

Quantum Computing Inc.

Reports Q3 slight miss. We expect major acquisition of QPhoton and strong growth over the next year to be positive for stock. Lowering P/T to \$9.00.

COMPANY UPDATE

Rating: BUY

Ticker: QUBT

Price: \$2.14 (intraday)

Target: \$9.00 (from \$9.50)

Q3 slight miss: Quantum recently (on November 14) reported its fiscal Q3 2022 (ending September) results. Revenue was \$0.04 million, compared to our estimate of \$0.20 million. EPS was \$(0.22), compared to our estimate of \$(0.16). There was no consensus estimates or company guidance.

Still very early stage: Quantum's recent financial performance is reflective of its developmental and early commercialization stage and has finally reported initial revenue in Q1 (Q3 was the 3rd quarter of revenues). The company, having recently launched several of its initial products, is currently focusing on sales and marketing of its products. We believe investors should be focused on its commercialization of its software, which we believe within the next year, the company should grow revenue quickly.

Lowering estimates: We are lowering our 2022 estimates for revenue to \$0.2 million, from \$1.0 million, and for EPS to \$(0.76) from \$(0.73).

Acquired QPhoton: In May, the company announced that it will acquire QPhoton, Inc. QPhoton is a privately held company that is a leading innovator in the quantum photonic technology space. Merger consideration will be paid in stock (~37 million shares). The deal closed in June 2022. This follows the announcement in February 2022 of a marketing agreement with QPhoton, to merge QCl's quantum software solution, Qatalyst, with QPhoton's advanced photonic quantum technologies for its application to QCI-specific solutions. QPhoton QPS: 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) offerings.

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.

Balance sheet: As of Q3, the company has \$10 million in cash and \$8 million in debt. In Q3, the company raised \$8 million from debt. We believe the company has enough cash into Q1 2023, so it will likely need to raise new capital soon.

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 \$9.00 from \$9.50, 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 16, 2022

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

N=====CN4

Stock Data

Exchange:	NasdaqCM
52-week Range:	1.42 - 7.70
Shares Outstanding (million):	54
Market cap (\$million):	\$116
EV (\$million):	\$114
Debt (\$million):	\$8
Cash (\$million):	\$10
Avg. Daily Trading Vol. (\$million):	\$1
Float (million shares):	25
Short Interest (million shares):	1
Dividend, annual (yield):	\$0 (NA%)

Revenues (US\$ million)

	2022E (Cur.)	2022E (Old)	2023E (Cur.)	2023E (Old)
Q1 Mar	0.0A		0.2E	1.0E
Q2 Jun	0.1A		0.2E	1.0E
Q3 Sep	0.0A	0.2E	0.4E	1.0E
Q4 Dec	<u>0.1E</u>	<u>0.7E</u>	<u>0.7E</u>	2.0E
Total	0.2E	1.0E	1.4E	5.0E
EV/Revs	570x		81x	

Earnings per Share (pro forma)

	<u>2022E</u> (Cur.)	2022E (Old)	<u>2023E</u> (Cur.)	2023E (Old)
Q1 Mar	(0.24)A		(0.12)E	(0.16)E
Q2 Jun	(0.17)A		(0.12)E	(0.16)E
Q3 Sep	(0.22)A	(0.16)E	(0.11)E	(0.16)E
Q4 Dec	(0.14)E	(0.15)E	(0.11)E	(0.14)E
Total	(0.76)E	(0.73)E	(0.45)E	(0.63)E
P/E	N/A		N/A	

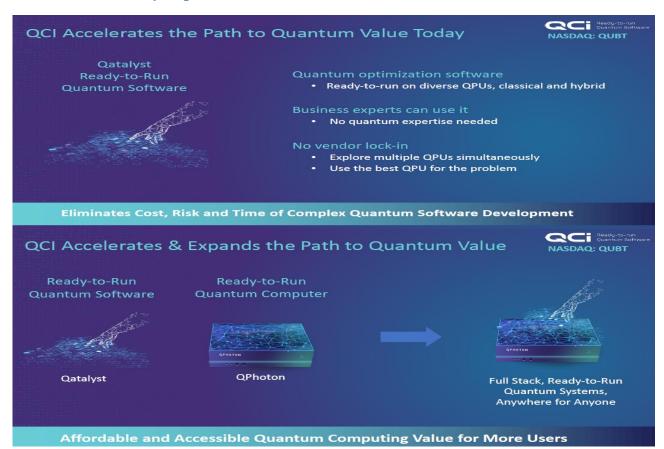
Important Disclosures

Ascendiant 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 14.



