

# THE QUANTUM QUARTERLY

## Q2 2020



THE QUANTUM DAILY  
QUANTUM COMPUTING AND BEYOND

Welcome to the Quantum  
Quarterly.

Here we cover the biggest  
commercial news in the  
Quantum Computing industry  
over the last 3 months.

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THE QUANTUM QUARTERLY

# THE QUANTUM QUARTER IN BRIEF

While it is still early to say definitively, thus far there are few signs that the coronavirus pandemic has halted progress on quantum technology, nor dammed the flow of funds into quantum startups.

The quarter has, if anything, featured an unrelenting stream of news that governments, convinced of quantum's unique potential, are backing it with grants and tech programs.

As you'll read, startups are emerging from stealth and investors are taking quantum computing companies increasingly seriously.

Finally, we continue to hear that companies are rapidly making technological strides and researchers are publishing breakthrough studies about quantum technology.



*Click this icon to see the full stories behind the brief*

# THE KEY TAKEAWAYS

## TECHNOLOGY

It's been a big quarter for ion trap quantum computers with announcements from IonQ, AQT, Honeywell, and Universal Quantum.

## FUNDING

Private capital is still flowing into quantum computing. Governments are committing more funding too, officially recognizing the potential of the technology.

## INDUSTRY MOVES

Key personnel moves could lead to industry shakeups and new startups. Preskill has started working with Amazon and Martinis has left Google for, currently unknown, new pastures.



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The Big News  
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# THE BIG NEWS



## AQT SELECTED AS ONE OF THE WEF TECHNOLOGY PIONEERS



AQT, which develops hardware for quantum computers based on trapped-ion technology, was selected as one of the World Economic Forum's "Technology Pioneers." AQT is a spin-off of the University of Innsbruck and the Austrian Academy of Sciences.



## IONQ'S FUNDING NOW TOTALS \$84 MILLION

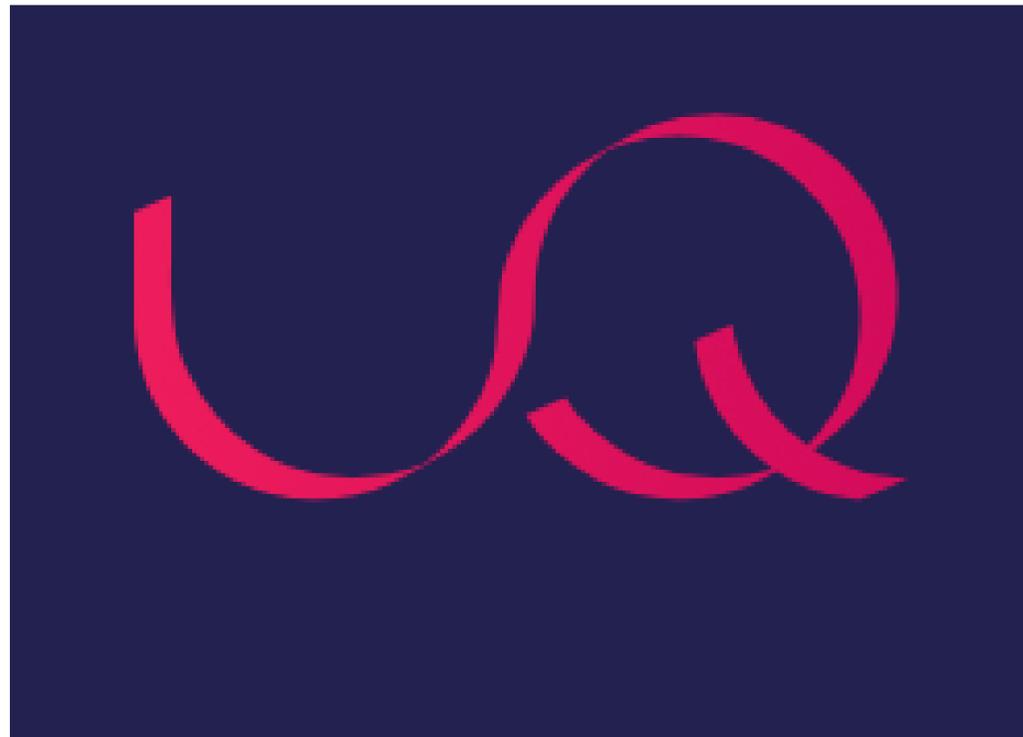


IonQ secured funding from Lockheed Martin, Robert Bosch Venture Capital GmbH (RBVC) and Cambium. This funding contributes to IonQ's Series B round, bringing the company's total amount raised to \$84 million.

