United States
Technology

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Quantum Computing Inc.

Initiating Coverage with BUY and $11 Target

Strong growth potential for its quantum software as quantum computing industry grows. We expect initial commercialization and strong growth over the next year to be positive for stock.

COVERAGE INITIATION

Rating: BUY

Ticker: QUBT

Price: $6.25

Target: $11.00

Initiating with BUY: We are initiating coverage of Quantum Computing with a BUY rating. Quantum is an early-stage software development company focused on classical and quantum software for complex optimization computations.

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 amount of 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. According to Grand View Research, the High-Performance computing market was valued at $35 billion in 2018 and is expected to reach a value of $60 billion by 2025.

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.

Still very early stage: Quantum's recent financial performance is reflective of its developmental and early commercialization stage. In its Q2 FY21 report, the company reported no revenue and net loss was $4.1 million (EPS was $(0.14)). We do not expect the company to begin revenue generation until 2022, with profitability likely at least several years away. 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 begin to generate and grow revenue quickly.

Growth is key: We believe that the biggest potential variable and challenge to our financial model is the ability of the company to successfully commercialize and grow its quantum computing platforms (both in the increase in number of customers and in revenue per customer).

However, challenges exist: Quantum operates in a highly competitive environment and competes against a wide range of other technology or software companies. Quantum computing technologies and software are constantly changing and improving, so this requires Quantum to constantly invest in its technology and software products. If Quantum is unable to keep its products innovative and useful, it may find its products obsolete.

Positive high risks versus rewards: Overall, concerns outweighed by growth prospects and valuation. We believe the demand for its software and services will grow fueled by continued growth and advances in quantum computing. We believe the ~billion dollars market potentials presents high rewards for the risks.

Current valuation attractive: We calculate a 12-month price target for shares of Quantum to be $11 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 an early-stage software development company focused on classical and quantum software for complex optimization computations.

Stock Data

Exchange:	NasdaqCM
52-week Range:	3.00 – 25.07
Shares Outstanding (million):	29
Market cap ($million):	$181
EV ($million):	$168
Debt ($million):	$0
Cash ($million):	$13
Avg. Daily Trading Vol. ($million):	$1
Float (million shares):	22
Short Interest (million shares):	1
Dividend, annual (yield):	$0 (NA%)

Revenues (US$ million)

	2020A (Cur.)	2021E (Cur.)	2022E (Cur.)
Q1 Mar	0A	0A	0.1E
Q2 Jun	0A	0A	0.2E
Q3 Sep	0A	0E	0.4E
Q4 Dec	0A	0E	1.3E
Total	**0A**	**0E**	**2.0E**
EV/Revs	N/A	N/A	84x

Earnings per Share (pro forma)

	2020A (Cur.)	2021E (Cur.)	2022E (Cur.)
Q1 Mar	(0.09)A	(0.12)A	(0.14)E
Q2 Jun	(0.21)A	(0.14)A	(0.14)E
Q3 Sep	(0.68)A	(0.15)E	(0.14)E
Q4 Dec	(0.38)A	(0.15)E	(0.12)E
Total	**(0.88)A**	**(0.55)E**	**(0.54)E**
P/E	N/A	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 31.

Exhibit 1: Quantum Computing Inc. Stock Price (5-Years)

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

INVESTMENT THESIS

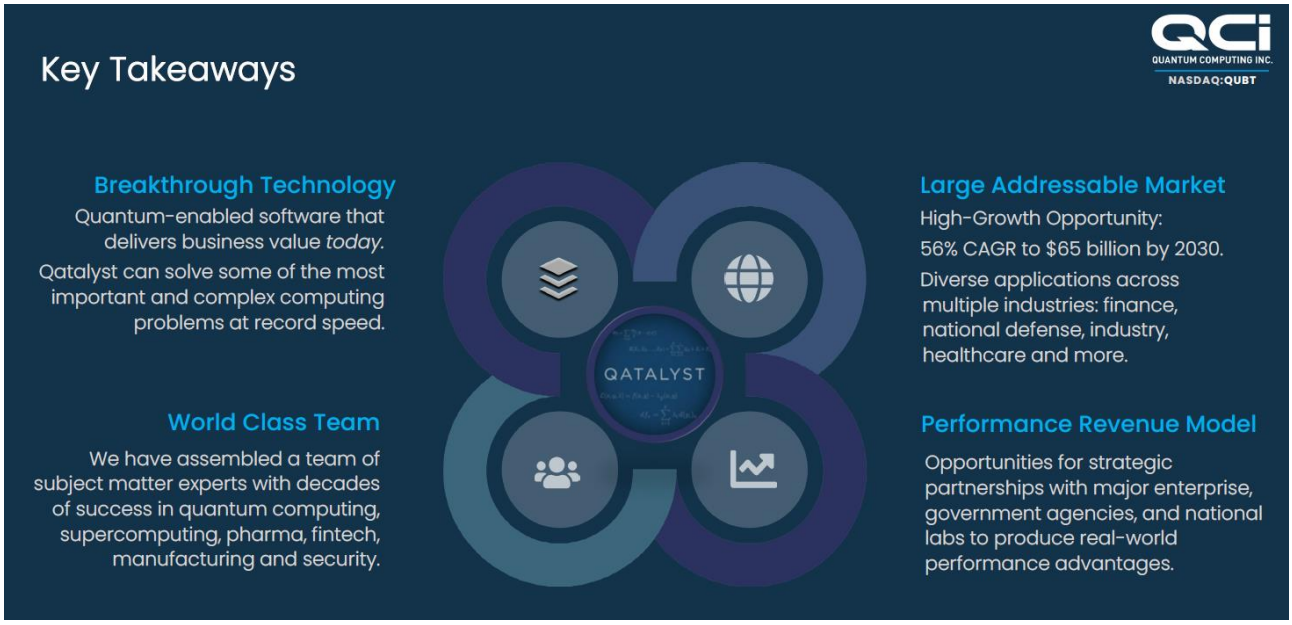
We are initiating coverage of Quantum Computing with a BUY rating and a 12-month price target of $11.00.

Based in Leesburg, VA, Quantum Computing is an early-stage software development company focused on classical and quantum software for complex optimization computations. Quantum was founded in 2018 by leaders in supercomputing, mathematics, and massively parallel programming to solve the major software development challenges inherent with quantum computing.

The company is currently developing "quantum ready" software tools, applications, and solutions for companies that want to utilize the potential of quantum computing. The company is initially focusing on addressing computational problems in the financial services, supply chain and logistics management, pharmaceutical design, heavy manufacturing, and computer security (cyber) market segments.

Quantum's flagship software solution, Qatalyst, is a ready-to-run quantum and classical software for optimization computations, empowering today's subject matter experts (SMEs) to leverage the power of quantum techniques for faster, better, and more diverse business decisions. Quantum computing is a fundamentally new paradigm compared with conventional silicon-based computing, requiring a new and highly technical set of skills to create the software that will drive quantum results. In order to address the steep learning curve and highly particular skillset associated with quantum computing, the company is developing "quantum ready" software applications and solutions for commercial and government entities looking to leverage the expected future performance of quantum computing.

Exhibit 2: Quantum Computing Inc. Overview



Source: Company reports.

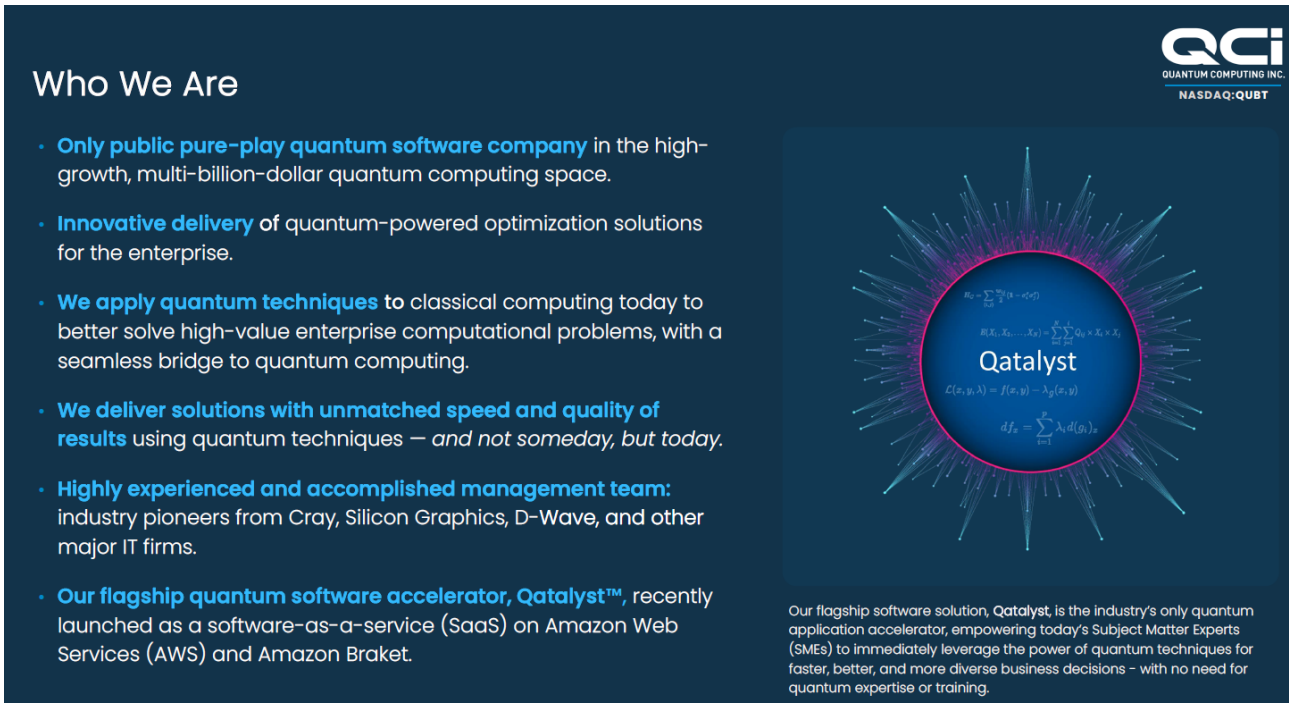
A quantum computer is a type of computer that uses quantum mechanics (the physical properties of atoms and subatomic particles) so that it can perform certain kinds of computation more efficiently and effectively than a traditional regular ("classical") computer. Quantum computing utilizes the properties of quantum mechanics to deliver large technological leaps forward in computation to solve certain complex problems.

Quantum computers process information in a fundamentally different way than classical computers. Quantum computers are designed to solve complex problems that today's most powerful supercomputers cannot solve.

Quantum computers are not meant to replace classic computers, but to supplement classic computers by solving very complex calculations (particularly those with many input and output variables). 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. Computationally intensive applications include optimization, data management and storage, analytics, and complex modeling. According to Grand View Research, the High-Performance computing market was valued at $35 billion in 2018 and is expected to reach a value of $60 billion by 2025.

As quantum computing hardware continues to advance, we expect a corresponding growth in demand for software capable of leveraging the large computing capabilities of quantum computing hardware. According to an article in the August 2018 issue of WIRED Magazine, CB Insights estimate that $241 million has been invested in quantum hardware and software startup businesses. In addition, the U.S. Government has committed $1.3 billion to funding quantum information science programs under the National Quantum Initiative enacted in 2018.

Exhibit 3: Quantum Computing Investment Highlights



Source: Company reports.

Quantum is developing hardware agnostic software capable of delivering high-performance computing capabilities to various industries while mitigating dependency risks that may emerge from various competing quantum computing hardware vendors (which at this point leadership is still undetermined). By being early in this rapidly growing industry, we believe Quantum is well-positioned to capture and drive a meaningful amount of market share and industry growth.

Exhibit 4: Quantum's Market Opportunity

Source: Company reports.

Quantum's recent financial performance is reflective of its developmental and early commercialization stage. In its Q2 FY21 report (on August 16, 2021), the company reported no revenue and net loss was $4.1 million (EPS was $(0.14)). We do not expect the company to begin revenue generation until 2022, with profitability likely at least several years away. The company, having recently launched several of its initial products, is currently focusing on sales and marketing of its products.

For 2021, we expect no revenue and net loss of $16 million and EPS of $(0.55). For 2022, we expect revenue of $2 million and a net loss of $16 million and EPS of $(0.54). We believe investors should be focused on its commercialization of its software, which we believe within the next year, the company should begin to generate and grow revenue quickly.

The company's balance sheet had $13 million in cash and no debt as of June 2021. We believe the company has enough cash through 2022, after which it will likely need to raise additional capital. Quantum recently (in July 2021) uplisted trading in its stock to the Nasdaq Capital Market from OTCQB.

Our investment thesis factors in an uncertain commercialization process for its quantum software platform, a very competitive industry, uncertain macro environment, and balance sheet and investment uncertainties which is offset by the very large potential upside opportunities created from successful commercialization and growth. We believe that the current valuation for Quantum has already factored in many of its risks (principally its ability to generate and grow revenues and customers) but is under valuing its overall growth and product prospects, resulting in a positive risk versus reward scenario for an investment in Quantum.

We believe the current valuation is attractive.

Based on our expectations and assumptions and our NPV analysis, we calculate a 12-month price target for shares of Quantum to be $11.00, representing significant upside from 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. We acknowledge that Quantum is still at a very early stage in its product commercialization, but we believe key product and commercial milestones over the next year should be positive catalysts for the stock.

INVESTMENT RISKS

Growth and Commercialization Risks

Quantum's goal is to develop and grow its quantum and classical software platform by increasing its customer base and to grow its product offerings. To be successful, Quantum will need to increase awareness to its target market (enterprise customers) and to demonstrate superiority (more effective, lower costs, and/or better technologies) of its software and services. While the company has developed leading software products, the company has not recognized any sales to date while generating financial losses. The market for quantum software is still very early and is characterized by frequent technological developments and innovations, new product and services, and evolving technology industry standards. This will require Quantum to develop its technologies, services, expertise and reputation, and continue to improve the effectiveness and ease of use of its software and services. While the market opportunities are large, there are always significant risks to grow (add new customers) and commercialize new products (grow or maintain revenue per customers).

