: Quantum’s Market Opportunity

QCI IS DEFINING ITS POSITION IN LARGE AND GROWING ADDRESSABLE MARKETS...

HIGH-PERFORMANCE COMPUTING IS A LARGE AND GROWING MARKET, GROWING AT A 7% CAGR ¹



¹ Source: Grand View Research

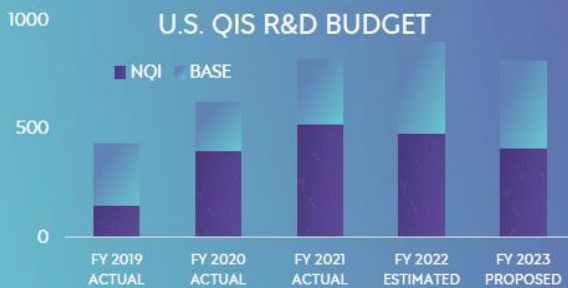
BCG ESTIMATES THAT QUANTUM COMPUTING COULD CREATE VALUE OF UP TO \$850 BILLION IN THE NEXT 15 TO 30 YEARS ²



² Source: BCG July 2021 "What Happens When 'If' Turns to 'When' in Quantum Computing?"

...SEEING INCREASING SUPPORT FROM NATIONAL GOVERNMENTS AND POLICYMAKERS

THE USA HAS COMMITTED SIGNIFICANT FUNDING TO SUPPORT QUANTUM INFORMATION SCIENCE ¹



¹ Source: National Quantum Initiative Supplement to the President's FY 2023 Budget

U.S. R&D budgets for QIS since the inception of the NQI Act. The bar heights represent the total budget for each fiscal year (FY 2019 – FY 2021 actual expenditures, FY 2022 estimated expenditures, and FY 2023 requested budgets). The portion of each bar marked "NQI" identifies funding allocated for NQI Act-authorized activities; this additional funding is on top of the budgets for baseline QIS R&D activities.

THE CHIPS AND SCIENCE ACT DIRECTS \$280 BILLION IN SPENDING OVER THE NEXT TEN YEARS ²

- ✓ Catalyze investments in domestic semiconductor manufacturing capacity.
- ✓ Accelerate R&D and commercialization of leading-edge technologies, such as quantum computing, AI, clean energy, and nanotechnology
- ✓ Create new regional high-tech hubs and a bigger, more inclusive science, technology, engineering, and math (STEM) workforce.

² Source: McKinsey & Company "The CHIPS and Science Act: Here's what's in it"

These priorities align perfectly with QCI vision and strategy



NASDAQ: QUBT

Source: Company reports.

Exhibit 7: Quantum’s Product Solutions

HARDWARE MAKING QUANTUM PRACTICAL TODAY



QCI's Dirac™ Entropy Quantum Computer operates on an **open quantum system rather than a closed system like other providers**, carefully coupling a quantum system to an engineered environment, so that its quantum state is collapsed to represent a problem’s desirable solution.

As a result, Dirac™:

- Allows large scale design
- Excellent reliability and eliminates errors
- Deploys as a ready-to-run, room temperature, rack-mountable server requiring low power levels and no special infrastructure
- **Solves larger and more complex problems**

SOLUTIONS & COMMERCIALIZATION

Legend: Green = Currently Available | Purple = Prototype Built | Blue = Lab Demonstrated

Entropy Quantum Computer Dirac 1 & 2	Q Intelligence (AI) Reservoir Computer	Q Cybersecurity Quantum Random Number Generator	Q Remote Sensing Q LiDAR & Vibrometer	Q Imaging
<p>\$1B TAM¹</p>	<p>\$208B TAM²</p>	<p>\$249B TAM²</p>	<p>\$22B TAM^{1,3}</p>	<p>\$518B TAM⁴</p>
<p>Description:</p> <ul style="list-style-type: none"> • Nanophotonic quantum information processing system <p>Use Cases:</p> <ul style="list-style-type: none"> • Optimization problems • Complex financial modeling • Quantum simulations <p>Advantages:</p> <ul style="list-style-type: none"> ✓ Solves larger and more complex problems ✓ Eliminates need for error correction ✓ Operates at room temperature ✓ Rack-mountable, requiring no special infrastructure 	<p>Description:</p> <ul style="list-style-type: none"> • Predictive modeling and partial differential equations <p>Use Cases:</p> <ul style="list-style-type: none"> • Improve ML models • Predictive analyses • Material science <p>Advantages:</p> <ul style="list-style-type: none"> ✓ Able to solve complex problems that are currently intractable using classical algorithms ✓ Much faster ✓ Improves accuracy ✓ Can solve problems that scale exponentially with data size 	<p>Description:</p> <ul style="list-style-type: none"> • Gives system-wide, zero-trust protections <p>Use Cases:</p> <ul style="list-style-type: none"> • Quantum network security • Cryptography and encryption • Random number generation <p>Advantages:</p> <ul style="list-style-type: none"> ✓ Protects information on the entire network at all points of slippage ✓ Compatible with existing fiber-based communication infrastructure and satellite-based networks 	<p>Description:</p> <ul style="list-style-type: none"> • Ability to measure at improved resolution and distances <p>Use Cases:</p> <ul style="list-style-type: none"> • Precision agriculture • Environmental monitoring • Autonomous vehicles <p>Advantages:</p> <ul style="list-style-type: none"> ✓ See around corners, without line of sight ✓ See miles of depth into waterways and oceans ✓ See into the molecular level of the human body ✓ See through infrastructure 	<p>Description:</p> <ul style="list-style-type: none"> • Counts single photons and filters to obtain optical imaging <p>Use Cases:</p> <ul style="list-style-type: none"> • Low-light microscopy • Covert imaging • Medical diagnostics <p>Advantages:</p> <ul style="list-style-type: none"> ✓ Powerful supplement to traditional imaging approaches ✓ Images through otherwise opaque and dense materials

