

Quantum Computing as a Service

2021

Table of contents



THE
QUANTUM
INSIDER

Table of contents

This document provides a preview of our QCaaS report. The table below gives an overview of the contents of the report. The appendix provides a couple of example slides to demonstrate the depth and quality of the work provided.

#	Focus	Scope
1	Market sizing – the revenue side of the equation 14 pages	<ul style="list-style-type: none">• Market sizing based on building up the estimated forecast revenues generated by providers of Quantum Computing as a Service (QCaaS) such as Amazon AWS and Microsoft Azure from 2020 to 2030• Full driver tree demonstrating the build up of the QCaaS market size, with deep-dive sections on price and volume• Articulation of where QCaaS sits in the wider Quantum Computing market sizing• High level estimation of total revenue potential for Quantum Computing applications• Summary of leading QPU provider roadmaps and mapping these to realistic applications• Triangulation of analysis through estimating revenue potential for exemplar use cases for quantum computing and testing implied usage of existing QCs in the market
2	Market mapping 17 pages	<ul style="list-style-type: none">• Summary of the Quantum Computing full technology stack today and a vision for the future QCaaS market• Map of all quantum computing hardware / full stack providers by their qubit implementation, their cloud offering and pricing where possible• Analytical discussion covering the above analysis and initial market dynamics and considerations
3	Scaling quantum computers – the cost side of the equation 5 pages	<ul style="list-style-type: none">• Analysis of cost model for a superconducting quantum computer at different scales of qubits (10, 100, 1k)• Estimate of evolution of individual costs and composition of costs over time (e.g. reduction in cables for each qubit and price of each cable)• Analysis of unit economics (revenue and cost side) for an individual QC player (e.g. an estimate of QC life time value vs. cost of individual QC unit)

Pricing

Type	Price for <u>report only</u>	Price <u>including 30 minute consulting call</u>
Single user license: for 1 individual	\$5,499	Not available
Multi user license: can be shared with 5 individuals in organization	\$6,499	Not available
Corporate license: can be shared in entire organization	\$7,999	\$9,499

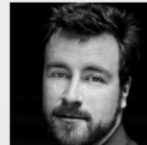
*Note: If you are interested in receiving some of the **underlying data** used in the report, this can be discussed on a case by case basis. This additional data includes downside and upside cases for the market size, as well as more detailed market mapping of the individual players in the market.*

CORE TEAM



ALAN MARTIN

Alan is a highly-experienced Management Consultant, former Automotive industry executive and Ph.D. Physicist. He provides business and technology strategy consulting services for Clients interested to grow through applications of Quantum Technology.



TRISTAN ROBERGE-MENTEC

Tristan is the Head of BD & Technical Data at The Quantum Daily. His quantum technologies expertise is drawn primarily from his position as Research Associate at the University of Waterloo and he was previously technology transfer office at CERN, focussed on emerging technologies.



ALEX CHALLANS

Alex is the CEO of The Quantum Daily. He previously worked as an investment director within a London-based private equity firm where he focussed on the technology sector. He draws upon his broad knowledge of the quantum technology sector to support customers with their commercial aims



CHRISTOPHER COLEMAN

Christopher is a quantum technologist. He provides insight into technical aspects of quantum control and measurement. His consulting capacity is founded on his direct experience in the fields of experimental quantum matter research and cryogenic measurement.

Further consulting support can be agreed on top of this depending on your precise scope and requirements. Price will be agreed depending on scope

Appendix: Example slides

Cloud infrastructure deep dive (1 of 5)