Major Concentration in Quantum Computing

The company is focused on quantum computing which is still at an early stage of development and its usage is limited. There is a very limited market now for quantum computers as classical computing still dominates the entire computing market. While the company is developing software for classical computers, it is likely to be less successful if quantum computing does not become a viable platform or product. Any substantial reduction in market opportunities for quantum computing is likely to reduce market opportunities and sales to customers and would have an adverse effect on its operations and financial results. If Quantum were to experience difficulties with commercialization or expansion of its customers or products, then it would have a material negative impact on its business and financials as there may not be any meaningful products or customers that can offset (particularly in the near term).

Competition

Quantum operates in a highly competitive environment and competes against a wide range of other technology or software companies that are attempting to replicate or have better technologies than the company's main quantum software platform. Although Quantum believes that its products and services are superior to competing products and technologies, there are always the possibility of new entrants or difficulties with existing competition. Quantum competes primarily with very large software technology companies offering quantum-based software and hardware solutions along with traditional enterprise software and services. Many of these competitors are much larger, have greater resources, very large customer base, and proprietary technology; which could result in lower projected sales for Quantum software and at higher costs, reduced margins, and lowered profitability for the company.

Technology Risks

Technologies and software are constantly changing and improving due to new technologies and changing business and consumer demands. This requires a company like Quantum to constantly invest in its technology and software products. This is much more the case for Quantum since they are focusing on quantum computing technology which itself is not yet established and is still very early in its development as a viable computing platform. If Quantum is unable to keep its products innovative and useful, it may find its products obsolete.

Coronavirus and Economic Uncertainties

General enterprise software spending tends to be correlated with economic activity and income levels due to their discretionary nature, so major deterioration in economic conditions tends to result in an overall decline in consumer and enterprise spending. This was demonstrated during the 2008 and 2009 Great Recession and global economic slowdown. While enterprise and consumer spending levels and economic conditions have rebounded since and have been strong the past several years, the global macroeconomic environment can change significantly quickly as was shown with last year's start of the pandemic in March 2020. Since then, due to huge government stimulus the U.S. economy is now very strong. However, the pandemic has still negatively impacted many businesses and has been a huge disruption to the U.S. (and global) economy. Further economic disruptions and weakness may result in depressed enterprise and consumer spending levels; this may have a negative impact on Quantum, its business partners, government, and consumers.

Capital Markets Risks

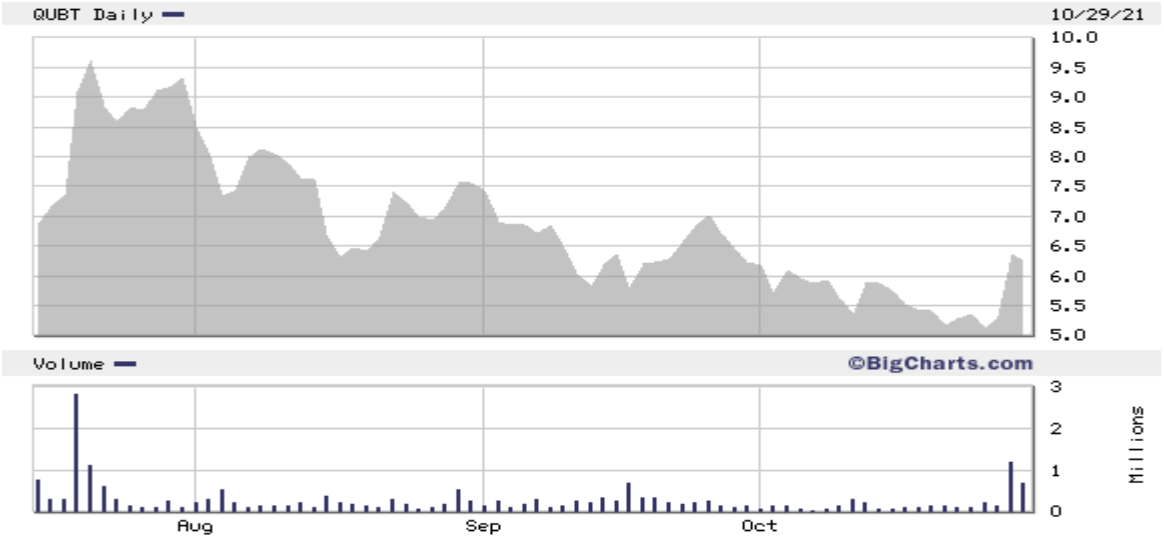
We believe Quantum has enough cash to fund its operations through 2022, but we estimate that it will need to raise capital by 2023. We believe that it will be at least several years before the company can be cash flow self-sufficient from operations. Many early stage software technology companies fund their operations from the sale of equity or debt capital until their products or services reach commercial success. Early stage software technology companies valuations tend to fluctuate widely, particularly in the past year with the volatility in the markets. There is always the chance that market interests and valuations for companies in this industry can decline significantly. The share price volatility in the past year (with a stock price range of $3.00 – 25.07) in Quantum's share price may make capital raising much more difficult and expensive.

VALUATION

We are initiating coverage of Quantum Computing with a BUY rating and a 12-month price target of $11.00, which is based on a NPV analysis. As the company is an early stage software development company, it currently generates no revenue and significant losses so traditional valuation metrics are not useful. We believe a more accurate valuation should take into consideration the potential value of its product pipeline. We do acknowledge that this valuation is complex and requires a large number of forward assumptions that we have to estimate that may be imprecise and may vary significantly from actual results. This is particularly so for a company like Quantum which is still in early commercialization/pre-revenue with its main software products.

However, we believe our assumptions are fair and provide a reasonable basis for our valuation analysis. Our analysis considers future estimated revenue from each of its major product pipelines (based on estimated future sales, a probability rate of success, and discounted this back to a current value), currently focused on its Qatalyst software. We apply a high discount rate to capture the high uncertainties associated generally with software development. We then added up the values, made an assumption about future investments required and allocated the value based on current share count. Based on our NPV analysis, we arrived at our 12-month price target of $11.00, which we believe appropriately balances out the company's risks with its high growth prospects.

Exhibit 5: Quantum's Stock Price (since uplisting to Nasdaq Capital Market from OTCQB on July 15, 2021)



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

Quantum just recently (in July 2021) uplisted trading in its stock to the Nasdaq Capital Market from OTCQB. As such, there is not a lot of share price trading history for the company yet on NASDAQ. We note that trading of its shares when it was on OTC were volatile as is typical of most OTC stocks. Though the share price since the uplisting has been about flat (it closed at $6.88 the first day it was uplisted on July 15, 2021), the stock has traded in a volatile range of $5.03 – 10.43. We believe this is more likely due to general stock price volatility with small/microcap technology stocks. We believe that there are near term catalysts that can drive the stock (particularly for key commercial milestones expected in 2021/22). As the company is likely to make significant progress (and milestones) in its software development and product commercialization over the next several years, we believe this will result in much improved visibility into future cash flows and higher share price. Although it is very likely that the company will have to keep raising capital to achieve its product commercialization goals, we believe that positive progress will make future financings accretive to current shareholders.

We expect valuations for Quantum to improve as visibility into cash flow generation becomes clearer, resulting in significant upside to the current share price. We also want to note that investor's interest in software development and technology companies are very high with many companies in this area attributed high valuations due to the large market and growth opportunities.

Exhibit 6: Company Valuation (DCF)

Valuation of Products (in millions)

Product	Calculated NPV	Discount Rate	Estimated Annual Profits
Quantum Computing Software	$ 326	20%	$ 65
Total	**$ 326**		
Estimated additional investments required	$ 20		
Net cash	$ 13		
Current Value for existing shareholders	$ 319		
Shares Outstanding (mils)	29		
Estimated Value per share	**$ 11.00**		

Source: Ascendiant Capital Markets estimates

COMPANY

Based in Leesburg, VA, Quantum Computing is an early-stage software development company focused on classical and quantum software for complex optimization computations. The company is currently developing "quantum ready" software tools, applications, and solutions for companies that want to utilize the potential of quantum computing. The company is initially focusing on addressing computational problems in the financial services, supply chain and logistics management, pharmaceutical design, heavy manufacturing, and computer security (cyber) market segments.

Quantum's flagship software solution, Qatalyst, is a ready-to-run quantum and classical software for optimization computations, empowering today's subject matter experts (SMEs) to leverage the power of quantum techniques for faster, better, and more diverse business decisions. Quantum computing is a fundamentally new paradigm compared with conventional silicon-based computing, requiring a new and highly technical set of skills to create the software that will drive quantum results. In order to address the steep learning curve and highly particular skillset associated with quantum computing, the company is developing "quantum ready" software applications and solutions for commercial and government entities looking to leverage the expected future performance of quantum computing.

Quantum Computing Inc. (under various legal entities and businesses since 2001) was initially incorporated in 2001. However, the current iteration of the company under Quantum Computing Inc. was formed in 2018. Quantum was founded in 2018 by leaders in supercomputing, mathematics, and massively parallel programming to solve the enormous software development challenges inherent with quantum computing.

Quantum recently (in July 2021) uplisted trading in its stock to the Nasdaq Capital Market from OTCQB. As of March 2021, Quantum has ~15 full time employees, with most of them focused on product and software development.

Exhibit 7: Quantum's Management Team

Name	Current Age	Position
Robert Liscouski	67	Chairman of the Board of Directors, President, and Chief Executive Officer (Principal Executive Officer)
Christopher Roberts	67	Chief Financial Officer, (Principal Financial Officer) (Principal Accounting Officer), Director

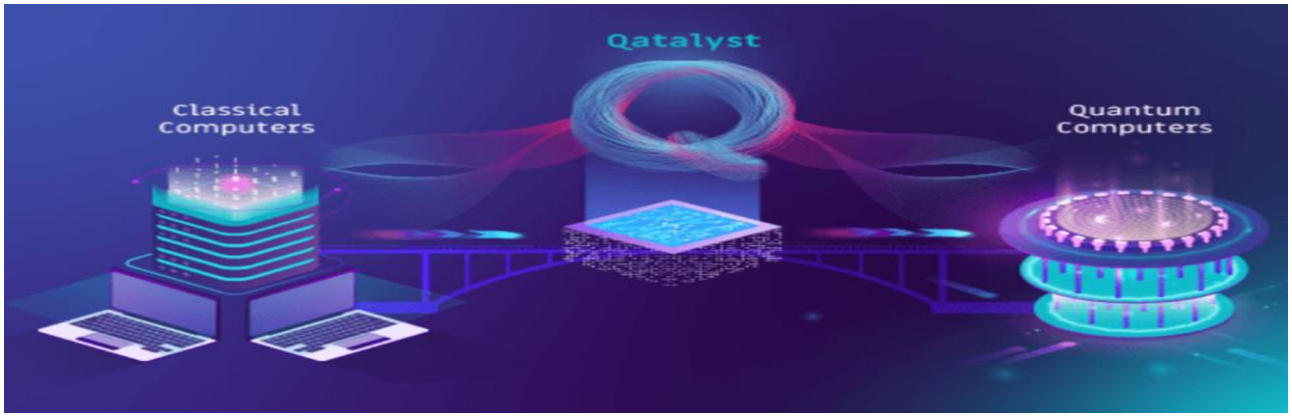
Source: Company reports.

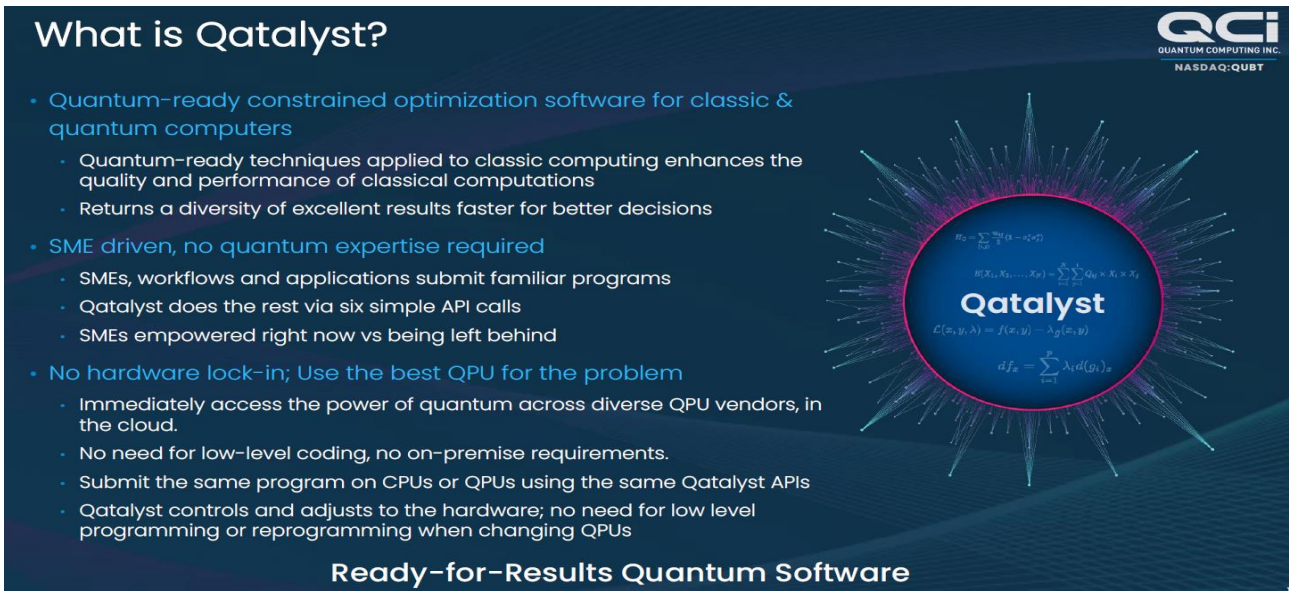
PRODUCT

Quantum is a classical and quantum software developer and vendor, offering ready-to-run software for complex optimization computations. The company is currently developing "quantum ready" software applications and solutions for companies that want to utilize the potential expected performance and advantages of quantum computing. These include quantum computer-ready software application, analytics, and tools, using non-quantum and quantum processors. The company's flagship solution, Qatalyst, is a ready-to-run quantum and classical software for optimization computations.