Exhibit 1: Quantum Computing Inc. Overview



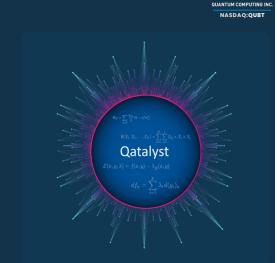
Key Takeaways Breakthrough Technology Large Addressable Market Quantum-enabled software that High-Growth Opportunity: delivers business value today. 56% CAGR to \$65 billion by 2030. Qatalyst can solve some of the most Diverse applications across important and complex computing multiple industries: finance, problems at record speed. national defense, industry, healthcare and more. **World Class Team** Performance Revenue Model We have assembled a team of Opportunities for strategic subject matter experts with decades partnerships with major enterprise, of success in quantum computing, government agencies, and national supercomputing, pharma, fintech, labs to produce real-world manufacturing and security. performance advantages.



Exhibit 2: Quantum Computing Investment Highlights

Who We Are

- Only public pure-play quantum software company in the highgrowth, multi-billion-dollar quantum computing space.
- Innovative delivery of quantum-powered optimization solutions for the enterprise.
- We apply quantum techniques to classical computing today to better solve high-value enterprise computational problems, with a seamless bridge to quantum computing.
- We deliver solutions with unmatched speed and quality of results using quantum techniques — and not someday, but today.
- Highly experienced and accomplished management team: industry pioneers from Cray, Silicon Graphics, D-Wave, and other major IT firms.
- Our flagship quantum software accelerator, Qatalyst™, recently launched as a software-as-a-service (SaaS) on Amazon Web Services (AWS) and Amazon Braket.



Our flagship software solution, **Qatalyst**, is the industry's only quantum application accelerator, empowering today's Subject Matter Experts (SMEs) to immediately leverage the power of quantum techniques for faster, better, and more diverse business decisions - with no need for quantum expertise or training.

Source: Company reports.

Exhibit 3: Quantum Computer Reality Check

The Quantum Reality Check

The Good

- Huge investments by major players are driving auantum 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

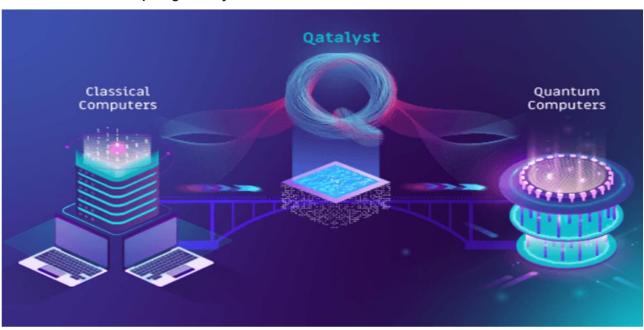
- Quantum processors are still in their infancy.
- Cannot scale to process the large volumes of data and variables created by today real-world problems
- No standard quantum computer architecture.
- Proprietary, unique low-level code required for each vendor

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



Exhibit 4: Quantum Computing's Qatalyst Software Solutions



What is Qatalyst? NASDAO:OUBT • Quantum-ready constrained optimization software for classic & Quantum-ready techniques applied to classic computing enhances the quality and performance of classical computations Returns a diversity of excellent results faster for better decisions · SME driven, no quantum expertise required SMEs, workflows and applications submit familiar programs **Oatalyst** Qatalyst does the rest via six simple API calls SMEs empowered right now vs being left behind No hardware lock-in; Use the best QPU for the problem Immediately access the power of quantum across diverse QPU vendors, in No need for low-level coding, no on-premise requirements. Submit the same program on CPUs or QPUs using the same Qatalyst APIs Qatalyst controls and adjusts to the hardware; no need for low level programming or reprogramming when changing QPUs Ready-for-Results Quantum Software



Exhibit 5: Quantum's Market Opportunity







Exhibit 6: Qatalyst Market Opportunities

QCI Market Opportunities Markets QCI is Addressing Today Transportation/Logistics Retail Ecommerce shift changes entire retail Airlines/Cargo routing, crew scheduling, supply chain (inbound and gate assignments distribution logistics), demanding Ground transportation routing per complex optimizations. traffic & emergency scenarios. Supply chain routing & logistics **Government & Security** Manufacturing Improved disaster response, Raw Materials optimization and faster detection of fraud and bad planning, discrete manufacturing actors, stronger cyber security and line optimization.,, national security, intercept-proof communications (\$) **Material Sciences & Pharma** Finance & Investment Improved chemistry simulations for Faster and better portfolio discovering novel materials. optimization, risk modeling, and Fast drug discovery, better clinical trial design, molecular modeling. derivatives creation.

Qatalyst Near-term Addressable Markets – Examples



Application	Markets		Addressable Market Size
Supply Chain & Logistics Optimization	Retail Aerospace Chemical/Materials Utilities Manufacturing		\$22 Billion+ 1
Transportation Optimization	Airlines Delivery		\$5 Billion+ ²
Community Detection	Cyber Security Biotech Government		\$156 Billion+ ³
Other potential revenue sources: • Government or Commercial R&D contracts		Fotal	\$157 Billion+
Consulting		Typical	Gross Margins of 60% - 70%



Exhibit 7: Qatalyst Applications Examples

Example QC Application Retail Supply Chain Optimization Ecommerce shift complicates everything. Comparing growth: US retail sales* vs. ecommerce Covid accelerated that shift. 40 35 30 Shopping baskets. From single basket with lots of items to many baskets with few items. 25 Supply Chain availability. Shifting demand and Covid lockdowns/delays mean raw materials and product availability is a dynamic and ever-changing target.