Source: Company reports.

Exhibit 8: Quantum Case Studies & Partnerships

ROBUST SET OF CASE STUDIES & PARTNERSHIPS



Objective: Vehicle sensor placement

Use quantum computing to optimize quantity and location of vehicle sensors
2,004 binary-encoded slack variables;
3,854 binary variables as qubits

Results:

EQC result provided a configuration of 15 sensors yielding 96% coverage of the criticality spaces
6-minute quantum optimization run time

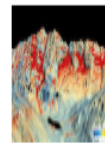


Objective: Remotely measure snowpacks

Use LIDAR to measure density, particle size, and depth
Results used to calculate how much water could be released when snow melts

Results:

In progress



Objective: Bank fraud detection

Demonstrate the use of entropy quantum computing for improving bank fraud detection techniques

Results:

QCI successfully demonstrated 4 separate quantum machine learning classification applications using Dirac-1 and Rabobank's fraud detection dataset



Objective: Drone flight trajectories

Develop flight paths that minimize risk & optimize flight time
As this problem size n grows linearly, the classical computational time complexity increases factorially making it impractical

Results:

Found solutions for problems as large as 11,000 variables
As the problem size n increased, the quantum time to solution increased on the order of only n^3 , less than factorially of classical computing

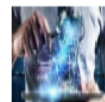


Objective: Detect and predict compromises to their IT environment

Utilized 4 months of anonymized network change requests and application error records with which QCI explored two approaches to detect changes in Progressive's IT systems using QCI's proprietary technology and methodology

Results:

Running a Quantum-based Support Vector Machine (QSVM) on Dirac-1™ heightened potential error protection by approximately 30 percent over other classical computing methods currently used by Progressive



Objective: Using audio files to produce an emotional scoring capability

Process audio files and enable the emotional intelligence to directly process a new medium of voice, creating applications that will expand AI into useful business and personal consumer uses

Results:

In progress



Source: Company reports.

Exhibit 9: Quantum Acquisition of QPhoton (announced May 24, 2022, closed June 16, 2022)

Quantum Computing Inc. Announces Agreement to Acquire QPhoton Delivering First Commercially Available, Ready-to-Run Full-Stack Quantum Solutions

QPhoton's Design for Affordable and Accessible QPS in Combination with QCI's Ready-to-Run Qatalyst Software Positions QCI as the Only Quantum Provider for Non-Quantum Experts

LEESBURG, VA. – May 24, 2022 – Quantum Computing Inc. (“QCI” or the “Company”) (NASDAQ: QUBT), a leader in accessible quantum computing software, today announced that it has entered into a definitive agreement to acquire QPhoton, a quantum photonics innovation company that has developed a series of quantum photonic systems (QPS). The acquisition of QPhoton extends QCI’s offerings to accelerate the accessibility of quantum computing, and other powerful technologies, into easily deployable solutions today, and advances QCI into a full-spectrum quantum software and hardware company.

QPhoton’s QPS, including those for AI and optimization, operate at room temperature and maintain computational stability in a variety of application environments. These unique approaches eliminate the cost and complexity required by the hyper-cooled, tightly controlled environments required by other technology. QPhoton’s QPS is designed to be easily deployed and used at a substantially reduced total cost of ownership relative to competing offerings, while providing substantial quantum advantages.

The QPS for optimization work effectively with QCI’s **Qatalyst™** software, which is designed to eliminate the need for complex quantum programming and runs seamlessly across a variety of quantum computers. This combination sets QCI on a path to delivering a broadly accessible and affordable solution that can be used by non-quantum experts, anywhere, for real-world industry applications.