Quantum computing is a fundamentally new paradigm compared with conventional classical computing, requiring a new and highly technical set of skills to create the software that will drive results. Organizations seeking to gain advantage from the promise of quantum technology must acquire and develop skills in quantum mechanics, mathematics and physics, and a deep knowledge of the ever-changing quantum hardware. By reducing the barriers to adoption for commercial and government entities in using quantum computing technologies to solve their most complex problems, we believe its products will accelerate quantum technology adoption.

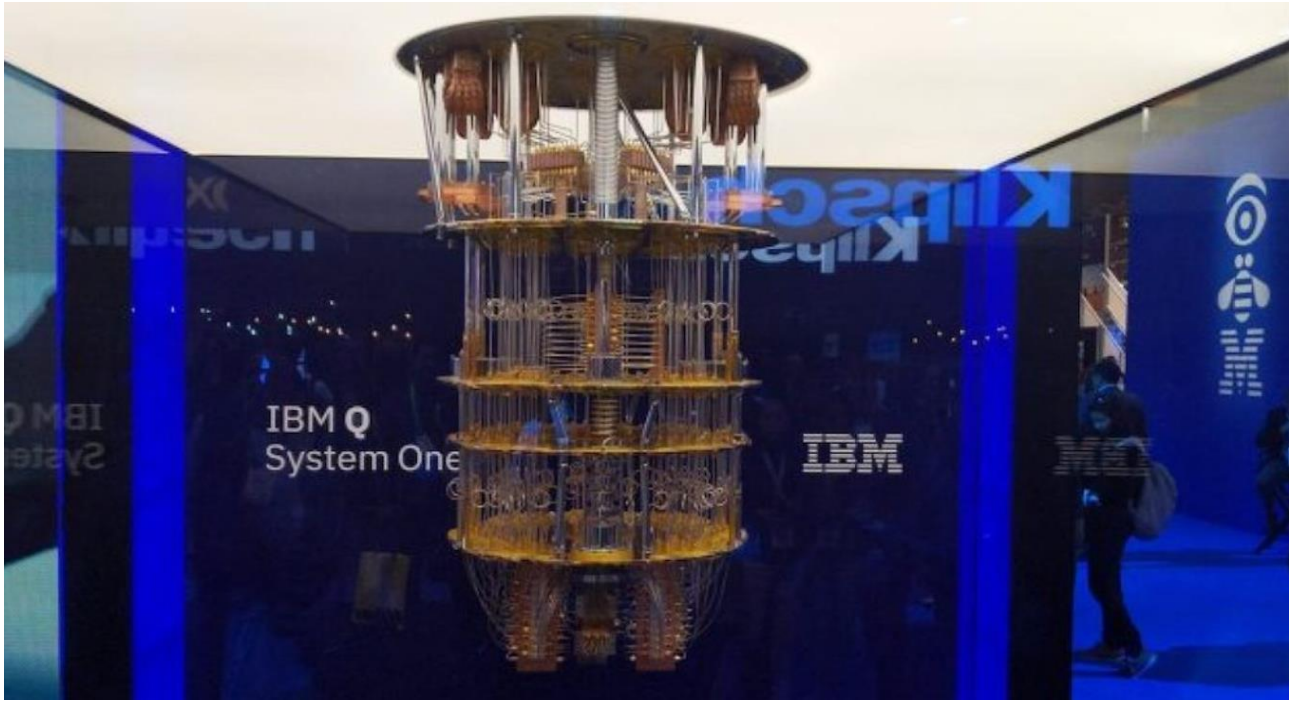
Exhibit 8: Quantum Computing's Qatalyst Software Solutions



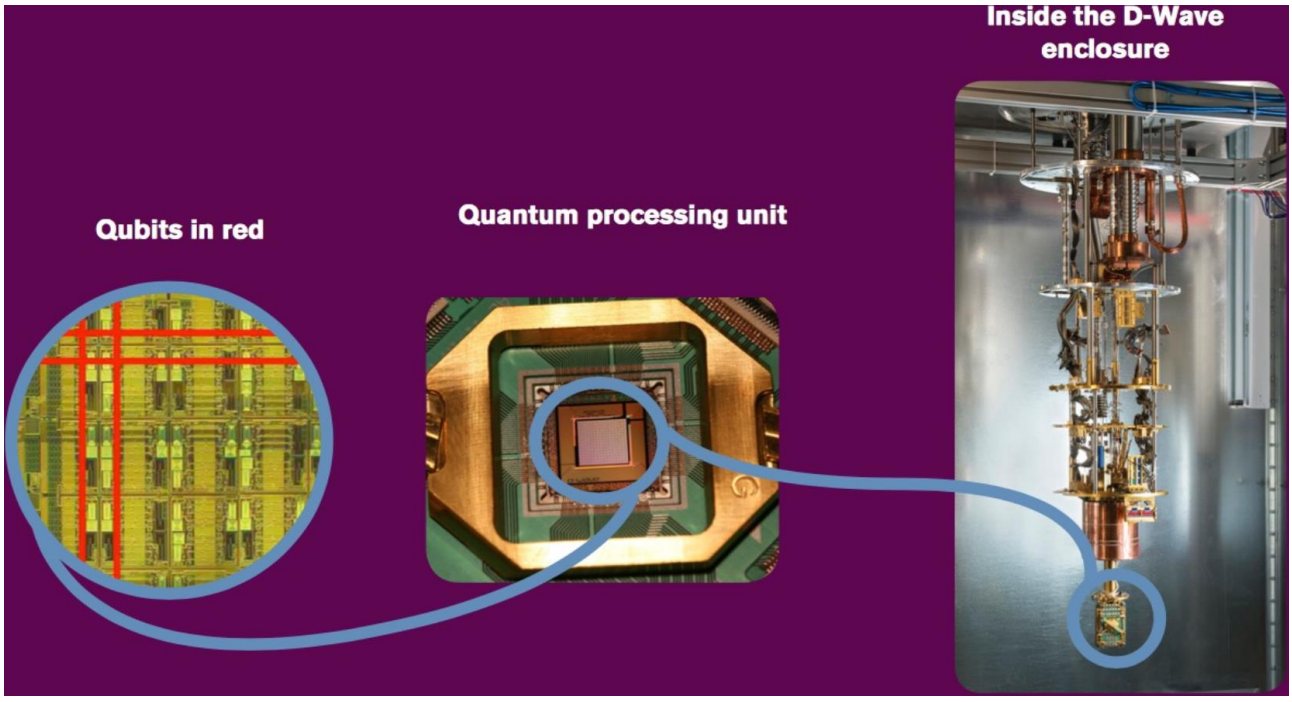


Source: Company reports.

Exhibit 9: Quantum Computers



Source: https://www.ibm.com/quantum-computing/what-is-quantum-computing/



Source: https://www.datasciencecentral.com/profiles/blogs/understanding-the-quantum-computing-landscape-today-buy-rent-or-w

A quantum computer is a type of computer that uses quantum mechanics so that it can perform certain kinds of computation more efficiently and effectively than a traditional regular (“classical”) computer. Quantum computing utilizes the properties of quantum mechanics to deliver large technological leaps forward in computation to solve certain complex problems.

These are the main terms to help explain quantum computing:

- **Quantum** - The word quantum in "quantum computing" refers to the quantum mechanics that the computer system uses to calculate outputs. In physics, a quantum is the smallest possible unit of any physical property and usually refers to atomic or subatomic particles, such as electrons, neutrinos, and photons. Quantum mechanics refers to the physics of the physical properties of quantum.

- **Qubit** - A qubit is the basic unit of information in quantum computing. Qubits play a similar role in quantum computing as bits play in classical computing, but there is one major difference. Classical bits are binary and can only be 0 or 1, but qubits can hold a superposition (the ability of a quantum system to be in multiple states at the same time until it is measured) of all possible states.

- **Quantum Computing** - Quantum computers uses the unique behavior of quantum physics — such as superposition, entanglement (where two particles are inextricably linked together no matter how far their separation is from one another), and quantum interference (the behavior of a qubit to influence its probability outcomes) — and apply it to computing.

Quantum computers process information in a fundamentally different way than classical computers. Traditional computers operate on binary bits — information processed in the form of ones (“1”) or zeroes (“0”). But quantum computers process information via quantum bits, or qubits, which can exist either as one or zero or both simultaneously.

Quantum computers are designed to solve complex problems that today's most powerful supercomputers cannot solve. These supercomputers are very large classical computers, often with thousands of classical CPU and GPU cores. However, supercomputers are not very good at solving certain types of complex problems.

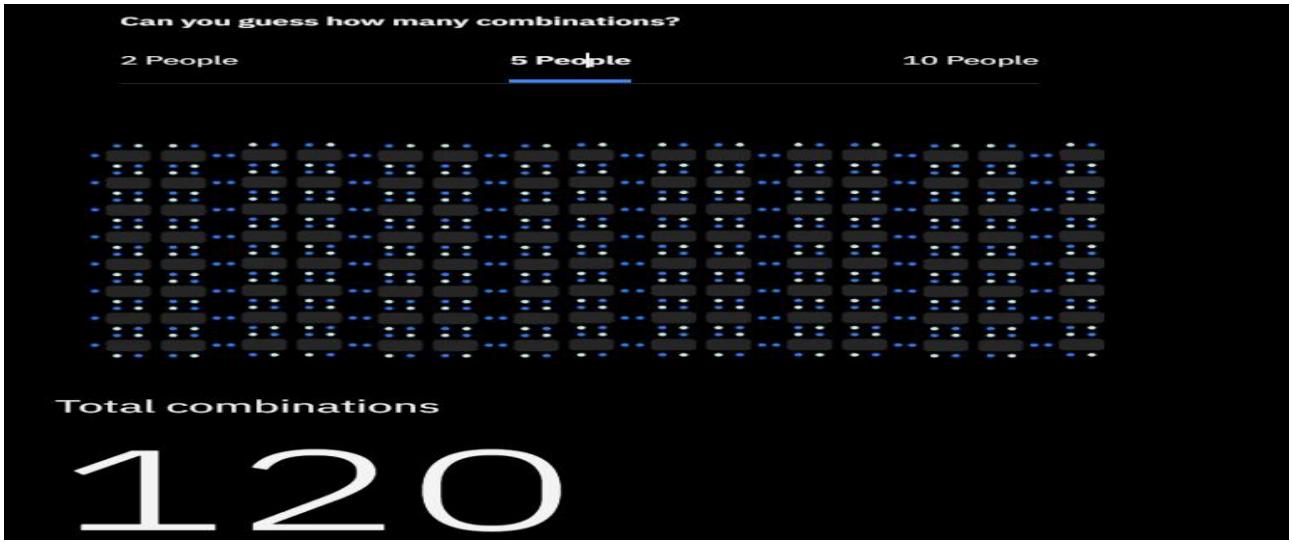
Quantum computers are not meant to replace classic computers, but to supplement classic computers by solving very complex calculations (particularly those with many input and output variables). Quantum computers do not give precise straightforward answers like classical computers do. Classical computations are quite simple: You provide an input (“question”), the computer processes it, and you end up with an output (“answer”). Quantum computations take a range of different inputs and return a range of output possibilities. Instead of getting an exact straightforward answer, you get an estimate or probabilities of a range of different outputs (“answers”).

An Illustration – Dinner for 10 ----------

Imagine you want to seat 10 people at a dinner party, where there is only one optimal seating plan out of all the many different possible combinations that will make everybody the happiest. How many different combinations would you have to examine before you find the optimal seating?

As shown on the following exhibit, as input variables (# of people) increase, the outcome probabilities rise exponentially. This greatly increases the time for a classical computer to perform the calculation, but for a quantum computer, the calculation time can be reduced significantly (by 99% or more).