- Consumer expectations. Customers expect unlimited product selection and availability at the lowest price. The emerging differentiator is becoming delivery time.
 - As many as 96% of customers consider faster delivery synonymous
 - In a study by McKinsey & Company, the primary aspect of customer service mentioned by customers? Delivery time.

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

Qatalyst Solves These Highly Complex Computations to Fuel Retail Markets

Example QC Application Transportation Optimization Increases in delivery demands drive more complex computations to optimize logistics. Uncertainty of availability of critical supply chain elements mean production is ever-changing. How to optimize delivery under these circumstances. For example, how to deliver automobiles globally with confirmed schedules for production and delivery. Scale of transportation as Covid lockdowns are removed offer opportunity for better optimization as we reboot airlines, trains and infrastructure.





Exhibit 8: 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.

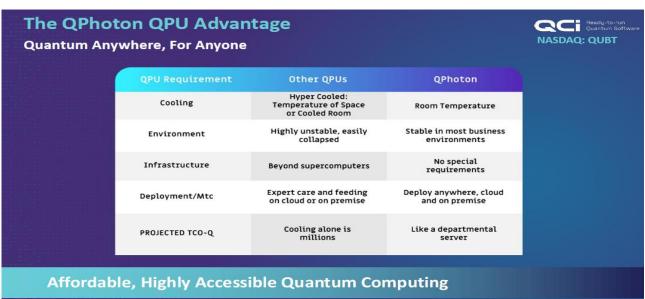
Quantum Computing Inc. Closes Acquisition of QPhoton

- 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.



Exhibit 9: Quantum's QPhoton











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



FINANCIAL MODEL

Quantum Computing Inc.