QPhoton will be a wholly-owned subsidiary of QCI, and Dr. Huang is expected to join QCI as a director and officer. Under the definitive agreement, at the closing of the proposed transaction, QCI will issue to QPhoton’s stockholders aggregate merger consideration consisting of: 5,802,206 shares of QCI’s common stock, 2,377,028 shares of a new series of QCI’s preferred stock, convertible into 23,770,280 shares of common stock (subject to receipt of the approval of QCI’s stockholders), and warrants exercisable, at a purchase price of \$0.0001 per share, to purchase up to 7,028,337 shares of common stock (subject to receipt of the approval of QCI’s stockholders). The merger consideration is subject to adjustment under certain circumstances, such that it will represent in total approximately 49% of the total capital stock of QCI outstanding immediately following the closing. The transaction is expected to close during the third or fourth quarter of 2022 and is subject to customary and other closing conditions, including QCI obtaining a final order from the Court of Chancery of the State of Delaware pursuant to Section 205 of the General Corporation Law of the State of Delaware.

Quantum Computing Inc. Closes Acquisition of QPhoton

- *The combination of QPhoton QPS and QCI’s Qatalyst software represents a major milestone in the quantum computing industry.*
- *The acquisition enables QCI to launch ready-to-run, full-stack quantum systems and extend its solutions in key markets such as supply chain and portfolio optimization, fraud detection, underwriting and government defense and security projects.*
- *The technology operates seamlessly alongside today’s classical technology.*

LEESBURG, VA. – June 16, 2022 – Quantum Computing Inc. (“QCI” or the “Company”) (NASDAQ: QUBT) a leader in accessible quantum computing, today announced the successful completion of its previously announced merger agreement to acquire QPhoton, Inc., a quantum photonics innovation company that has developed a quantum photonic system (QPS). The closing of this transaction will enable QCI to deliver the first ready-to-run, broadly accessible and affordable full-stack QPS that can be used by non-quantum experts, anywhere, for real-world business applications. QCI expects to release initial quantum solutions leveraging QPhoton’s QPS in Q4 2022.

Source: Company reports.

Exhibit 10: Quantum's QPhoton

The QPhoton QPU Advantage

Quantum Anywhere, For Anyone

Ready-to-run Quantum Software
NASDAQ: QUBT

QPU Requirement	Other QPUs	QPhoton
Cooling	Hyper Cooled: Temperature of Space or Cooled Room	Room Temperature
Environment	Highly unstable, easily collapsed	Stable in most business environments
Infrastructure	Beyond supercomputers	No special requirements
Deployment/Mtc	Expert care and feeding on cloud or on premise	Deploy anywhere, cloud and on premise
PROJECTED TCO-Q	Cooling alone is millions	Like a departmental server

Affordable, Highly Accessible Quantum Computing

1st Generation vs QCI

Hyper-cooled, Hyper-Controlled Environment

QCI QPhoton
2u Rackable Blade Chassis

Ready-to-run Quantum Software
NASDAQ: QUBT

The difference is obvious

Dramatic Acceleration of Commercial Quantum Computing

Evolution of Classical Computing

1945
ENIAC

1964
IBM System 360

1983
First PC

39 years to
Desktop
Classical

QCI Accelerates Quantum Computing

2019
Gate Model QC

2022
QCI/QPhoton Cloud

2023/4
QCI/QPhoton
On Premise/Desktop

5-6 years to
Desktop Quantum

Significantly Expanding QCI Total Available Market/Revenue Opportunities

Source: Company reports.

Exhibit 11: Q3 2023 and Recent Highlights

“We achieved significant progress since the acquisition of QPhoton less than 17 months ago and we have continued that momentum thus far in 2023. To date, QCi has announced five product releases, expanded manufacturing capacity and begun the buildout of our quantum chip facility, which establishes the roadmap for future product design, development and sales of a variety of lithium niobate chips in 2024, including physical unclonable function (PUF) and electro-optic modulator (EOM) chips.”

- Robert Liscouski, Co-Founder, CEO & Chairman of QCi

Source: Company reports.