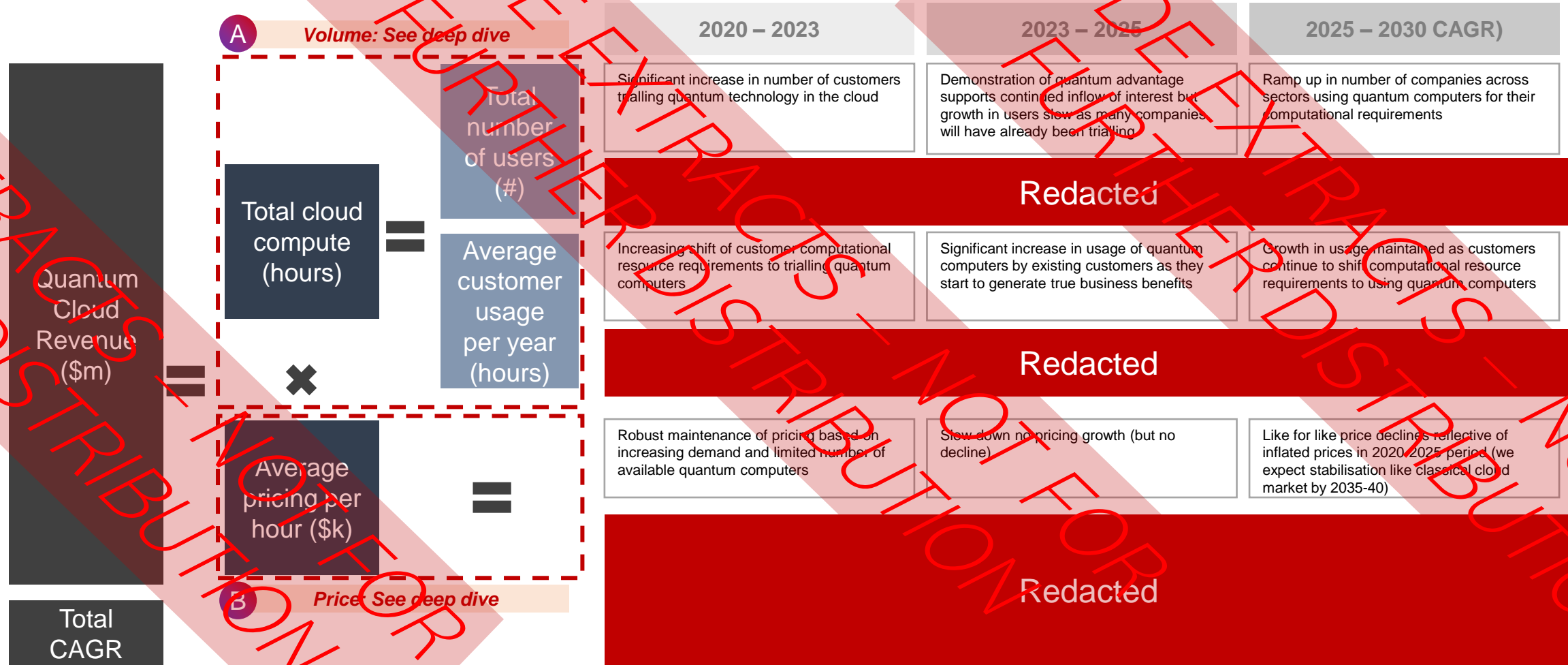
- Access to quantum computers in the cloud is being provided by 3 large multi-platform players
- The market broadly splits between (i) companies providing access to multiple quantum computers and simulators and (ii) companies providing access to their own quantum computer directly.
- There are several developers of QCs who do not offer a cloud proposition – these are typically in development stage and are investing in the development of the underlying technology rather than their go to market approach.

Large multi-platform players offering QPU (including SDK), CPU and GPU in the Cloud

Cloud / QCaaS providers	Underlying technology providers	Comment	Pricing model
 Amazon Braket	 aws Amazon Braket Simulators  IONQ Trapped Ion  QCI The Quantum Computing Company™ Annealers  rigetti Superconducting	Amazon launched its Braket quantum computing service in Aug-20. Using Jupyter notebooks and existing AWS services, Braket users can assess present and forthcoming capabilities, including quantum annealing, ion trap devices, and superconducting chips. Offers quantum processing and simulators	Per shot (single execution of quantum algorithm) and per task (multiple shots) pricing – akin to pay as you go.
 Microsoft Azure Quantum	QCs Honeywell Trapped Ion  IONQ Trapped Ion  QCI Quantum Circuits, Inc. Superconducting Optimisation QBit Software TOSHIBA Simulator (GPU)  Microsoft Algorithms	Microsoft launched its Azure Quantum offering in Feb-21. It provides an open source Quantum Development Kit (QDK) with the Q# programming language. It also offers Quantum Intermediate Representation, a common open source interface between languages and target quantum computation platforms	Hourly basis for IonQ and monthly basis for Honeywell and Qbit
 Google Cloud	 IONQ Trapped Ion  Google AI Quantum Superconducting  AQT Trapped Ion Simulator  PASQAL Neutral Atom (Simulator)	Google launched its Google Cloud Quantum Computing Service (QCS) in 2020. Quantum Computing Service gives customers access to Google's quantum computing hardware, as well as select other partners	Per shot (single execution of quantum algorithm) and per task (multiple shots) pricing – akin to pay as you go.

Source: TQI analysis, company websites

Market driver tree – base case



Full slide preview

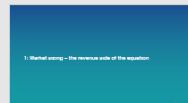
Intro and Exec Sum


1 


2 


3 


1. Market sizing


4 


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6 


7 


8 


9 


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12 

13 

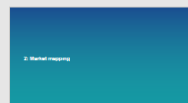
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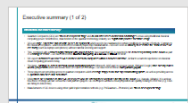
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17 


2. Market mapping


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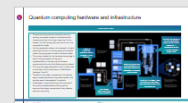
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22 


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26 


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33 

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Cost

35 

36 

37 

38 

39 

40 