Quantum Computing						_																				
Income Statement (\$ mils)	2018		Jun-19			2019		Jun-20	Sep-20	Dec-20			Jun-21			2021			Sep-22		2022			Sep-23		2023
Fiscal Year End: December 31	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.2	0.2	0.4	0.7	1.4
Cost of Revenues	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	0.1	0.1	0.1	0.2	0.3	0.6
Gross Profit	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	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.4	0.8
Salaries Consulting	0.5	0.1	0.1	0.1	0.1	0.5 0.4	0.2 0.1	0.1	0.1	0.2 1.3	0.6 1.7	0.2	0.5	0.7	1.1	2.5 1.1	1.1 0.4	1.4 0.3	1.3	1.6 0.3	5.4 1.2	1.6 0.3	1.6	1.6 0.3	1.6 0.3	6.4 1.2
Research & Development	0.3	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.3	0.6	1.7	0.6	0.2	0.6	0.2	2.6	1.0	0.9	1.3	1.2	4.3	1.2	1.2	1.2	1.2	4.8
Stock Based Compensation Related Party Marketing	4.2	0.1	1.5	(1.3)	0.0	0.2	1.0	0.2	6.6 0.1	3.4 0.0	11.2	2.0	2.5	2.6	2.3	9.4 0.0	3.1	0.3	1.3	1.0	5.7 0.0	0.6	0.6	0.6	0.6	2.4
Selling General & Administrat	0.5	0.2	0.1	0.1	0.2	0.6	0.1	0.2	1.3	0.5	2.2	0.2	0.5	0.6	0.2	1.6	1.1	2.1	2.7	2.5	8.4	2.5	2.5	2.5	2.5	10.0
Restructuring and other Total operating expenses	5.8	0.6	2.0	(8.0)	0.8	0.0 2.5	1.7	0.9	8.7	6.0	0.0 17.3	3.4	4.3	4.8	4.6	0.0 17.1	6.7	4.9	6.8	6.6	0.0 25.0	6.2	6.2	6.2	6.2	<u>0.0</u> 24.8
Operating income (loss)	(5.8)	(0.6)	(2.0)	0.8	(8.0)	(2.5)	(1.7)	(0.9)	(8.7)	(6.0)	(17.3)	(3.4)	(4.3)	(4.8)	(4.6)	(17.1)	(6.7)	(4.8)	(6.8)	(6.5)	(24.9)	(6.1)	(6.1)	(6.0)	(5.8)	(24.0)
Interest income (expense) Other income (expense)	(4.1)	(0.1)	(0.1)	(0.0)	(5.7)	(5.8) 0.0	(0.1) 1.2	(1.6) 0.8	(3.0)	(3.1) (1.5)	(7.8) 0.4	0.0	0.0 0.2	0.0	0.0	0.0	(0.4)	(0.3)	(0.7)	(0.2) 0.0	(1.6) 0.0	(0.2)	(0.2)	(0.2) 0.0	(0.2)	(0.6) 0.0
Income before income taxes	(10.5)	(0.6)	(2.0)	0.8	(6.5)	(8.4)	(0.7)	(1.8)	(11.7)	(10.6)	(24.7)	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(6.7)	(26.5)	(6.3)	(6.3)		(6.0)	(24.6)
Income taxes Net income (loss)	(10.5)	(0.6)	(2.0)	0.8	(6.5)	0.0 (8.4)	(0.7)	(1.8)	(11.7)	(10.6)	0.0 (24.7)	(3.4)	(4.1)	(4.8)	(15.6)	<u>0.0</u> (27.9)	(7.1)	(5.1)	(7.6)	0.0 (6.7)	<u>0.0</u> (26.5)	0.0 (6.3)	0.0 (6.3)	<u>0.0</u> (6.1)	0.0 (6.0)	<u>0.0</u> (24.6)
Nonrecurring/noncash adjustme Net income (pro forma)	nts (10.5)	(0.6)	(2.0)	0.8	(6.5)	0.0 (8.4)	(0.7)	(1.8)	(11.7)	(10.6)	0.0 (24.7)	(3.4)	(4.1)	(4.8)	(15.6)	0.0 (27.9)	(7.1)	(5.1)	(7.6)	(6.7)	0.0 (26.5)	(6.3)	(6.3)	(6.1)	(6.0)	0.0 (24.6)
EBITDA	(1.8)	(0.5)	(0.5)	(0.6)	(8.0)	(2.3)	(0.7)	(2.0)	(0.8)	(2.6)	(6.2)	(1.2)	(1.9)	(1.8)	(2.1)	(6.9)	(3.7)	(4.6)	(5.7)	(5.4)	(19.3)	(4.9)	(4.9)	(4.8)	(4.6)	(19.2)
Shares, Basic Shares, Diluted	4.7 4.7	4.7 4.7	5.3 5.3	7.4 7.4	7.4 7.4	7.4 7.4	7.8 7.8	8.6 8.6	17.2 17.2	28.0 28.0	28.0 28.0	28.7 28.7	29.1 29.1	29.2 29.2	29.2 29.2	29.2 29.2	29.2 29.2	29.2 29.2	33.9 33.9	48.0 48.0	35.1 35.1	54.0 54.0	54.3 54.3	54.6 54.6	54.9 54.9	54.5 54.5
EPS Basic (pro forma)	(\$2.22)	(\$0.13)	(\$0.38)	\$0.10	(\$0.88)	(\$1.14)	(\$0.09)	(\$0.21)	(\$0.68)	(\$0.38)	(\$0.88)	(\$0.12)	(\$0.14)	(\$0.16)	(\$0.54)	(\$0.96)	(\$0.24)	(\$0.17)	(\$0.22)	(\$0.14)	(\$0.76)	(\$0.12)	(\$0.12)	(\$0.11)	(\$0.11)	(\$0.45)
EPS Diluted (pro forma)	(\$2.22)	(\$0.13)	(\$0.38)	\$0.10	(\$0.88)	(\$1.14)	(\$0.09)	(\$0.21)	(\$0.68)	(\$0.38)	(\$0.88)	(\$0.12)	(\$0.14)	(\$0.16)	(\$0.54)	(\$0.96)	(\$0.24)	(\$0.17)	(\$0.22)	(\$0.14)	(\$0.76)	(\$0.12)	(\$0.12)	(\$0.11)	(\$0.11)	(\$0.45)
Margins Gross margin																	63%	92%	34%	60%	65%	60%	60%	60%	60%	60%
Salaries Consulting Research and development General and administrative Operating margin Tax rate, GAAP Net margin																										
Y/Y % change Total Revenue Gross margin Salaries Consulting Research and development General and administrative Operating income (loss) Net income (loss) EPS Diluted (pro forma)						-5% 12% 256% 12% -56% -20% -49%	43% -1% 128% -16% 198% 10% -33%	15% -26% 131% 8% -54% -13% -46%	1% 251% 12% 1197% -1206% -1613% -748%	55% 985% 69% 219% 685% 64% -57%	30% 366% 73% 269% 581% 195% -22%	49% 298% 81% 72% 95% 386% 31%	279% 257% 69% 201% 372% 131% -32%	444% 6% 114% -53% -45% -59% -76%	383% -81% 37% -57% -23% 47% 42%	287% -36% 68% -27% -1% 13% 8%	355% 22% 64% 371% 98% 110% 107%	167% 12% 50% 335% 11% 24% 24%	98% -2% 107% 335% 43% 58% 36%	48% 23% 54% 977% 41% -57% -74%	116% 14% 68% 435% 45% -5% -21%	43% -19% 17% 120% -9% -12% -53%	19% 17% 41% 20% 27% 22% -34%	1% -5% -8% -13% -19%	0% 0% 0% -11% -11%	19% -2% 11% 18% -4% -7% -40%

Source: Company reports and Ascendiant Capital Markets estimates.