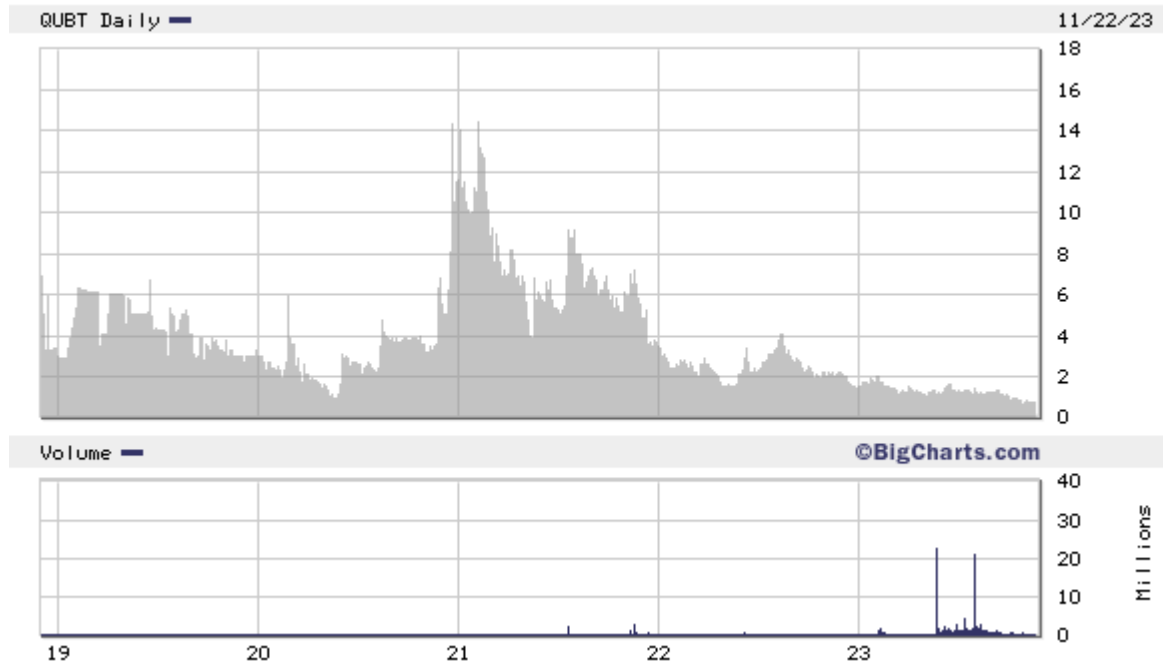
Exhibit 12: Company Guidance (as of November 13, 2023)

Guidance:

- To date, the Company has announced five products, secured initial testing contracts with Government agencies, engaged in a growing number of proof of concepts, established collaborations and sales teaming agreements and, just last week, received its first hardware sales with product delivery scheduled in the fourth quarter. The Company anticipates a gradual revenue increase for the remainder of the year, accelerating into heightened growth starting in early 2024.

Source: Company reports.

Exhibit 13: Quantum Computing Inc. Stock Price (5-Years)



Source: <https://bigcharts.marketwatch.com/>

FINANCIAL MODEL

Quantum Computing Inc.