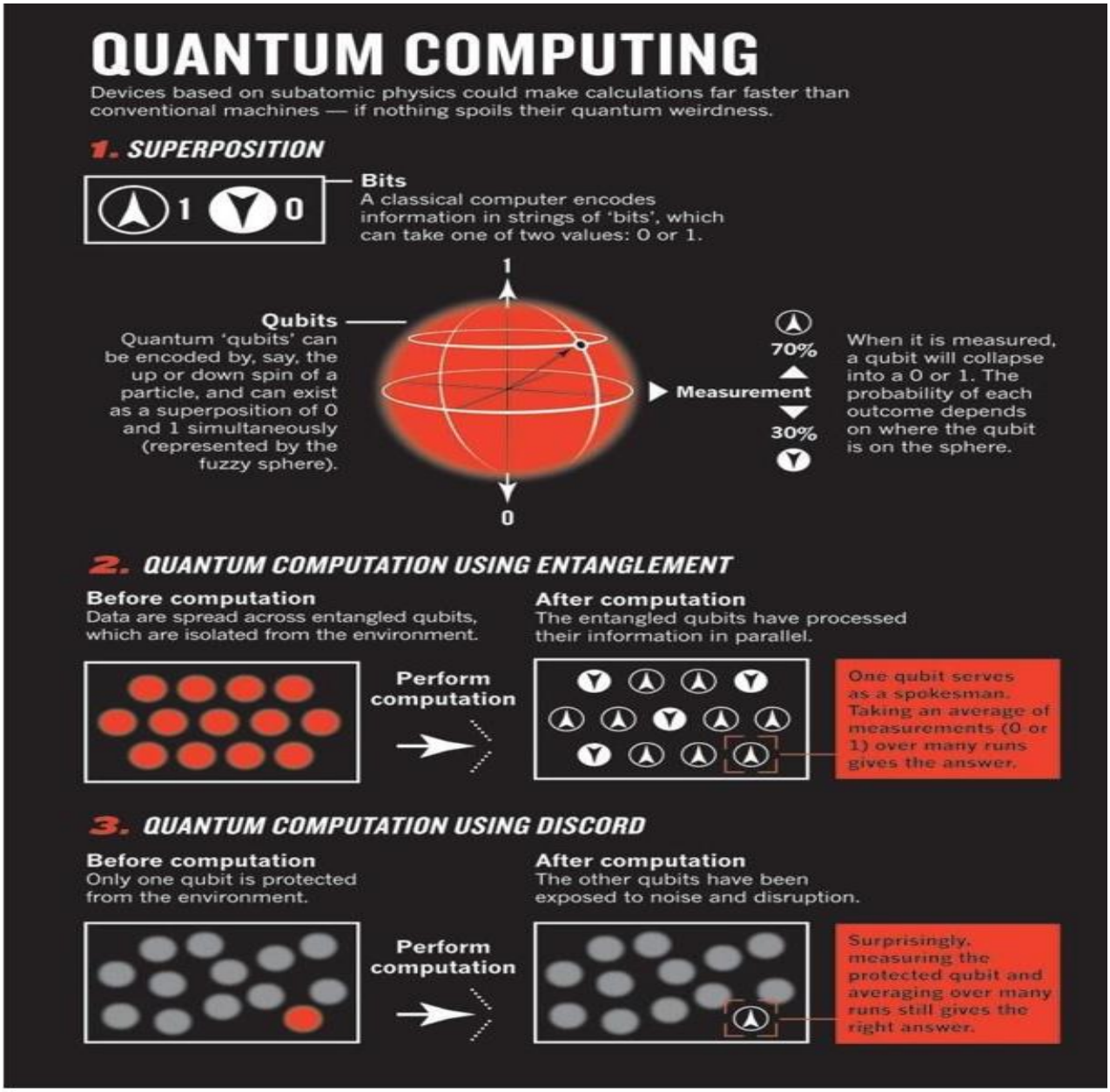
Exhibit 10: Exponential Problems – "Can you guess how many combinations?"



Source: IBM, https://www.ibm.com/quantum-computing/what-is-quantum-computing/

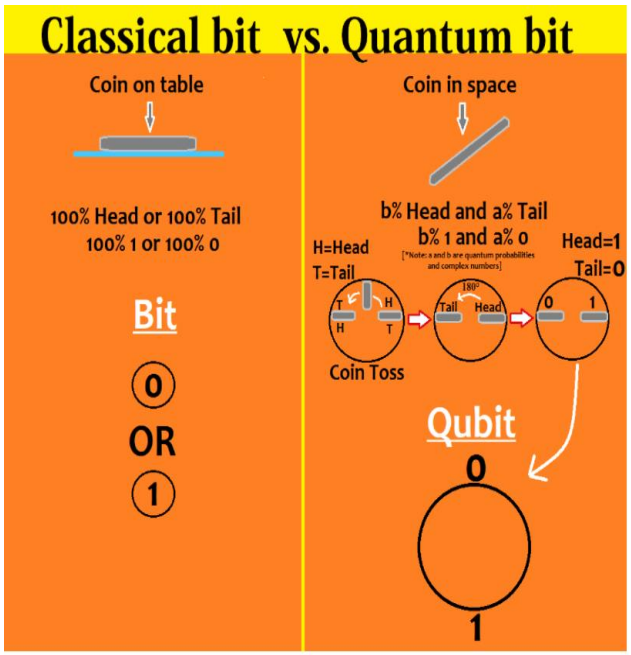
For about the past 50 years, silicon-based computer chip processor manufacturers (such as Intel) have been able to double their processing power every 18 to 24 months, a phenomenon known in the computer industry as "Moore's Law." Recently, the computer chip industry has found it increasingly difficult to offer faster, more powerful processors due to fundamental physical effects limiting further size reduction of transistors. 10nm (nanometers or one billionth of a meter) chips are common now with 7nm, 5nm, and even 3nm size chips coming soon, but the limits of size will be challenged by quantum physics (atoms sizes are 0.1 – 0.5 nm). Quantum computing is a potential solution to the hard physical limits now being approached by classical computers using silicon based chips.

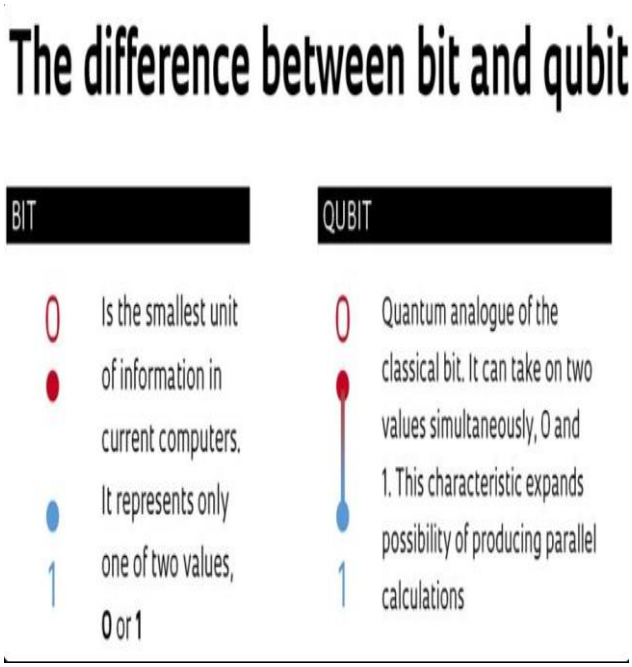
Exhibit 11: Quantum Computing Technical Overview



Source: https://www.pinterest.com/pin/295408056801796775/visual-search/?x=16&y=16&w=530&h=671&cropSource=6

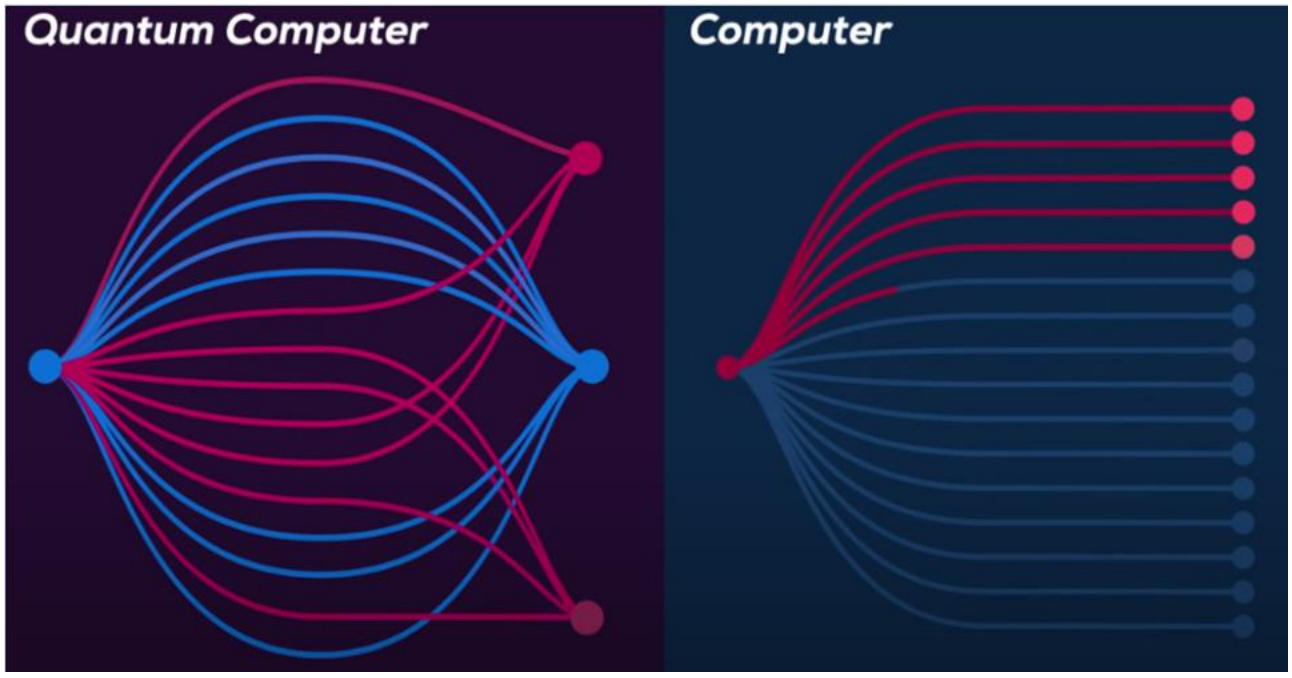
Exhibit 12: Classic Computing Bits vs. Quantum Computing Bits





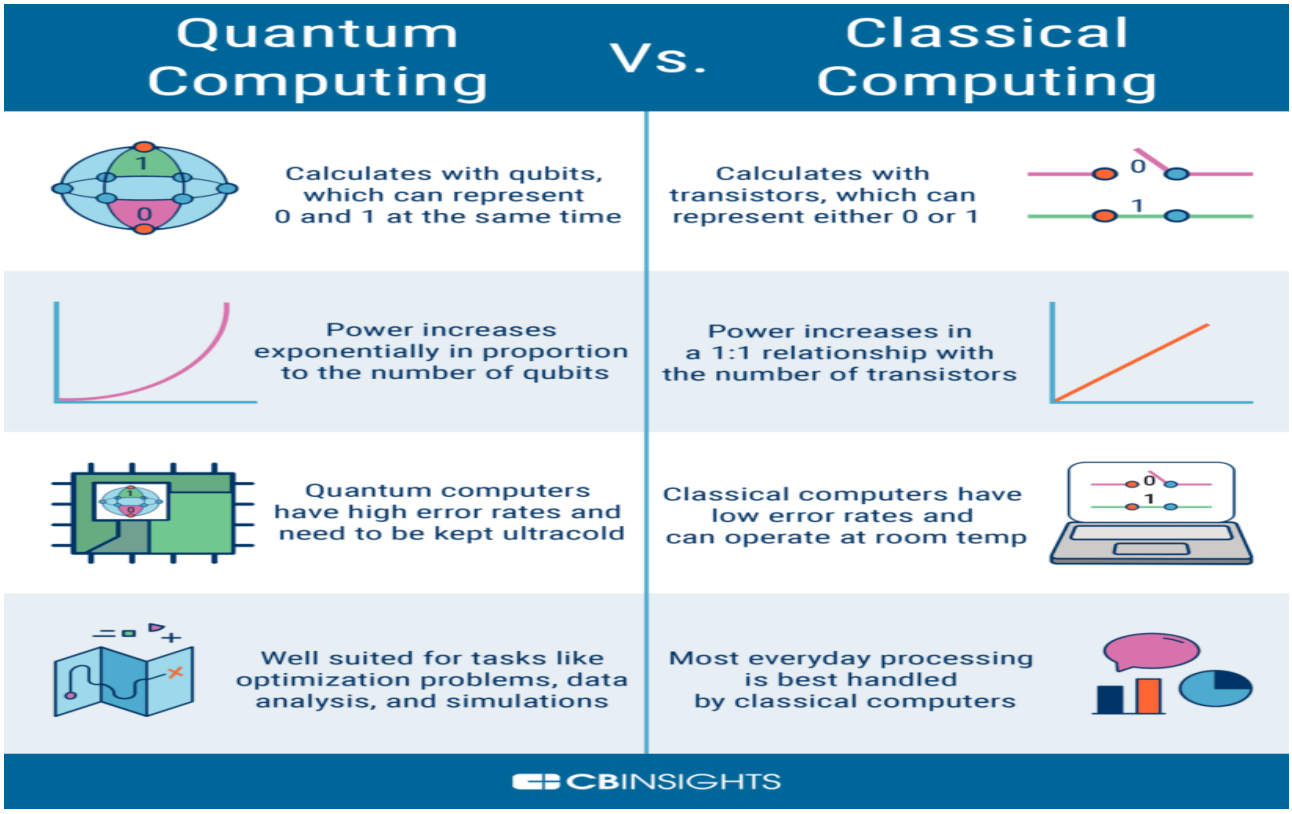
https://byte-man.com/quantum-of-computer/

https://lifeboat.com/blog/2016/08/quantum-computing-and-cryptocurrencies-are-steemit-and-bitcoin-safe

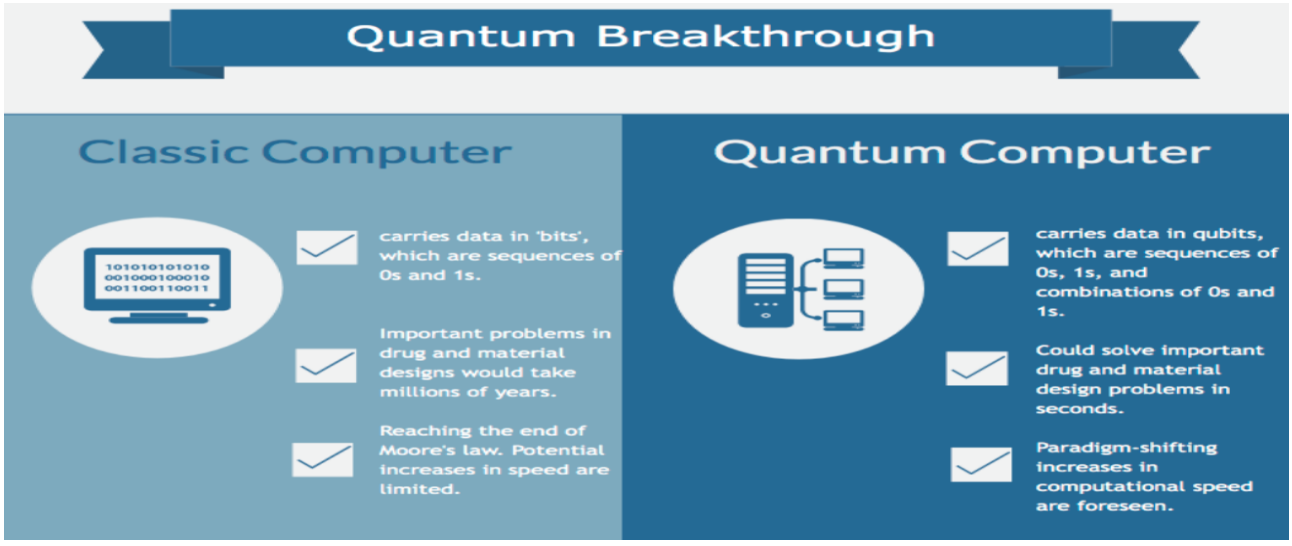


Source: https://www.pinterest.com/pin/295408056801796775/visual-search/?x=16&y=16&w=530&h=671&cropSource=6.