Quantum Com	puting Inc.
-------------	-------------

Balance Sheet (\$ mils) Fiscal Year End: December 31	Dec-18 Q4A	Mar-19 Q1A	Jun-19 Q2A	Sep-19 Q3A	Dec-19 Q4A	Mar-20 Q1A	Jun-20 Q2A	Sep-20 Q3A	Dec-20 Q4A	Mar-21 Q1A	Jun-21 Q2A	Sep-21 Q3A	Dec-21 Q4A	Mar-22 Q1A	Jun-22 Q2A	Sep-22 Q3A	Dec-22 Q4E	Mar-23 Q1E	Jun-23 Q2E	Sep-23 Q3E	Dec-23 Q4E
riscal fear End: December 31	Q4A	QTA	Q2A	Q3A	Q4E	QTE	Q2E	Q3E	Q4E												
Assets																					
Cash and cash equivalents	1.8	1.3	0.8	0.3	0.1	0.2	0.5	4.0	15.2	13.8	12.6	10.4	16.7	11.5	6.7	10.4	4.8	(0.4)	(5.9)	(10.9)	(16.
Short term investments																	0.0	0.0	0.0	0.0	0.
Accounts receivable, net														0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.
Inventory																	0.0	0.0	0.0	0.0	0.
Deferred income taxes																	0.0	0.0	0.0	0.0	0.
Prepaid expenses and other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.6	0.5	1.7	0.4	0.3	0.3	0.3	0.3	0.3	<u>0.</u>
Total current assets	1.8	1.3	0.8	0.3	0.1	0.2	0.5	4.0	15.2	14.1	12.9	11.0	17.2	13.2	7.3	10.8	5.2	(0.1)	(5.5)	(10.6)	(15.
Property and equipment, net	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	0.2	0.3	0.4	0.5	0.9	1.0	1.
Intangibles, net															84.3	82.8	82.8	82.8	82.8	82.8	82.
Deferred income tax																	0.0	0.0	0.0	0.0	0.
Other														0.0	0.1	1.4	1.4	1.4	1.4	1.4	1.
Total assets	1.8	1.4	0.8	0.3	0.1	0.2	0.5	4.0	15.3	14.1	12.9	11.1	17.3	13.3	91.9	95.3	89.8	84.7	79.6	74.7	69.
Liabilities and stockholders' equity																					
Accounts payable	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.4	0.2	0.6	0.5	0.5	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.
Accrued expenses	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.1	0.1	0.2	0.3	0.5	0.0	0.3	0.7	0.7	0.7	0.7	0.7	0.
Deferred revenue																	0.0	0.0	0.0	0.0	0.
Deferred income tax																	0.0	0.0	0.0	0.0	0.
Warrant liabilities					1.0	0.5	0.9	1.1									0.0	0.0	0.0	0.0	0.0
Other		0.0									0.0	0.0	0.1	0.2	0.2	1.5	1.5	1.5	1.5	1.5	1.5
Short term debt	3.2	3.2	3.1	<u>1.1</u>	1.6	1.5	2.0	1.8	0.2	0.2						0.5	0.5	0.5	0.5	0.5	0.
Total current liabilities	3.3	3.4	3.4	1.4	3.0	2.4	3.5	3.4	0.7	0.6	8.0	8.0	1.1	1.0	1.3	3.6	3.6	3.6	3.6	3.6	3.6
Deferred income taxes																	0.0	0.0	0.0	0.0	0.0
Warrant liabilities																	0.0	0.0	0.0	0.0	0.0
Other long term liabilities																0.0	0.0	0.0	0.0	0.0	0.0
Deferred revenue																	0.0	0.0	0.0	0.0	0.
Long term debt										٠.				٠.		7.5 7.5	7.5 7.5	7.5 7.5	7.5 7.5	7.5 7.5	<u>7.</u>
Total other liabilities	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	7.5	7.5	7.5	7.5	7.5	7.
Preferred stock													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	0.0	0.0	0.0	0.0	0.0	1.2	2.3	3.5	4.7	5.
Additional paid-in capital	18.9	18.9	20.4	21.2	25.9	27.3	28.2	43.5	68.1	70.4	73.1	76.1	97.6	100.8	184.2	185.4	185.4	185.4	185.4	185.4	185.
Retained earnings	(20.4)	(21.0)	(23.0)	(22.3)	(28.8)	(29.5)	(31.2)	(42.9)	(53.5)	(56.9)	(61.0)	(65.8)	(81.4)	(88.5)	(93.6)	(101.2)	(107.9)	(114.2)	(120.4)	(126.5)	(132.
Accumulated other comprehensive in	come																0.0	0.0	0.0	0.0	0.
Other																	0.0	0.0	0.0	0.0	0.
Total stockholders' equity	(1.5)	(2.1)	(2.6)	(1.0)	(2.8)	(2.2)	(3.0)	0.6	14.6	13.5	12.1	10.3	16.2	12.3	90.6	84.2	78.6	73.5	68.5	63.5	58.
Total stockholders' equity and liabili	i 1.8	1.4	0.8	0.3	0.1	0.2	0.5	4.0	15.3	14.1	12.9	11.1	17.3	13.3	91.9	95.3	89.8	84.7	79.6	74.7	69.