Income Statement (\$ mils)	Mar-21	Jun-21	Sep-21	Dec-21	2021	Mar-22	Jun-22	Sep-22	Dec-22	2022	Mar-23	Jun-23	Sep-23	Dec-23	2023	Mar-24	Jun-24	Sep-24	Dec-24	2024
Fiscal Year End: December 31	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4E	FY-E	Q1E	Q2E	Q3E	Q4E	FY-E
Total Revenue	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.3	0.4	0.7	1.6
<u>Cost of Revenues</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.0</u>	<u>0.1</u>	<u>0.2</u>	<u>0.1</u>	<u>0.1</u>	<u>0.2</u>	<u>0.3</u>	<u>0.6</u>
Gross Profit	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	(0.0)	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.2	0.2	0.4	1.0
Salaries	0.2	0.5	0.7	1.1	2.5	1.1	1.4	1.3	0.6	4.3	1.5	0.5	1.5	1.2	4.6	1.2	1.2	1.2	1.2	4.8
Consulting	0.3	0.2	0.3	0.2	1.1	0.4	0.3	0.3	0.4	1.3	0.2	0.2	0.2	0.2	0.8	0.3	0.3	0.3	0.3	1.2
Research & Development	0.6	0.6	0.6	0.8	2.6	1.0	0.9	1.3	1.4	4.6	1.5	1.6	1.7	1.6	6.4	1.6	1.6	1.6	1.6	6.4
Stock Based Compensation	2.0	2.5	2.6	2.3	9.4	3.1	0.3	1.3	13.1	17.8	2.0	1.9	2.0	2.0	7.9	1.9	1.9	1.9	1.9	7.6
Related Party Marketing					0.0					0.0					0.0					0.0
Selling General & Administrative	0.2	0.5	0.6	0.2	1.6	1.1	2.1	2.7	2.8	8.7	2.7	(0.3)	2.4	2.5	7.2	2.5	2.5	2.5	2.5	10.0
Restructuring and other					0.0					0.0					0.0					0.0
Total operating expenses	3.4	4.3	4.8	4.6	17.1	6.7	4.9	6.8	18.2	36.7	7.9	3.9	7.7	7.5	26.9	7.5	7.5	7.5	7.5	30.0
Operating income (loss)	(3.4)	(4.3)	(4.8)	(4.6)	(17.1)	(6.7)	(4.8)	(6.8)	(18.2)	(36.6)	(7.8)	(3.9)	(7.7)	(7.4)	(26.7)	(7.4)	(7.3)	(7.3)	(7.1)	(29.0)
Interest income (expense)	0.0	0.0	0.0	0.0	0.0	(0.4)	(0.3)	(0.7)	(0.6)	(2.0)	(0.7)	(0.8)	(0.6)	(0.1)	(2.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.4)
Other income (expense)		0.2		(11.0)	(10.8)					0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0
Income before income taxes	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(18.8)	(38.6)	(8.5)	(4.6)	(8.3)	(7.5)	(28.9)	(7.5)	(7.4)	(7.4)	(7.2)	(29.4)
Income taxes					0.0					0.0					0.0	0.0	0.0	0.0	0.0	0.0
Net income (loss)	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(18.8)	(38.6)	(8.5)	(4.6)	(8.3)	(7.5)	(28.9)	(7.5)	(7.4)	(7.4)	(7.2)	(29.4)
Nonrecurring/noncash adjustments					0.0					0.0					0.0					0.0
Net income (pro forma)	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(18.8)	(38.6)	(8.5)	(4.6)	(8.3)	(7.5)	(28.9)	(7.5)	(7.4)	(7.4)	(7.2)	(29.4)
EBITDA	(1.2)	(1.9)	(1.8)	(2.1)	(6.9)	(3.7)	(4.6)	(5.7)	(8.7)	(22.6)	(3.7)	(3.7)	(3.6)	(3.3)	(14.4)	(3.3)	(3.3)	(3.2)	(3.0)	(12.8)
Shares, Basic	28.7	29.1	29.2	29.2	29.2	29.2	29.2	33.9	56.0	56.0	60.5	67.2	75.1	75.4	69.6	75.5	75.8	76.1	76.4	75.9
Shares, Diluted	28.7	29.1	29.2	29.2	29.2	29.2	29.2	33.9	56.0	56.0	60.5	67.2	75.1	75.4	69.6	75.5	75.8	76.1	76.4	75.9
EPS Basic (pro forma)	(\$0.12)	(\$0.14)	(\$0.16)	(\$0.54)	(\$0.96)	(\$0.24)	(\$0.17)	(\$0.22)	(\$0.34)	(\$0.69)	(\$0.14)	(\$0.07)	(\$0.11)	(\$0.10)	(\$0.42)	(\$0.10)	(\$0.10)	(\$0.10)	(\$0.09)	(\$0.39)
EPS Diluted (pro forma)	(\$0.12)	(\$0.14)	(\$0.16)	(\$0.54)	(\$0.96)	(\$0.24)	(\$0.17)	(\$0.22)	(\$0.34)	(\$0.69)	(\$0.14)	(\$0.07)	(\$0.11)	(\$0.10)	(\$0.42)	(\$0.10)	(\$0.10)	(\$0.10)	(\$0.09)	(\$0.39)
Margins																				
Gross margin						63%	92%	34%	-1406%	55%	53%	54%	53%	53%	53%	60%	60%	60%	60%	60%
Salaries																				
Consulting																				
Research and development																				
General and administrative																				
Operating margin																				
Tax rate, GAAP																				
Net margin																				
YY % change																				
Total Revenue																				
Gross margin																				
Salaries	49%	279%	444%	383%	287%	355%	167%	98%	-49%	74%	30%	-61%	12%	117%	7%	-17%	126%	-18%	0%	3%
Consulting	298%	257%	6%	-81%	-36%	22%	12%	-2%	46%	19%	-39%	-28%	-34%	-45%	-37%	33%	64%	53%	53%	50%
Research and development	81%	69%	114%	37%	68%	64%	50%	107%	82%	76%	50%	86%	34%	13%	41%	4%	1%	-6%	0%	0%
General and administrative	72%	201%	-53%	-57%	-27%	371%	335%	335%	1100%	453%	135%	-116%	-13%	-10%	-17%	-6%	-868%	6%	0%	39%
Operating income (loss)	95%	372%	-45%	-23%	-1%	98%	11%	43%	294%	114%	16%	-20%	12%	-59%	-27%	-5%	90%	-5%	-4%	9%
Net income (loss)	386%	131%	-59%	47%	13%	110%	24%	58%	20%	38%	19%	-9%	9%	-60%	-25%	-12%	60%	-11%	-4%	2%
EPS Diluted (pro forma)	31%	-32%	-76%	42%	8%	107%	24%	36%	-37%	-28%	-43%	-60%	-51%	-70%	-40%	-30%	42%	-12%	-6%	-7%

Source: Company reports and Ascendant Capital Markets estimates.