IonQ is considered a pioneer in trapped-ion quantum computers.



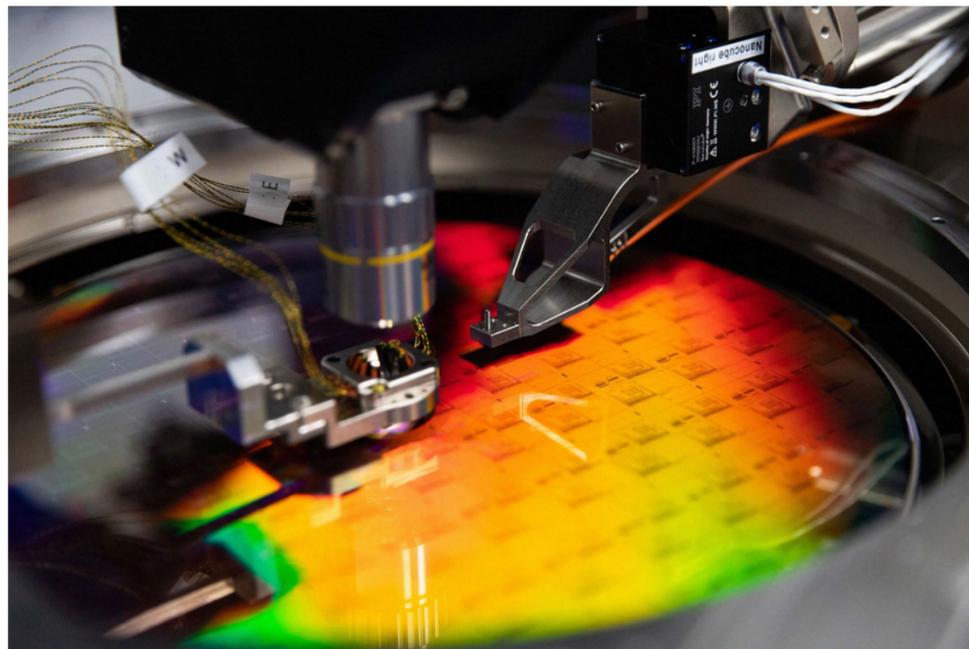
## UNIVERSAL COMPUTING - STRAIGHT OUT OF STEALTH



Universal Quantum has today emerged out of stealth announcing an oversubscribed £3.6 million — or \$4.5 million — seed-funding round. The company said it is set to develop its trapped ion-based quantum computing approach and compete with the world's biggest quantum computing companies with backing from highly influential tech investors.



## PSIQUANTUM'S SIZEABLE INVESTMENT



PsiQuantum has now raised nearly a quarter of a billion dollars in venture capital funding. The latest round, which was led by *Atomico*, brings \$150 million of new capital. Others participating in the round included VC groups, such as *Founders Fund*, growth investors like *Blackrock* and *Ballie Gifford*, and strategic partners like *Microsoft's M12 Ventures*.