Balance	Sheet	Drivers

Bulance Officer Differs																					
	Dec-18	Mar-19	Jun-19	Sep-19	Dec-19	Mar-20	Jun-20	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22	Mar-23	Jun-23	Sep-23	Dec-23
	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4E	Q1E	Q2E	Q3E	Q4E
Prepaid as % of total rev																					
Accounts payable as % of total rev																					ı
Accrued expenses as % of total rev																					
Activity Ratios																					
A/R Days Sales Outstanding																					
Book & Cash Value (per share)																					
Book Value per Share (diluted)	-\$0.32	-\$0.44	-\$0.49	-\$0.14	-\$0.38	-\$0.28	-\$0.35	\$0.04	\$0.52	\$0.47	\$0.42	\$0.35	\$0.56	\$0.42	\$3.10	\$2.48	\$1.64	\$1.36	\$1.26	\$1.16	\$1.07
Cash per Share (diluted)	\$0.37	\$0.28	\$0.15	\$0.04	\$0.01	\$0.03	\$0.06	\$0.23	\$0.54	\$0.48	\$0.43	\$0.36	\$0.57	\$0.39	\$0.23	\$0.31	\$0.10	-\$0.01	-\$0.11	-\$0.20	-\$0.29
Net cash per Share (diluted)	-\$0.30	-\$0.39	-\$0.44	-\$0.11	-\$0.20	-\$0.17	-\$0.18	\$0.13	\$0.53	\$0.47	\$0.43	\$0.36	\$0.57	\$0.39	\$0.23	\$0.07	-\$0.07	-\$0.16	-\$0.26	-\$0.35	-\$0.44