Quantum Computing Inc.

Balance Sheet (\$ mils)	Mar-21				Jun-21				Sep-21				Dec-21				Mar-22				Jun-22				Sep-22				Dec-22				Mar-23				Jun-23				Sep-23				Dec-23				Mar-24				Jun-24				Sep-24				Dec-24			
Fiscal Year End: December 31	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E												
Assets																																																																
Cash and cash equivalents	13.8	12.6	10.4	16.7	11.5	6.7	10.4	5.3	6.8	7.2	7.4	3.7	0.4	(5.3)	(8.8)	(14.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
Short term investments																																																																
Accounts receivable, net					0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																				
Inventory																																																																
Deferred income taxes																																																																
Prepaid expenses and other	0.3	0.2	0.6	0.5	1.7	0.4	0.3	0.3	0.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7																								
Total current assets	14.1	12.9	11.0	17.2	13.2	7.3	10.8	5.6	7.1	8.0	8.1	4.5	1.1	(4.6)	(8.1)	(13.6)																																																
Property and equipment, net	0.0	0.0	0.0	0.0	0.0	0.2	0.3	1.0	1.3	1.5	3.0	3.1	3.2	5.5	5.6	7.9																																																
Intangibles, net						84.3	82.8	81.3	79.9	77.9	77.0	77.0	77.0	77.0	77.0	77.0																																																
Deferred income tax																																																																
Other					0.0	0.1	1.4	1.4	1.3	1.2	1.2	1.2	1.0	1.0	1.0	1.0																																																
Total assets	14.1	12.9	11.1	17.3	13.3	91.9	95.3	89.3	89.5	88.6	89.3	85.8	82.3	78.9	75.6	72.4																																																
Liabilities and stockholders' equity																																																																
Accounts payable	0.2	0.6	0.5	0.5	0.8	0.8	0.9	0.9	0.9	0.9	1.1	1.1	1.1	1.1	1.1	1.1																																																
Accrued expenses	0.1	0.2	0.3	0.5	0.0	0.3	0.7	3.6	1.7	2.8	1.0	1.0	1.0	1.0	1.0	1.0																																																
Deferred revenue																																																																
Deferred income tax																																																																
Warrant liabilities																																																																
Other		0.0	0.0	0.1	0.2	0.2	1.5	1.6	1.6	1.5	1.4	1.4	1.4	1.4	1.4	1.4																																																
Short term debt	0.2						0.5	0.5	8.3	6.5	4.5	4.5	4.5	4.5	4.5	4.5																																																
Total current liabilities	0.6	0.8	0.8	1.1	1.0	1.3	3.6	6.5	12.6	11.7	8.1	8.1	8.1	8.1	8.1	8.1																																																
Deferred income taxes																																																																
Warrant liabilities																																																																
Other long term liabilities							0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																																																
Deferred revenue																																																																
Long term debt							7.5	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																																																
Total other liabilities	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																																																
Preferred stock				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0																																																
Common stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	8.0	12.0	16.0	20.0																																																
Additional paid-in capital	70.4	73.1	76.1	97.6	100.8	184.2	185.4	194.9	205.4	210.0	222.6	222.6	222.6	222.6	222.6	222.6																																																
Retained earnings	(56.9)	(61.0)	(65.8)	(81.4)	(88.5)	(93.6)	(101.2)	(120.0)	(128.5)	(133.1)	(141.4)	(148.9)	(156.4)	(163.8)	(171.1)	(178.3)																																																
Accumulated other comprehensive income																																																																
Other																																																																
Total stockholders' equity	13.5	12.1	10.3	16.2	12.3	90.6	84.2	74.9	76.9	76.9	81.2	77.7	74.3	70.8	67.5	64.3																																																
Total stockholders' equity and liabil	14.1	12.9	11.1	17.3	13.3	91.9	95.3	89.3	89.527	88.6	89.3	85.8	82.3	78.9	75.6	72.4																																																