Exhibit 13: Quantum Computing vs. Classical Computing



Source: www.cbinsights.com



Source: https://advocacy.ucla.edu/ucla-researchers-bring-quantum-computing-revolution-to-washington-d-c/quantum-computing-infographic/

Additionally, conventional computers struggle with optimization problems known as NP-complete problems, which are a class of mathematical problems that can be solved by conventional computers, but the time to solve grows exponentially with the size of the problem. These complex calculations cannot currently be performed in any reasonable amount of time using conventional computer systems. Quantum computers may be ideally suited to run these types of optimization algorithms.

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. Computationally intensive applications include optimization, data management and storage, analytics, and complex modeling. According to Grand View Research, the High-Performance computing market was valued at $35 billion in 2018 and is expected to reach a value of $60 billion by 2025.

Quantum computing is still an early but rapidly developing technology that has shown promise in delivering potentially disruptive computing capabilities. As quantum computing hardware continues to advance, we expect a corresponding growth in demand for software capable of leveraging the large computing capabilities of quantum computing hardware.

According to an article in the August 2018 issue of WIRED Magazine, CB Insights estimate that $241 million has been invested in quantum hardware and software startup businesses. In addition, the U.S. Government has committed $1.3 billion to funding quantum information science programs under the National Quantum Initiative enacted in 2018.

Exhibit 14: Quantum Computer Reality Check

Source: Company reports.

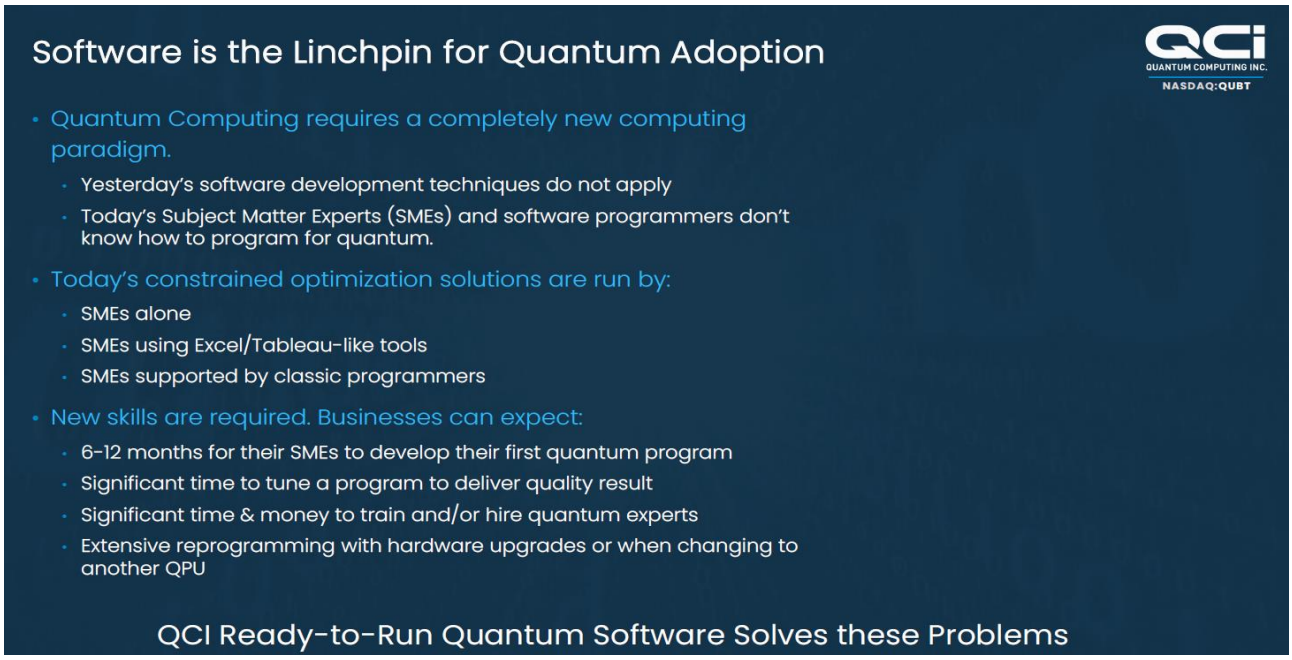
While the future for quantum computing is strong, the reality is that delivering value from quantum software in the near term will not come from pure quantum computing. Value will come from the sophisticated and advanced combination of classical and quantum technologies. Quantum can be combined with classical computers to create a hybrid environment that accelerates the value, quality, and timeliness of complex analyses to drive critical business decisions.

Utilizing quantum computers for real-world problems requires a blend of a wide range of computing and non-computing expertise, including:

- *Subject Matter Expertise (SME):* As with many problems, the first step is for a business expert to define and describe what information and/or results the business requires.
- *Programming Excellence:* In the classical computing world, a programmer will take the problem defined by a SME and implement it using standardized applications to run on the computer. In quantum computing, programmers are required to explicitly program it for the quantum computer they have access to, requiring a deep understanding of sophisticated areas of expertise.
- *Mathematics:* The problems that are attractive for being solved using quantum computers require significant mathematical expertise to a) optimize the data and problem for quantum computers, b) create the quantum-specific algorithms and formulas required to solve the problem, c) iterate upon the results in a way that optimizes the performance, cost and quality of result.
- *Quantum Mechanics:* Quantum computing demands deep knowledge of the principles driving the computing itself. Unlike classical computers which utilize 0 or 1 bits, quantum computers utilize qubits, which leverage concepts of quantum mechanics such as probabilistic computation, superposition, and entanglement. Experts must understand these concepts to create the algorithms necessary to solve problems on a quantum computer. The problems and algorithms must be optimized in the specific way required for a quantum computer to accept and process the problem.
- *Quantum Hardware Knowledge:* QPUs (Quantum Processing Units) require that programmers manage the configuration, actions, and overall operations of all the underlying circuits utilized in solving the problem. For example, the programming to configure and access QPUs is low level and extremely complicated. This coding is proprietary to each vendor's QPU idiosyncratic requirements, and are unique to the specific count and version of QPUs in the system, right now. When the system is expended or a QPU upgraded, all the code has to be rewritten.

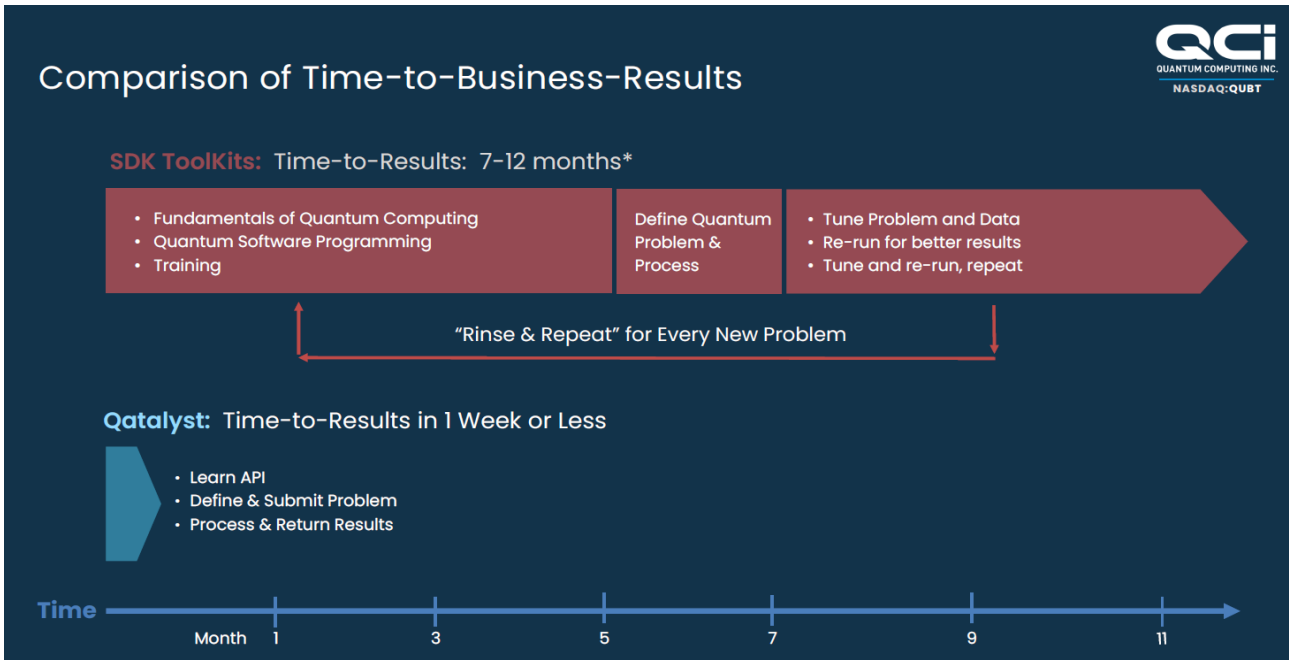
Given the dramatic differences in quantum computer hardware architectures currently under development (almost all of the big technology companies (i.e. IBM and Google) are developing their own quantum computers), quantum software requires a dramatic shift from classic software. Consequently, the time, difficult and expense of hiring a diverse and deeply knowledgeable team to create quantum applications and workflows limits any organization's ability to quickly utilize and benefit from the power of quantum computing.

Exhibit 15: Quantum Software



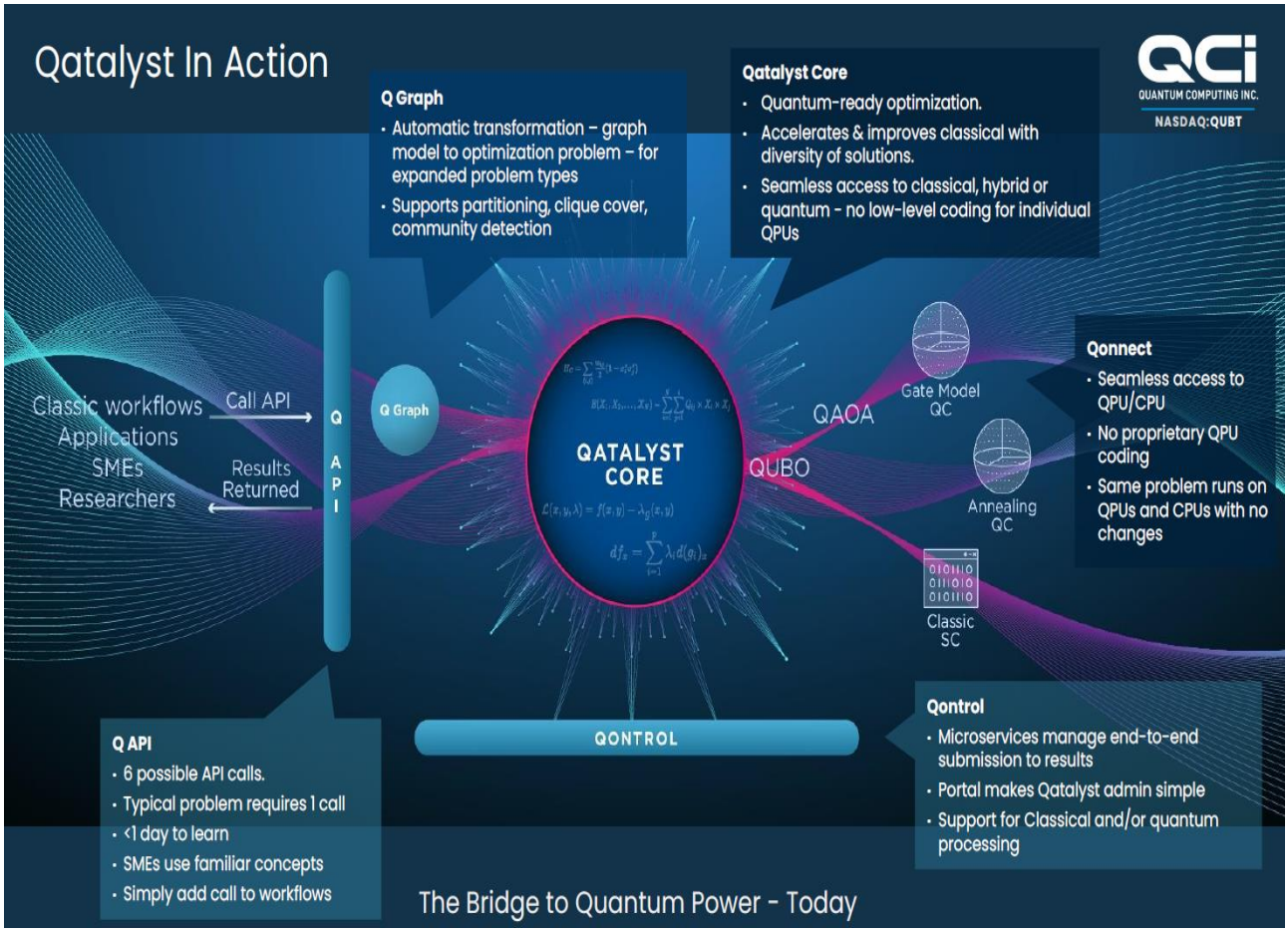
Source: Company reports.