Source: Company reports and Ascendiant Capital Markets estimates



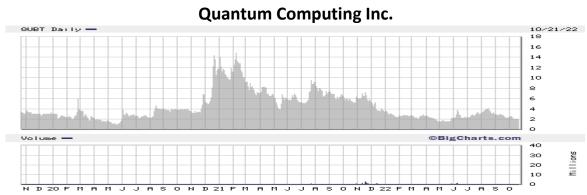
Cash Flow Statement (\$ mils)	2018	Mar-19	Jun-19	Sep-19	Dec-19	2019	Mar-20	Jun-20	Sep-20	Dec-20	2020	Mar-21	Jun-21	Sep-21	Dec-21	2021	Mar-22	Jun-22	Sep-22	Dec-22	2022	Mar-23	Jun-23	Sep-23	Dec-23	2023
iscal Year End: December 31	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4E	FY-E	Q1E	Q2E	Q3E	Q4E	FY-I
	l																									
Cash flow from operating activ	1	(0.0)	(0.0)		(0.5)	(0.1)										(OT 0)				(O. T)	(00.5)			(0.4)	(0.0)	
Net income	(10.5)	(0.6)	(2.0)	0.8	(6.5)	(8.4)	(0.7)	(1.8)	(11.7)	(10.6)	(24.7)	(3.4)	(4.1)	(4.8)	(15.6)	(27.9)	(7.1)	(5.1)	(7.6)	(6.7)	(26.5)	(6.3)	(6.3)	(6.1)	(6.0)	(24
Depreciation Amortization	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 1.5	0.0	0.0 1.7	0.0	0.0	0.0	0.0	(
Debt related amortization exper	l					0.0					0.0					0.0		0.2	1.5		0.0					(
Stock comp	4.0	0.1	1.5	(1.3)		0.0	1.0	(1.1)	7.9	3.4	11.2	2.2	2.5	3.0	2.5	10.2	3.0	0.2	1.2	1.2	5.6	1.2	1.2	1.2	1.2	
Deferred income taxes	4.0	0.1	1.5	(1.5)		0.0	1.0	(1.1)	1.5	3.4	0.0	2.2	2.5	3.0	2.5	0.0	3.0	0.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	
Change in fair value of warrant	4.0				5.7	5.7	(0.6)	0.6	0.9	1.1	1.9				10.7	10.7				0.0	0.0	0.0	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				0.0	0.0	0.1	(0.1)	(0.0)		(0.0)					
Changes in operating assets and	liabilities:																									
Accounts receivable						0.0					0.0					0.0	(0.0)	(0.1)	(0.0)	0.1	0.0	0.0	0.0	0.0	0.0	(
Inventory						0.0					0.0					0.0					0.0					(
Prepaid expenses & other curre	(0.0)	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.3)	0.1	(0.4)	0.1	(0.4)	0.0	0.0	0.1	0.0	0.2	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	0.0	0.0	0.0	0.0	(
Accounts payable	0.1	0.1	(0.0)	0.1	0.1	0.2	(0.0)	0.1	(0.1)	0.2	0.1	(0.1)	0.3	(0.1)	0.0	0.1	0.3	(0.0)	0.1	0.0	0.4	0.0	0.0	0.0	0.0	(
Accrued expenses	0.1	0.1	0.1	(0.1)	0.0	0.1	0.1	0.1	(0.0)	(0.1)	(0.0)	0.0	0.1	0.1	0.3	0.5	(0.5)	0.3	0.4	0.0	0.2	0.0	0.0	0.0	0.0	(
Deferred revenue						0.0					0.0					0.0					0.0					(
Other liabilities						0.0					0.0					0.0		0.1	1.3	0.0	1.4	0.0	0.0	0.0	0.0	2
Net cash (used in) provided by	(2.4)	(0.4)	(0.5)	(0.6)	(0.7)	(2.2)	(0.3)	(2.1)	(3.0)	(6.1)	(11.5)	(1.5)	(1.2)	(2.2)	(1.9)	(6.8)	(4.2)	(4.4)	(3.0)	(5.4)	(17.0)	(5.1)	(5.1)	(4.9)	(4.8)	(19
Cash flow from investing activi	ine																									
Purchases of property and equi				(0.0)	(0.0)	(0.0)	(0.0)			(0.0)	(0.0)	(0.0)		(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.2)	(0.1)	(0.4)	(0.1)	(0.4)	(0.1)	(0.4)	(1
Purchases of short-term investr				(0.0)	(0.0)	0.0	(0.0)			(0.0)	0.0	(0.0)		(0.0)	(0.0)	0.0	(0.0)	(0.1)	(0.2)	(0.1)	0.0	(0.1)	(0.4)	(0.1)	(0.4)	,
Acquisitions	I					0.0					0.0					0.0		(84.6)	0.0		(84.6)					Č
Other						0.0					0.0		(0.0)		(0.0)	(0.0)	(1.2)	1.1	(1.3)		(1.4)					
Net cash used in investing acti	(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)	(1.2)	(83.6)	(1.4)	(0.1)	(86.4)	(0.1)	(0.4)	(0.1)	(0.4)	(1
Cash flow from financing activi																										
Issuance of debt	3.1					0.0		0.2	0.0	0.0	0.2					0.0			8.0	0.0	8.0	0.0	0.0	0.0	0.0	(
Repayment of debt	١		(0.0)		0.5	(1.6)	(0.1)	0.3	(0.3)	(1.6)	(1.6)		(0.2)		0.0	(0.2)		0.1		0.0	0.0					(
Issuance of stock	1.1			2.2		2.2	0.4	2.0	6.7	18.9	28.0	0.1	0.3	(0.0)	8.3	8.6	0.2	0.1		0.0	0.3	0.0	0.0	0.0	0.0	(
Proceeds from stock option exe Other	l					0.0					0.0					0.0 0.0		83.1	0.0		83.1					(
			(0.0)							47.0				(0.0)				83.2								
Cash provided by (used in) fina	4.1	0.0	(0.0)	0.1	0.5	0.6	0.4	2.4	6.5	17.3	26.6	0.1	0.0	(0.0)	8.3	8.4	0.2	83.2	8.0	0.0	91.4	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	1.8	(0.4)	(0.5)	(0.5)	(0.2)	(1.7)	0.1	0.3	3.5	11.2	15.1	(1.4)	(1.1)	(2.2)	6.3	1.5	(5.2)	(4.8)	3.6	(5.5)	(11.9)	(5.2)	(5.5)	(5.1)	(5.2)	(20
Beginning cash and equivalent	0.0	1.8	1.3	0.8	0.3	1.8	0.1	0.2	0.5	4.0	0.1	15.2	13.8	12.6	10.4	15.2	16.7	11.5	6.7	10.4	16.7	4.8	(0.4)	(5.9)	(10.9)	. 4
Ending cash and equivalents	1.8	1.3	0.8	0.3	0.1	0.1	0.2	0.5	4.0	15.2	15.2	13.8	12.6	10.4	16.7	16.7	11.5	6.7	10.4	4.8	4.8	(0.4)	(5.9)	(10.9)	(16.1)	(1)

Ending cash and equivalents 1.8 1.3 0.8 0.3
Source: Company reports and Ascendiant Capital Markets estimates



ANALYST CERTIFICATION

Each analyst hereby certifies that the views expressed in this report reflect the analyst's personal views about the subject securities or issuers. Each analyst also certifies that no part of the analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this report. The analyst who prepared this report is compensated based upon the overall profitability of Ascendiant Capital Markets, LLC, which may, from time to time, include the provision of investment banking, financial advisory and consulting services. Compensation for research is based on effectiveness in generating new ideas for clients, performance of recommendations, accuracy of earnings estimates, and service to clients.



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

	Report Date		Price
Report	Date	Rating	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

 Ascendiant Capital Markets, LLC has received compensation for advisory or investment banking services from the company in the past 12 months.

IMPORTANT DISCLOSURES

This report has been distributed by Ascendiant Capital Markets, LLC and is for the sole use of our clients. This report is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. This report contains information from various sources, including United States government publications, The Wall Street Journal and other periodicals, Yahoo! Finance and other sources, and is for informational purposes only and is not a recommendation to trade in the securities of the companies mentioned within the report. We seek to update our research and recommendations as appropriate, but the large majority of reports are published at irregular intervals as we consider appropriate and, in some cases, as constrained by industry regulations.