Balance Sheet Drivers

	Mar-21				Jun-21				Sep-21				Dec-21				Mar-22				Jun-22				Sep-22				Dec-22				Mar-23				Jun-23				Sep-23				Dec-23				Mar-24				Jun-24				Sep-24				Dec-24			
	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E												
Prepaid as % of total rev																																																																
Accounts payable as % of total rev																																																																
Accrued expenses as % of total rev																																																																
Activity Ratios																																																																
A/R Days Sales Outstanding																																																																
Book & Cash Value (per share)																																																																
Book Value per Share (diluted)	\$0.47	\$0.42	\$0.35	\$0.56	\$0.42	\$3.10	\$2.48	\$1.34	\$1.27	\$1.14	\$1.08	\$1.03	\$0.98	\$0.93	\$0.89	\$0.84																																																
Cash per Share (diluted)	\$0.48	\$0.43	\$0.36	\$0.57	\$0.39	\$0.23	\$0.31	\$0.09	\$0.11	\$0.11	\$0.10	\$0.05	\$0.01	-\$0.07	-\$0.12	-\$0.19																																																
Net cash per Share (diluted)	\$0.47	\$0.43	\$0.36	\$0.57	\$0.39	\$0.23	\$0.07	-\$0.05	-\$0.03	\$0.01	\$0.04	-\$0.01	-\$0.05	-\$0.13	-\$0.18	-\$0.25																																																

Source: Company reports and Ascendant Capital Markets estimates

Quantum Computing Inc.

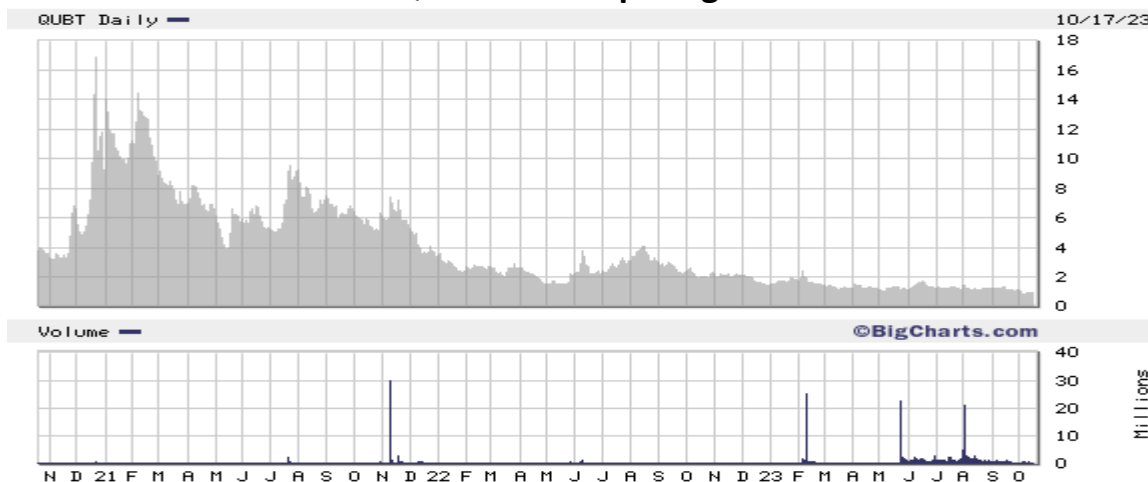
Cash Flow Statement (\$ mils)	Mar-21	Jun-21	Sep-21	Dec-21	2021	Mar-22	Jun-22	Sep-22	Dec-22	2022	Mar-23	Jun-23	Sep-23	Dec-23	2023	Mar-24	Jun-24	Sep-24	Dec-24	2024	
Fiscal Year End: December 31	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4E	FY-E	Q1E	Q2E	Q3E	Q4E	FY-E	
Cash flow from operating activities																					
Net income	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(18.8)	(38.6)	(8.5)	(4.6)	(8.3)	(7.5)	(28.9)	(7.5)	(7.4)	(7.4)	(7.2)	(29.4)	
Depreciation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.3	
Amortization					0.0		0.2	1.5	1.5	3.2	1.5	(1.7)	0.7		0.5					0.0	
Debt related amortization expense					0.0				0.1	0.1	0.1	0.1	0.1		0.4					0.0	
Stock comp	2.2	2.5	3.0	2.5	10.2	3.0	0.2	1.2	9.5	13.9	4.0	0.1	4.0	4.0	12.1	4.0	4.0	4.0	4.0	16.0	
Deferred income taxes					0.0					0.0					0.0					0.0	
Change in fair value of warrant liability				10.7	10.7					0.0					0.0					0.0	
Writedowns and impairments					0.0					0.0					0.0					0.0	
Other gains/losses					0.0					0.0					0.0					0.0	
Other				0.0	0.0	0.1	(0.1)	(0.0)	0.0	0.0					0.0					0.0	
Changes in operating assets and liabilities:																					
Accounts receivable					0.0	(0.0)	(0.1)	(0.0)	0.1	(0.0)	(0.1)	(0.1)		0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Inventory					0.0					0.0					0.0					0.0	
Prepaid expenses & other curre	(0.3)	0.1	(0.4)	0.1	(0.4)	0.0	0.0	0.1	0.1	0.3	(0.0)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	
Income tax					0.0					0.0					0.0					0.0	
Other assets					0.0					0.0			(0.0)	0.0	(0.0)	0.2	0.0	0.0	0.0	0.2	
Accounts payable	(0.1)	0.3	(0.1)	0.0	0.1	0.3	(0.0)	0.1	(0.2)	0.2	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	