Exhibit 16: Qatalyst Advantage



Source: Company reports.

Exhibit 17: Qatalyst Platform

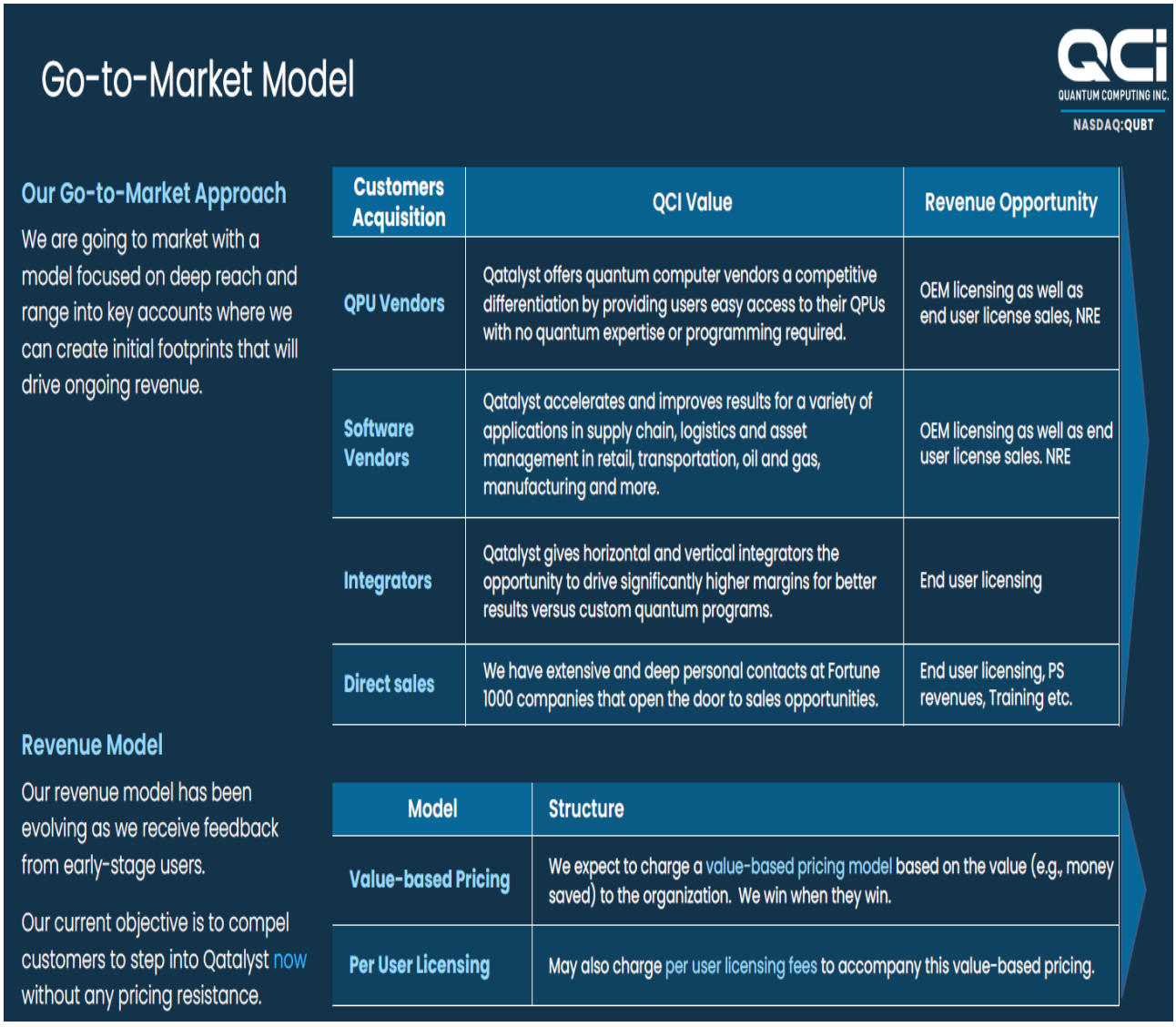


Source: Company reports.

The company's main product is its Qatalyst platform. Qatalyst enables developers to create and execute quantum-ready applications on classical computers, while being ready to also run on quantum computers. Qatalyst performs the complex problem transformations necessary to be executed on a variety of quantum platforms today, and users can call upon the same Qatalyst APIs (Application Programming Interfaces) to achieve optimization performance advantages on conventional computers using its cloud-based solution.

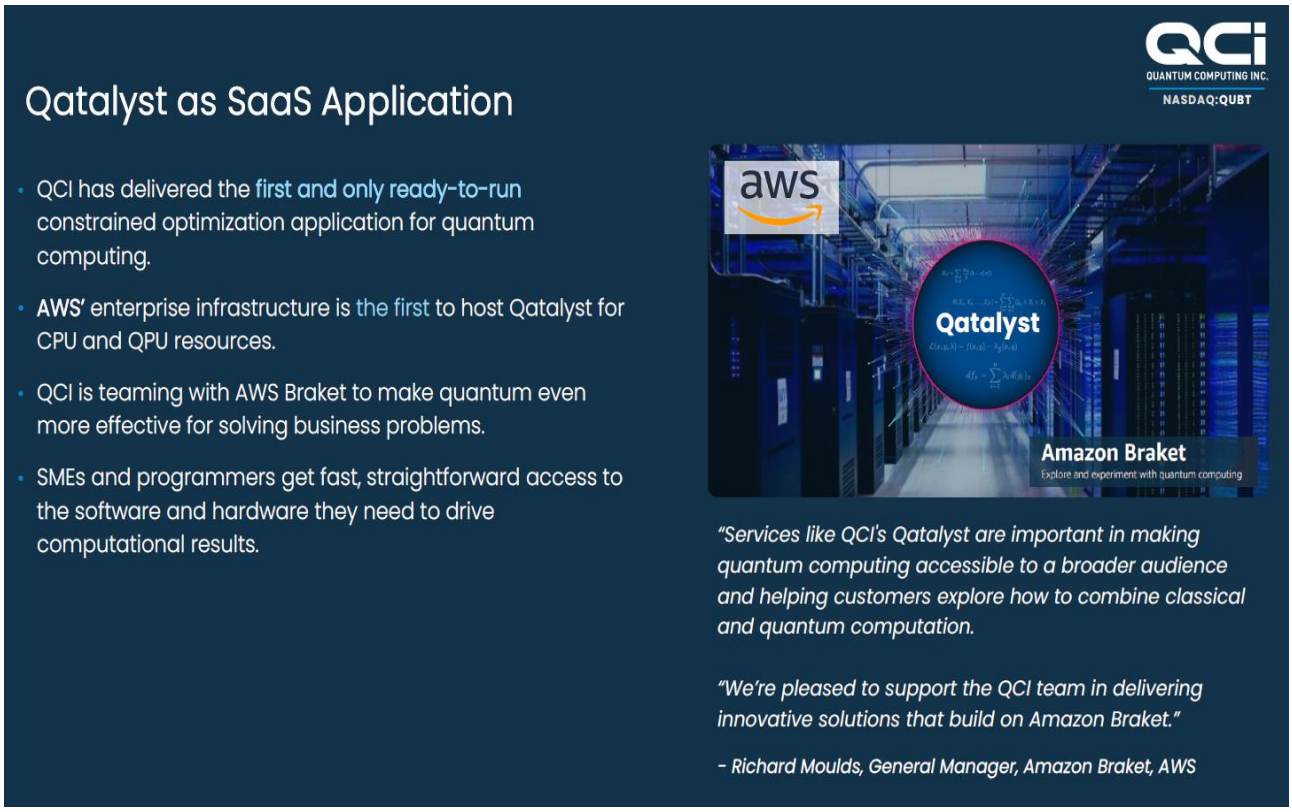
Qatalyst is the only quantum acceleration platform available today, dramatically reducing the time-to-quality results and the associated costs for both classical and quantum computers. Unlike more common toolsets that require deep level quantum expertise to build new quantum problems and workflows, Qatalyst is not a tool kit, but a complete platform. It accelerates performance and results on classic and quantum computers, with no additional quantum programming or quantum computing expertise required. This is unique in its approach to the quantum computing industry. Instead of invoking a team of quantum specialists to transform an optimization problem, a subject matter expert ("SME") or programmer submits their current problem via a software API to the Qatalyst cloud-based platform. Qatalyst manages the workflow, optimizations, and results, without any further intervention by the user.

Exhibit 18: Quantum's Go-to-Market Model



Source: Company reports.

Exhibit 19: Qatalyst as SaaS



Source: Company reports.

Qatalyst is integrated with the Amazon Cloud BRAKET API, offering access to multiple Quantum Processing Units ("QPUs") including DWave, Rigetti, and IonQ. Qatalyst also integrates directly with IBM's QPUs. By using Qatalyst, application developers can run their applications on any or all of the available QPUs by merely selecting which QPU they prefer to run on based on the desired performance results of the application.

Qatalyst eliminates the need for the low-level hardware programming expertise required by toolkits. This programming is time consuming and must be updated constantly as QPUs evolve and change, resulting in significant development costs. Qatalyst automatically optimizes the same problem submitted by a SME for multiple Quantum and Conventional Processors. The SME or programmer selects one, or many, processing resources and the problem will be submitted by Qatalyst.

Qatalyst software masks the complexity of quantum programming via the Q API, a powerful six call API that users can learn in a day. Instead of spending months or years developing new applications and workflows requiring complex and extremely low-level coding, users, workflows or applications can immediately submit a problem to Qatalyst within a day, using the same familiar constructs they use right now, via the Q API. Users have utilized Qatalyst's simple API and familiar constructs to solve their first complex problem within a week, as compared to the 6 - 12 months associated with quantum software toolkits.

Today, SMEs can leverage the power of Qatalyst to solve high-value discrete optimization problems present in finance, bio/pharma, and cybersecurity. Currently, Qatalyst offers the following features:

- *Quantum-ready engines tuned for complex computations.* These engines automatically optimize, submit, and iterate to return excellent, diverse results for supply chain and other constrained optimization problems.
- *Transparent abstraction from quantum hardware variance.* Qatalyst eliminates the need to write low-level, assembly-type code to support different vendors' quantum hardware architectures, such as D-Wave, Rigetti, IBM and ION-Q. The same problem can run seamlessly across all quantum types and architectures.
- *Qatalyst Core:* an engine that utilizes sophisticated mathematics, quantum transformation and iterative processing to find highly optimal answers across both classic and quantum computers.
- *Q Graph:* a powerful transformation engine that empowers SMEs to submit and analyze graph models as part of their complex optimizations.
- *Qontrol:* a portal that provides administrative management tools for user administration, request control, statuses and alerts. Qontrol also enables system administrators and users to import Qatalyst results into popular analysis applications such as Excel or Tableau.

Quantum's products utilizes a software technique known as a "Solver", which is a set of instructions whose function is to calculate the minimum values of a large optimization problem. The company's Solvers delivers the aforementioned performance advantages while running on today's conventional computers and will be able to deliver significantly improved performance as better QPU technology becomes available.

The company is also working on software products to address community detection to aid researchers in discovering correlations that may not have been imagined. The company believes that community detection holds significant promise in pharmaceutical applications such as evaluating client trial outcomes, and in epidemiology to enable detection of common factors among a population.