We may have a business relationship with companies covered in this report. Ascendiant Capital Markets, LLC may make a market in the securities of the subject company. We and our affiliates, officers, directors, and employees will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives (including options and warrants) thereof of covered companies referred to in this report. This report is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any information in this report is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of the investments referred to in this report may fluctuate.

Following are some general risks that can adversely impact future operational and financial performance and share price valuation: (1) industry fundamentals with respect to legislation, mandates, incentives, customer demand, or product pricing; (2) issues relating



to competing companies or products; (3) unforeseen developments with respect to management, financial condition or accounting policies or practices; or (4) external factors that affect the interest rates, currency, the economy or major segments of the economy. Past performance is not a guide to future performance, future returns are not guaranteed, and loss of original capital may occur. Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Our report is disseminated primarily electronically, and, in some cases, in printed form. The information contained in this report is not incorporated into the contents of our website and should be read independently thereof. Copyright Ascendiant Capital Markets, LLC. No part of this material may be copied, photocopied or duplicated by any means or redistributed without the prior written consent of Ascendiant Capital Markets, LLC.

Risks & Considerations

Risks to attainment of our share price target include balance sheet/liquidity risks, technological changes and customer demand for computer software and SaaS technologies, investor sentiment for investing in technology stocks, consumer sentiment and industry growth for software technology companies, competition, changing macroeconomic factors, and changes in government regulations.

Ascendiant Capital Markets, LLC Rating System

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.

Ascendiant Capital Markets, LLC Rating System

Prior to January 31, 2014, ASCM used the following rating system:

Strong Buy: We expect the stock to provide a total return of 30% or more within a 12-month period.

Buy: We expect the stock to provide a total return of between 10% and 30% within a 12-month period.

Neutral: We expect the stock to provide a total return of between minus 10% and plus 10% within a 12-month period.

Sell: We expect the stock to provide a total return of minus 10% or worse within a 12-month period.

Speculative Buy: This rating is reserved for companies we believe have tremendous potential, but whose stocks are illiquid or

whose equity market capitalizations are very small, often in the definition of a nano cap (below \$50 million in market cap). In general, for stocks ranked in this category, we expect the stock to provide a total return of 50% or more within a 12-month period. However, because of the illiquid nature of the stock's trading and/or the nano

cap nature of the investment, we caution that these investments may not be suitable for all parties.

Total return is defined as price appreciation plus dividend yield.



Ascendiant Capital Markets, LLC Distribution of Investment Ratings (as of October 7, 2022)

Investment Banking Services

			Past 1	.2 months
Rating	Count	Percent	Count	Percent
Buy	43	98%	17	40%
Hold	0	0%	0	0%
Sell	1	2%	0	0%
Total	44	100%	17	39%

Other Important Disclosures

Our analysts use various valuation methodologies including discounted cash flow, price/earnings (P/E), enterprise value/EBITDAS, and P/E to growth rate, among others. Risks to our price targets include failure to achieve financial results, product risk, regulatory risk, general market conditions, and the risk of a change in economic conditions.

Dissemination of Research

Ascendiant Capital Markets, LLC research is distributed electronically via the Thomson Reuters platforms, Bloomberg, Capital IQ and FactSet. Please contact your investment advisor or institutional salesperson for more information.

General Disclaimer

The information and opinions in this report were prepared by Ascendiant Capital Markets, LLC. This information is not intended to be used as the primary basis of investment decisions and because of individual client objectives it should not be construed as advice designed to meet the particular investment needs of any investor. This material is for information purposes only and is not an offer or solicitation with respect to the purchase or sale of any security. The reader should assume that Ascendiant Capital Markets, LLC may have a conflict of interest and should not rely solely on this report in evaluating whether or not to buy or sell securities of issuers discussed herein. The opinions, estimates, and projections contained in this report are those of Ascendiant Capital Markets, LLC as of the date of this report and are subject to change without notice. Ascendiant Capital Markets, LLC endeavors to ensure that the contents have been compiled or derived from sources that we believe are reliable and contain information and opinions that are accurate and complete. However, Ascendiant Capital Markets, LLC makes no representation or warranty, express or implied, in respect thereof, takes no responsibility for any errors and omissions contained herein, and accepts no liability whatsoever for any loss arising from any use of, or reliance on, this report or its contents. Information may be available to Ascendiant Capital Markets, LLC, or its affiliates that is not reflected in this report. This report is not to be construed as an offer or solicitation to buy or sell any security.

Additional Disclosures

Ascendiant Capital Markets, LLC is a broker-dealer registered with the United States Securities and Exchange Commission (SEC) and a member of the FINRA and SIPC. Ascendiant Capital Markets, LLC is not a Registered Investment Advisor nor is it an investment advisor registered with the Securities and Exchange Commission or with the securities regulators of any state, and at the present time is not eligible to file for federal registration.