Accrued expenses	0.0	0.1	0.1	0.3	0.5	(0.5)	0.3	0.4	3.0	3.2	(1.9)	0.9	(1.8)	0.0	(2.7)	0.0	0.0	0.0	0.0	0.0	
Deferred revenue					0.0					0.0					0.0					0.0	
Other liabilities					0.0	0.1	1.3	(1.4)		0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Net cash (used in) provided by	(1.5)	(1.2)	(2.2)	(1.9)	(6.8)	(4.2)	(4.4)	(3.0)	(6.0)	(17.6)	(4.716)	(5.072)	(4.846)	(3.4)	(18.1)	(3.2)	(3.3)	(3.3)	(3.1)	(12.9)	
Cash flow from investing activities																					
Purchases of property and equi	(0.0)		(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.2)	(0.6)	(0.9)	(0.4)	(0.2)	(1.6)	(0.2)	(2.4)	(0.2)	(2.4)	(0.2)	(2.4)	(5.1)	
Purchases of short-term investments					0.0		(84.6)	0.0	83.2	(1.4)					0.0					0.0	
Acquisitions					0.0					0.0					0.0					0.0	
Other	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(1.2)	1.1	(1.3)	1.4	(0.0)	(0.5)	(0.1)		(0.6)						0.0	
Net cash used in investing activ	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(1.2)	(83.6)	(1.4)	84.0	(2.2)	(0.379)	(0.711)	(1.643)	(0.2)	(2.9)	(0.2)	(2.4)	(0.2)	(2.4)	(5.1)	
Cash flow from financing activities																					
Issuance of debt					0.0			8.0	(0.0)	8.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Repayment of debt		(0.2)		0.0	(0.2)				0.0	0.0		(1.9)	(2.1)	(4.0)						0.0	
Issuance of stock	0.1	0.3	(0.0)	8.3	8.6	0.2	0.1		(0.0)	0.3	6.6	8.1	8.8	0.0	23.5	0.0	0.0	0.0	0.0	0.0	
Proceeds from stock option exercises					0.0					0.0					0.0					0.0	
Other					0.0		83.1	0.0	(83.1)	0.0					0.0					0.0	
Cash provided by (used in) fina	0.1	0.0	(0.0)	8.3	8.4	0.2	83.2	8.0	(83.1)	8.4	6.6	6.2	6.7	0.0	19.4	0.0	0.0	0.0	0.0	0.0	
Effect of exchange rate on cash					0.0					0.0					0.0					0.0	
Net increase (decrease) in cash	(1.4)	(1.1)	(2.2)	6.3	1.5	(5.2)	(4.8)	3.6	(5.1)	(11.4)	1.5	0.4	0.2	(3.6)	(1.6)	(3.4)	(5.7)	(3.5)	(5.5)	(18.0)	
Beginning cash and equivalents	15.2	13.8	12.6	10.4	15.2	16.7	11.5	6.7	10.4	16.7	5.3	6.8	7.2	7.4	5.3	3.7	0.4	(5.3)	(8.8)	3.7	
Ending cash and equivalents	13.8	12.6	10.4	16.7	16.7	11.5	6.7	10.4	5.3	5.3	6.8	7.2	7.4	3.7	3.7	0.4	(5.3)	(8.8)	(14.3)	(14.3)	

Source: Company reports and Ascendant Capital Markets estimates

ANALYST CERTIFICATION

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Quantum Computing Inc.



Source: <https://bigcharts.marketwatch.com/>

Report	Report Date	Rating	Price Target
1	11/1/2021	Buy	11.00
2	11/14/2021	Buy	11.50
3	3/16/2022	Buy	10.00
4	6/4/2022	Buy	9.00
5	8/22/2022	Buy	9.50
6	11/16/2022	Buy	9.00
7	4/4/2023	Buy	9.25
8	5/19/2023	Buy	9.50
9	8/25/2023	Buy	9.00

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BUY: We expect the stock to provide a total return of 15% or more within a 12-month period.

HOLD: We expect the stock to provide a total return of negative 15% to positive 15% within a 12-month period.

SELL: We expect the stock to have a negative total return of more than 15% within a 12-month period.

Total return is defined as price appreciation plus dividend yield.

Ascendant Capital Markets, LLC Distribution of Investment Ratings (as of October 13, 2023)

Rating	Count	Percent	Investment Banking Services Past 12 months	
			Count	Percent
Buy	51	98%	19	37%
Hold	0	0%	0	0%
Sell	1	2%	0	0%
Total	52	100%	19	37%

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