Exhibit 20: Qatalyst Market Opportunities

Qatalyst Near-term Addressable Markets – Examples

QCI QUANTUM COMPUTING INC. NASDAQ:QUBT

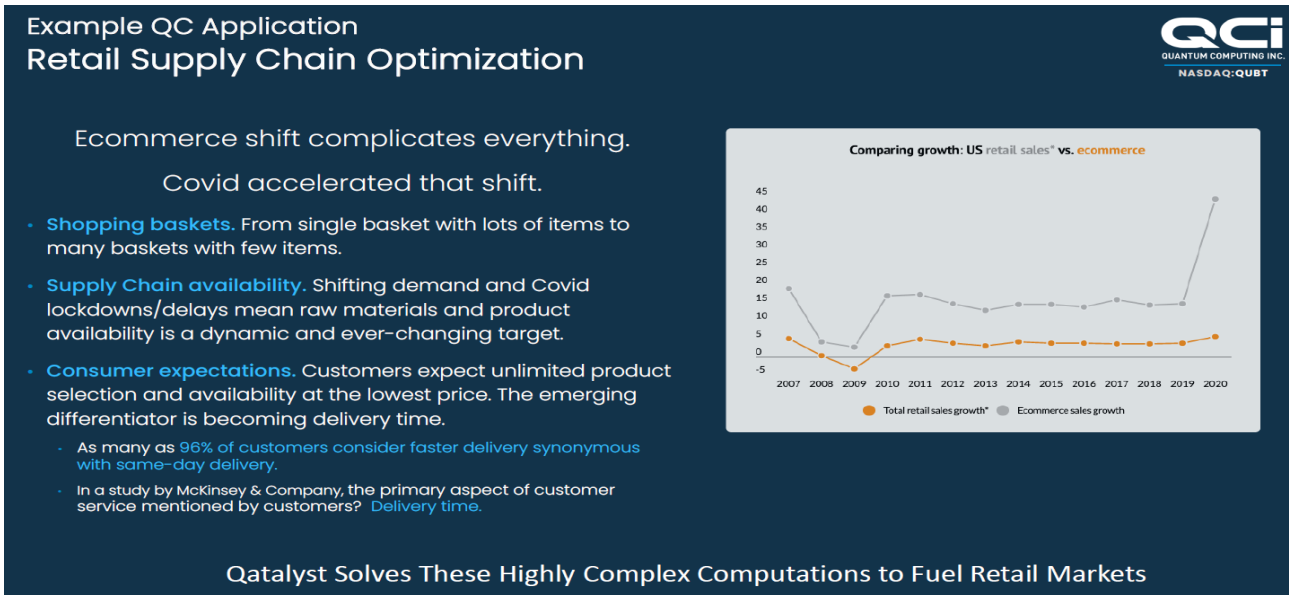
Application	Markets	Addressable Market Size
Supply Chain & Logistics Optimization	• Retail • Aerospace • Chemical/Materials • Utilities • Manufacturing	$22 Billion+ [1]
Transportation Optimization	• Airlines • Delivery	$5 Billion+ [2]
Community Detection	• Cyber Security • Biotech • Government	$156 Billion+ [3]
	Total	**$157 Billion+**

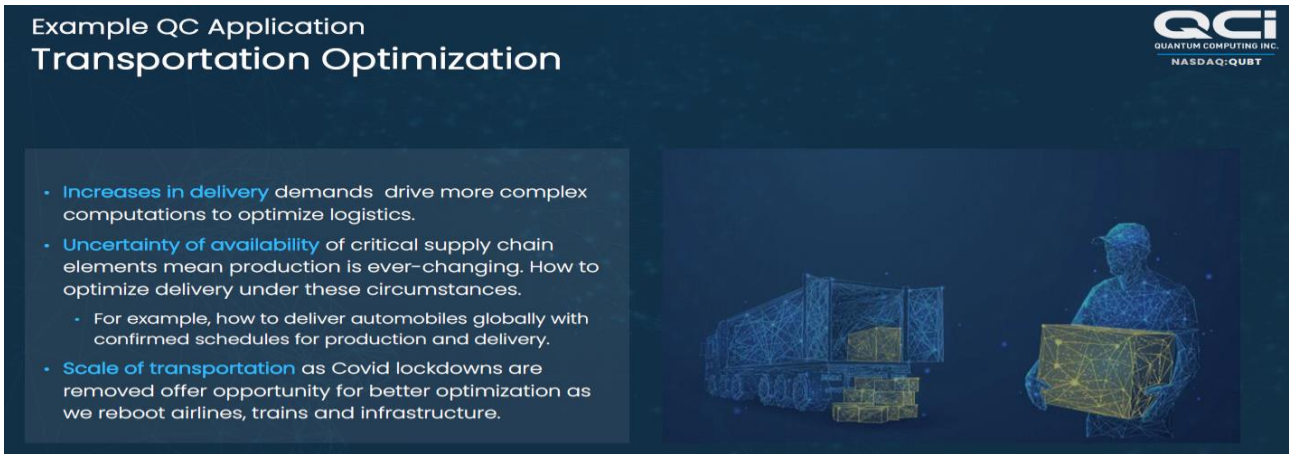
Other potential revenue sources:
- Government or Commercial R&D contracts
- Consulting

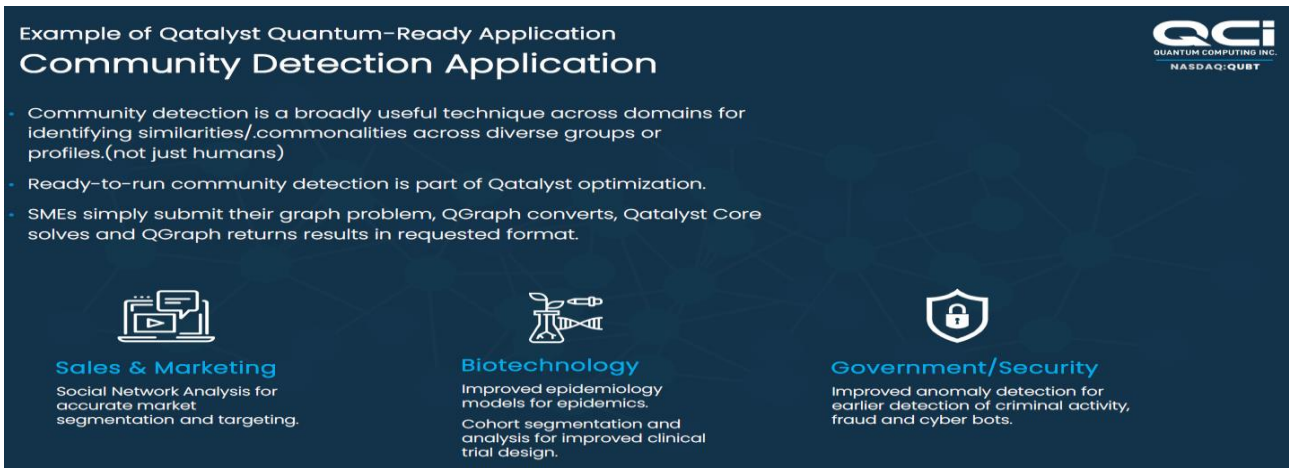
Typical Gross Margins of 60% - 70%

Source: Company reports.

Exhibit 21: Qatalyst Applications Examples







Source: Company reports.

Quantum is pursuing the following key business and product strategies:

1) Deliver production-ready software that de-risks the shift to quantum computing.
2) Empower SMEs and programmers to access the power of quantum computing without the prerequisite quantum expertise.
3) Eliminate the vendor lock-in created by the low-level coding required for individual QPUs by allowing users to freely select the best QPU for their specific problem with no low-level coding or programming changes.
4) Deliver the best performance results (speed, quality and diversity) at the lowest cost for its users.
5) Provide software and the required hardware in the cloud to make it simple and cost effective for organizations to begin leveraging quantum computing.

FINANCIALS

Quantum's fiscal year ends on December 31. We expect its next earnings report (for Q3 2021 ending September) to be in mid-November. Because the company is an early stage software development company, it has not generated revenue to date and has significant losses as it funds its software development and commercialization.

Exhibit 22: Quantum Computing's Historical Financials

FYE Dec 31 (in millions except EPS)	2018A	2019A	2020A	2021E	2022E
Total Revenue	0.0	0.0	0.0	0.0	2.0
Growth % (y/y)					
Operating income (loss)	(5.8)	(2.5)	(17.3)	(16.4)	(16.4)
Net income (pro forma)	(10.5)	(8.4)	(24.7)	(16.2)	(16.4)
EPS	$(2.22)	$ (1.14)	$ (0.88)	$ (0.55)	$ (0.54)
EBITDA	(1.8)	(2.3)	(6.2)	(6.7)	(6.6)

Source: Company reports and Ascendiant Capital Markets estimates.

Recent Results (fiscal Q2 ending June 2021)

Quantum's recent financial performance is reflective of its developmental and early commercialization stage. In its Q2 FY21 report (on August 16, 2021), the company reported no revenue and net loss was $4.1 million. Operating expenses were $4.3 million, mainly due to software development costs and general and administrative expenses (with stock compensation more than half of operating costs). Q2 EPS was $(0.14).

The company does not provide specific quarterly financial guidance, but we believe that operating expenses should increase as the company expands commercialization and product development activities. Going forward, we believe operating expenses of ~$4 million (or ~$2 million cash operating expenses) is a reasonable near term quarterly burn rate. The company expects continued progress on its product and commercialization development milestones in 2021/22. We do not expect the company to begin revenue

generation until 2022, with profitability likely at least several years away. We have modeled relatively steady operating costs over the next year, primarily driven by its commercialization and development expenses. The company, having recently launched several of its initial products, is currently focusing on sales and marketing of its products and has increased its investment in sales and marketing efforts.

For 2021, we expect no revenue and net loss of $16 million and EPS of $(0.55). For 2022, we expect revenue of $2 million and a net loss of $16 million and EPS of $(0.54). We believe investors should be focused on its commercialization of its software, which we believe within the next year, the company should begin to generate and grow revenue quickly.

We believe that the biggest potential variable and challenge to our financial model is the ability of the company to successfully develop and grow its quantum software platforms (both in the increase in number of customers and in revenue per customer). It is these customers that are ultimately how Quantum will be able to finally be able to generate revenue. If the company can make significant progress towards these goals, then revenue and earnings will likely begin and be able to grow significantly. However, if the company has difficulties in making progress towards these goals (particularly commercialization of its software products), then revenue and profitability may not be achieved or will likely grow at a moderate rate or even not at all. Even after initial commercialization, Quantum faces a big challenge to maintain and grow its customers and products.

The company's balance sheet had $13 million in cash and no debt as of June 2021. Since commencing operations as Quantum Computing in February 2018, the company has raised $19 million through common stock sales and $5 million through debt for a total of $24 million in new investments. Its last major capital raise was in October 2020 raising $14 million (5.8 million shares at $2.50 per share). We believe the company has enough cash through 2022, after which it will likely need to raise additional capital.

Exhibit 23: Quantum Computing's Financial Metrics

Recent Share Price (10/29/21)	$ 6.25
52-Weeks Share Price (Low - High)	$3.00 - 25.07
Shares Outstanding	29 million
Market Capitalization	$181 million
Enterprise Value	$168 million
Cash (6/30/21)	$13 million
Debt (6/30/21)	$0
2020A Revenue	$0
2020A Net loss	$25 million
2020A EPS	$ (0.88)
2021E Revenue	$0
2021E Net loss	$16 million
2021E EPS	$ (0.55)

Source: Company reports and Ascendiant Capital Markets estimates.

FINANCIAL MODEL

Quantum Computing Inc.

Income 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
Fiscal Year End: December 31	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3E	Q4E	FY-E	Q1E	Q2E	Q3E	Q4E	FY-E
Total Revenue	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.100**	**0.200**	**0.400**	**1.300**	**2.000**
Cost of Revenues	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.100	0.200	0.650	1.000
Gross Profit	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.100	0.200	0.650	1.000
Salaries	0.520	0.116	0.116	0.120	0.144	0.495	0.165	0.134	0.120	0.223	0.643	0.246	0.509	0.509	0.509	1.771	0.509	0.509	0.550	0.550	2.117
Consulting	0.322	0.077	0.087	0.081	0.116	0.361	0.076	0.064	0.285	1.258	1.683	0.303	0.228	0.228	0.228	0.989	0.228	0.228	0.228	0.228	0.913
Research & Development	0.251	0.151	0.145	0.257	0.338	0.891	0.345	0.336	0.287	0.572	1.540	0.625	0.566	0.566	0.566	2.323	0.600	0.600	0.650	0.650	2.500
Stock Based Compensation	4.182	0.071	1.488	(1.344)	0.000	0.215	1.012	0.225	6.563	3.377	11.177	1.977	2.548	2.548	2.548	9.621	2.500	2.500	2.500	2.500	10.000
Related Party Marketing						0.000			0.098	0.043	0.141					0.000					0.000
Selling General & Administrat	0.524	0.168	0.147	0.102	0.168	0.585	0.140	0.159	1.324	0.537	2.160	0.242	0.478	0.478	0.478	1.676	0.478	0.478	0.478	0.478	1.913
Restructuring and other						0.000					0.000					0.000					0.000
Total operating expenses	5.799	0.583	1.983	(0.784)	0.766	2.548	1.738	0.918	8.676	6.011	17.343	3.393	4.329	4.329	4.329	16.379	4.315	4.315	4.406	4.406	17.443
Operating income (loss)	**(5.799)**	**(0.583)**	**(1.983)**	**0.784**	**(0.766)**	**(2.548)**	**(1.738)**	**(0.918)**	**(8.676)**	**(6.011)**	**(17.343)**	**(3.393)**	**(4.329)**	**(4.329)**	**(4.329)**	**(16.379)**	**(4.265)**	**(4.215)**	**(4.206)**	**(3.756)**	**(16.443)**
Interest income (expense)	(4.083)	(0.053)	(0.050)	(0.014)	(5.717)	(5.833)	(0.127)	(1.616)	(2.981)	(3.111)	(7.834)	0.001	0.002	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000
Other income (expense)	(0.625)					0.000	1.167	0.754		(1.479)	0.443		0.218	0.000	0.000	0.218	0.000	0.000	0.000	0.000	0.000
Income before income taxes	(10.507)	(0.636)	(2.033)	0.770	(6.482)	(8.381)	(0.698)	(1.779)	(11.657)	(10.600)	(24.734)	(3.392)	(4.109)	(4.329)	(4.329)	(16.158)	(4.265)	(4.215)	(4.206)	(3.756)	(16.443)
Income taxes						0.000					0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net income (loss)	(10.507)	(0.636)	(2.033)	0.770	(6.482)	(8.381)	(0.698)	(1.779)	(11.657)	(10.600)	(24.734)	(3.392)	(4.109)	(4.329)	(4.329)	(16.158)	(4.265)	(4.215)	(4.206)	(3.756)	(16.443)
Nonrecurring/noncash adjustments						0.000					0.000					0.000					0.000
Net income (pro forma)	**(10.507)**	**(0.636)**	**(2.033)**	**0.770**	**(6.482)**	**(8.381)**	**(0.698)**	**(1.779)**	**(11.657)**	**(10.600)**	**(24.734)**	**(3.392)**	**(4.109)**	**(4.329)**	**(4.329)**	**(16.158)**	**(4.265)**	**(4.215)**	**(4.206)**	**(3.756)**	**(16.443)**
EBITDA	(1.767)	(0.512)	(0.495)	(0.559)	(0.764)	(2.330)	(0.724)	(2.018)	(0.785)	(2.632)	(6.160)	(1.164)	(1.862)	(1.862)	(1.862)	(6.749)	(1.798)	(1.748)	(1.740)	(1.290)	(6.575)
Shares, Basic	4.7	4.7	5.3	7.4	7.4	7.4	7.8	8.6	17.2	28.0	28.0	28.7	29.1	29.2	29.5	29.1	29.8	30.1	30.4	30.7	30.3
Shares, Diluted	4.7	4.7	5.3	7.4	7.4	7.4	7.8	8.6	17.2	28.0	28.0	28.7	29.1	29.2	29.5	29.1	29.8	30.1	30.4	30.7	30.3
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)**	**($0.15)**	**($0.15)**	**($0.55)**	**($0.14)**	**($0.14)**	**($0.14)**	**($0.12)**	**($0.54)**
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)	($0.15)	($0.15)	($0.55)	($0.14)	($0.14)	($0.14)	($0.12)	($0.54)
Margins																					
Gross margin																	50%	50%	50%	50%	50%
Salaries																					
Consulting																					
Research and development																					
General and administrative																					
Operating margin																					
Tax rate, GAAP																					
Net margin																					
Y/Y % change																					
Total Revenue																					
Gross margin																					
Salaries						-5%	43%	15%	1%	55%	30%	49%	279%	322%	128%	176%	107%	0%	8%	8%	20%
Consulting						12%	-1%	-26%	251%	985%	366%	298%	257%	-20%	-82%	-41%	-25%	0%	0%	0%	-8%
Research and development						256%	128%	131%	12%	69%	73%	81%	69%	97%	-1%	51%	-4%	6%	15%	15%	8%
General and administrative						12%	-16%	8%	1197%	219%	269%	72%	201%	-64%	-11%	-22%	98%	0%	0%	0%	14%
Operating income (loss)						-56%	198%	-54%	-1206%	685%	581%	95%	372%	-50%	-28%	-6%	26%	-3%	-3%	-13%	0%
Net income (loss)						-20%	10%	-13%	-1613%	64%	195%	386%	131%	-63%	-59%	-35%	26%	3%	-3%	-13%	2%
EPS Diluted (pro forma)						-49%	-33%	-46%	-748%	-57%	-22%	31%	-32%	-78%	-61%	-37%	21%	-1%	-7%	-17%	-2%

Source: Company reports and Ascendiant Capital Markets estimates.

Quantum Computing Inc.

Balance Sheet ($ mils)	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
Fiscal Year End: December 31	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3E	Q4E	Q1E	Q2E	Q3E	Q4E
Assets																	
Cash and cash equivalents	1.767	1.333	0.807	0.308	0.101	0.199	0.497	3.978	15.196	13.766	12.625	10.714	8.802	6.954	5.155	3.366	2.026
Short term investments												0.000	0.000	0.000	0.000	0.000	0.000
Accounts receivable, net												0.000	0.000	0.000	0.000	0.000	0.000
Inventory												0.000	0.000	0.000	0.000	0.000	0.000
Deferred income taxes												0.000	0.000	0.000	0.000	0.000	0.000
Prepaid expenses and other	0.023	0.015	0.009	0.007	0.022	0.014	0.009	0.005	0.041	0.292	0.240	0.240	0.240	0.240	0.240	0.240	0.240
Total current assets	1.790	1.348	0.816	0.316	0.123	0.214	0.505	3.984	15.237	14.057	12.865	10.953	9.041	7.193	5.395	3.606	2.266
Property and equipment, net	0.007	0.007	0.006	0.019	0.026	0.027	0.026	0.024	0.031	0.033	0.031	0.079	0.126	0.174	0.222	0.270	0.317
Intangibles, net												0.000	0.000	0.000	0.000	0.000	0.000
Deferred income tax												0.000	0.000	0.000	0.000	0.000	0.000
Other												0.000	0.000	0.000	0.000	0.000	0.000
Total assets	**1.797**	**1.354**	**0.822**	**0.334**	**0.148**	**0.241**	**0.531**	**4.008**	**15.268**	**14.090**	**12.896**	**11.032**	**9.168**	**7.367**	**5.617**	**3.875**	**2.583**
Liabilities and stockholders' equity																	
Accounts payable	0.054	0.108	0.098	0.162	0.218	0.207	0.290	0.171	0.367	0.247	0.587	0.587	0.587	0.587	0.587	0.587	0.587
Accrued expenses	0.090	0.157	0.208	0.104	0.153	0.213	0.285	0.258	0.108	0.135	0.185	0.185	0.185	0.185	0.185	0.185	0.185
Deferred revenue												0.000	0.000	0.000	0.000	0.000	0.000
Deferred income tax												0.000	0.000	0.000	0.000	0.000	0.000
Warrant liabilities					0.981	0.476	0.919	1.148				0.000	0.000	0.000	0.000	0.000	0.000
Other		0.001									0.027	0.027	0.027	0.027	0.027	0.027	0.027
Short term debt	3.171	3.171	3.125	1.109	1.609	1.549	2.030	1.810	0.218	0.218		0.000	0.000	0.000	0.000	0.000	0.000
Total current liabilities	**3.314**	**3.436**	**3.430**	**1.374**	**2.961**	**2.446**	**3.524**	**3.388**	**0.693**	**0.600**	**0.800**	**0.800**	**0.800**	**0.800**	**0.800**	**0.800**	**0.800**
Deferred income taxes												0.000	0.000	0.000	0.000	0.000	0.000
Warrant liabilities												0.000	0.000	0.000	0.000	0.000	0.000
Other long term liabilities												0.000	0.000	0.000	0.000	0.000	0.000
Deferred revenue												0.000	0.000	0.000	0.000	0.000	0.000
Long term debt												0.000	0.000	0.000	0.000	0.000	0.000
Total other liabilities	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Preferred stock																	
Common stock	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.003	0.003	0.003	2.468	4.932	7.397	9.862	12.326	14.791
Additional paid-in capital	18.862	18.934	20.441	21.238	25.948	27.254	28.244	43.514	68.067	70.374	73.089	73.089	73.089	73.089	73.089	73.089	73.089
Retained earnings	(20.380)	(21.016)	(23.049)	(22.278)	(28.761)	(29.459)	(31.238)	(42.895)	(53.495)	(56.887)	(60.996)	(65.324)	(69.653)	(73.918)	(78.133)	(82.340)	(86.096)
Accumulated other comprehensive income												0.000	0.000	0.000	0.000	0.000	0.000
Other												0.000	0.000	0.000	0.000	0.000	0.000
Total stockholders' equity	**(1.517)**	**(2.081)**	**(2.607)**	**(1.040)**	**(2.812)**	**(2.205)**	**(2.993)**	**0.620**	**14.575**	**13.490**	**12.096**	**10.232**	**8.368**	**6.568**	**4.817**	**3.076**	**1.784**
Total stockholders' equity and liabili	**1.797**	**1.354**	**0.822**	**0.334**	**0.148**	**0.241**	**0.531**	**4.008**	**15.268**	**14.090**	**12.896**	**11.032**	**9.168**	**7.367**	**5.617**	**3.875**	**2.583**

Balance Sheet Drivers

	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
	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	Q3A	Q4A	Q1A	Q2A	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)	-$0.32	-$0.44	-$0.49	-$0.14	-$0.38	-$0.28	-$0.35	$0.04	$0.52	$0.47	$0.42	$0.35	$0.28	$0.22	$0.16	$0.10	$0.06
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	$0.37	$0.30	$0.23	$0.17	$0.11	$0.07
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	$0.37	$0.30	$0.23	$0.17	$0.11	$0.07

Source: Company reports and Ascendiant Capital Markets estimates

Quantum Computing Inc.

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
Fiscal Year End: December 31	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3A	Q4A	FY-A	Q1A	Q2A	Q3E	Q4E	FY-E	Q1E	Q2E	Q3E	Q4E	FY-E
Cash flow from operating activities																					
Net income	(10.507)	(0.636)	(2.033)	0.770	(6.482)	(8.381)	(0.698)	(1.779)	(11.657)	(10.600)	(24.734)	(3.392)	(4.109)	(4.329)	(4.329)	(16.158)	(4.265)	(4.215)	(4.206)	(3.756)	(16.443)
Depreciation	0.000	0.000	0.000	0.001	0.001	0.003	0.002	0.002	0.002	0.002	0.007	0.002	0.002	0.002	0.002	0.009	0.002	0.002	0.002	0.002	0.009
Amortization						0.000					0.000					0.000					0.000
Debt related amortization expense						0.000					0.000					0.000					0.000
Stock comp	4.032	0.071	1.488	(1.344)		0.215	1.012	(1.102)	7.889	3.377	11.177	2.227	2.465	2.465	2.465	9.621	2.465	2.465	2.465	2.465	9.859
Deferred income taxes						0.000					0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Change in fair value of warrant l	3.996				5.691	5.691	(0.642)	0.580	0.867	1.120	1.925					0.000					0.000
Writedowns and impairments						0.000					0.000					0.000					0.000
Other gains/losses						0.000					0.000					0.000					0.000
Other						0.000					0.000					0.000					0.000
Changes in operating assets and liabilities:																					
Accounts receivable						0.000					0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Inventory						0.000					0.000					0.000					0.000
Prepaid expenses & other curre	(0.023)	0.009	0.005	0.002	(0.014)	0.002	0.007	0.006	0.003	(0.035)	(0.019)	(0.251)	0.082	0.000	0.000	(0.169)	0.000	0.000	0.000	0.000	0.000
Income tax						0.000					0.000					0.000					0.000
Other assets						0.000					0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Accounts payable	0.053	0.054	(0.011)	0.064	0.056	0.164	(0.011)	0.082	(0.118)	0.195	0.148	(0.120)	0.340	0.000	0.000	0.221	0.000	0.000	0.000	0.000	0.000
Accrued expenses	0.090	0.067	0.051	(0.104)	0.049	0.063	0.061	0.072	(0.027)	(0.150)	(0.044)	0.027	0.050	0.000	0.000	0.077	0.000	0.000	0.000	0.000	0.000
Deferred revenue						0.000					0.000					0.000					0.000
Other liabilities						0.000					0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net cash (used in) provided by	**(2.361)**	**(0.434)**	**(0.500)**	**(0.611)**	**(0.699)**	**(2.244)**	**(0.269)**	**(2.139)**	**(3.042)**	**(6.091)**	**(11.541)**	**(1.506)**	**(1.169)**	**(1.862)**	**(1.862)**	**(6.399)**	**(1.798)**	**(1.748)**	**(1.740)**	**(1.290)**	**(6.575)**
Cash flow from investing activities																					
Purchases of property and equi	(0.007)			(0.013)	(0.008)	(0.021)	(0.003)			(0.009)	(0.012)	(0.004)		(0.050)	(0.050)	(0.104)	(0.050)	(0.050)	(0.050)	(0.050)	(0.200)
Purchases of short-term investments						0.000					0.000					0.000					0.000
Acquisitions						0.000					0.000					0.000					0.000
Other						0.000					0.000		(0.003)			(0.003)					0.000
Net cash used in investing activ	**(0.007)**	**0.000**	**0.000**	**(0.013)**	**(0.008)**	**(0.021)**	**(0.003)**	**0.000**	**0.000**	**(0.009)**	**(0.012)**	**(0.004)**	**(0.003)**	**(0.050)**	**(0.050)**	**(0.107)**	**(0.050)**	**(0.050)**	**(0.050)**	**(0.050)**	**(0.200)**
Cash flow from financing activities																					
Issuance of debt	3.071					0.000		0.163	0.038	0.017	0.218			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Repayment of debt			(0.026)	(2.036)	0.500	(1.562)	(0.060)	0.319	(0.258)	(1.609)	(1.609)		(0.218)			(0.218)					0.000
Issuance of stock	1.064			2.161		2.161	0.431	1.955	6.743	18.909	28.038	0.080	0.250	0.000	0.000	0.330	0.000	0.000	0.000	0.000	0.000
Proceeds from stock option exercises						0.000					0.000					0.000					0.000
Other						0.000					0.000					0.000					0.000
Cash provided by (used in) fina	**4.135**	**0.000**	**(0.026)**	**0.125**	**0.500**	**0.599**	**0.370**	**2.437**	**6.523**	**17.317**	**26.648**	**0.080**	**0.032**	**0.000**	**0.000**	**0.112**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Effect of exchange rate on cash						0.000					0.000					0.000					0.000
Net increase (decrease) in cash	**1.767**	**(0.434)**	**(0.526)**	**(0.499)**	**(0.207)**	**(1.666)**	**0.098**	**0.297**	**3.482**	**11.218**	**15.095**	**(1.430)**	**(1.140)**	**(1.912)**	**(1.912)**	**(6.395)**	**(1.848)**	**(1.798)**	**(1.790)**	**(1.340)**	**(6.775)**
Beginning cash and equivalents	**0.000**	**1.767**	**1.333**	**0.807**	**0.308**	**1.767**	**0.101**	**0.199**	**0.497**	**3.978**	**0.101**	**15.196**	**13.766**	**12.625**	**10.714**	**15.196**	**8.802**	**6.954**	**5.155**	**3.366**	**8.802**
Ending cash and equivalents	**1.767**	**1.333**	**0.807**	**0.308**	**0.101**	**0.101**	**0.199**	**0.497**	**3.978**	**15.196**	**15.196**	**13.766**	**12.625**	**10.714**	**8.802**	**8.802**	**6.954**	**5.155**	**3.366**	**2.026**	**2.026**

Source: Company reports and Ascendiant Capital Markets estimates

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Quantum Computing Inc.

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Total return is defined as price appreciation plus dividend yield.

Ascendiant Capital Markets, LLC Rating System

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Total return is defined as price appreciation plus dividend yield.

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			Investment Banking Services Past 12 months	
Rating	**Count**	**Percent**	**Count**	**Percent**
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Sell	1	2%	0	0%
Total	42	100%	14	33%

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