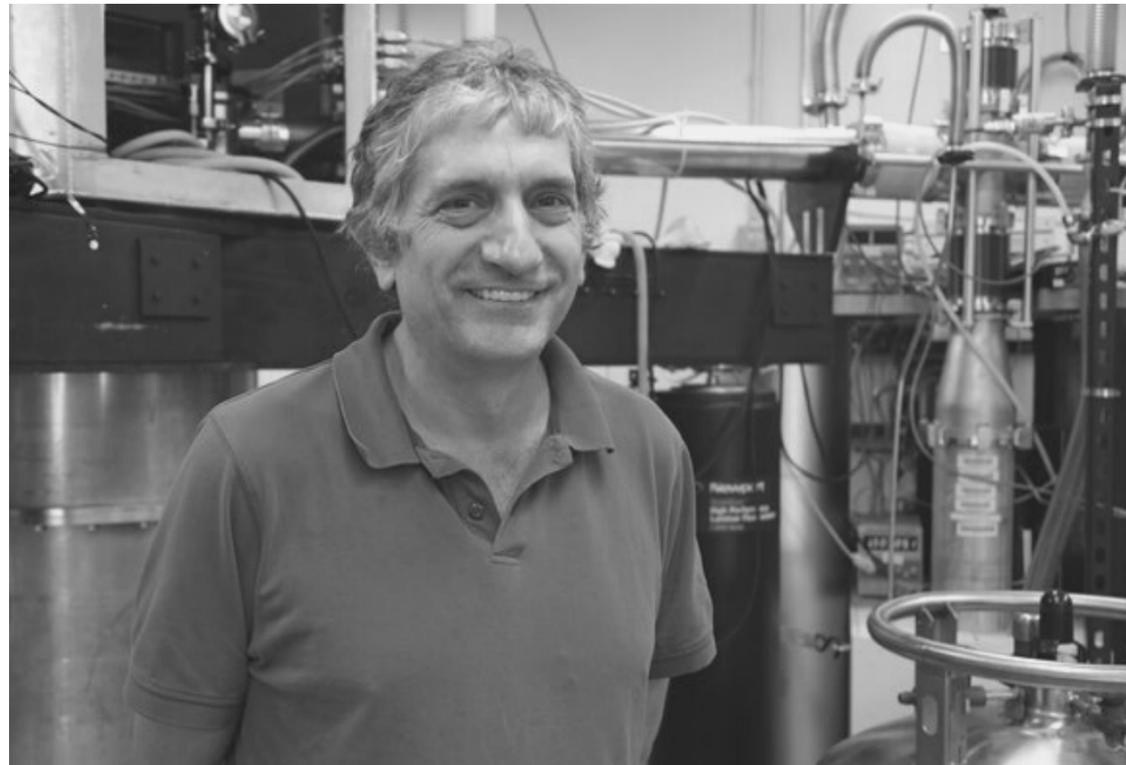
## ALICE&BOB RAISES \$3.3 MILLION



Paris-based startup Alice&Bob has raised \$3.3 million to bolster its quest to build a universal error-free quantum computer. Elaia Partners and Breega led the funding round. The company's founders are working to develop an error-free quantum computer. The cofounders are affiliated with France's Ecole Normale Supérieure.



## JOHN MARTINIS MOVES ON FROM GOOGLE'S QUANTUM TEAM



Quantum computing pioneer John Martinis has moved on from Google's quantum computing project, but he plans to continue work in the quantum field. "This is an exciting time for many groups who are working on quantum computing," Martinis said at the BCI Summit, a virtual conference on the latest advances in quantum computing. "We are now building machines and building algorithms. Of course, having real applications is difficult because classical computers are so good. It's a very healthy time right now."

# PRESKILL JOINS AMAZON'S QUANTUM COMPUTING INITIATIVE



**John Preskill**  
@preskill

I have news. Starting now I will be an Amazon Scholar, working one day per week at the AWS Center for Quantum Computing in Pasadena. We have an outstanding team, and I'm very excited to join. I will also continue as a full-time professor @Caltech and Director of @IQIM\_Caltech. /1

John Preskill, a leading pioneer in Quantum Information Science, announced at the end of June that he will be joining the AWS Center for Quantum Computing in Pasadena. He will be maintaining his position as professor at Caltech.

# RESEARCH AND SCIENTIFIC DEVELOPMENTS



"A fault-tolerant non-Clifford gate for the surface code in two dimensions" - Science Advances.

Benjamin Brown, University of Sydney

"High-fidelity manipulation of a qubit enabled by a manufactured nucleus" - NPJ Quantum Information.

Christensen, et al., UCLA

"Arrow of time and its reversal on the IBM quantum computer" - Nature.

Lesovik, et al., Moscow Institute of Physics and Technology

"Entanglement-based secure quantum cryptography over 1,120 kilometres" - Nature.

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# CAPITAL MARKETS

# \$288M

of new private capital flowing into  
Quantum Technology companies in Q2  
2020

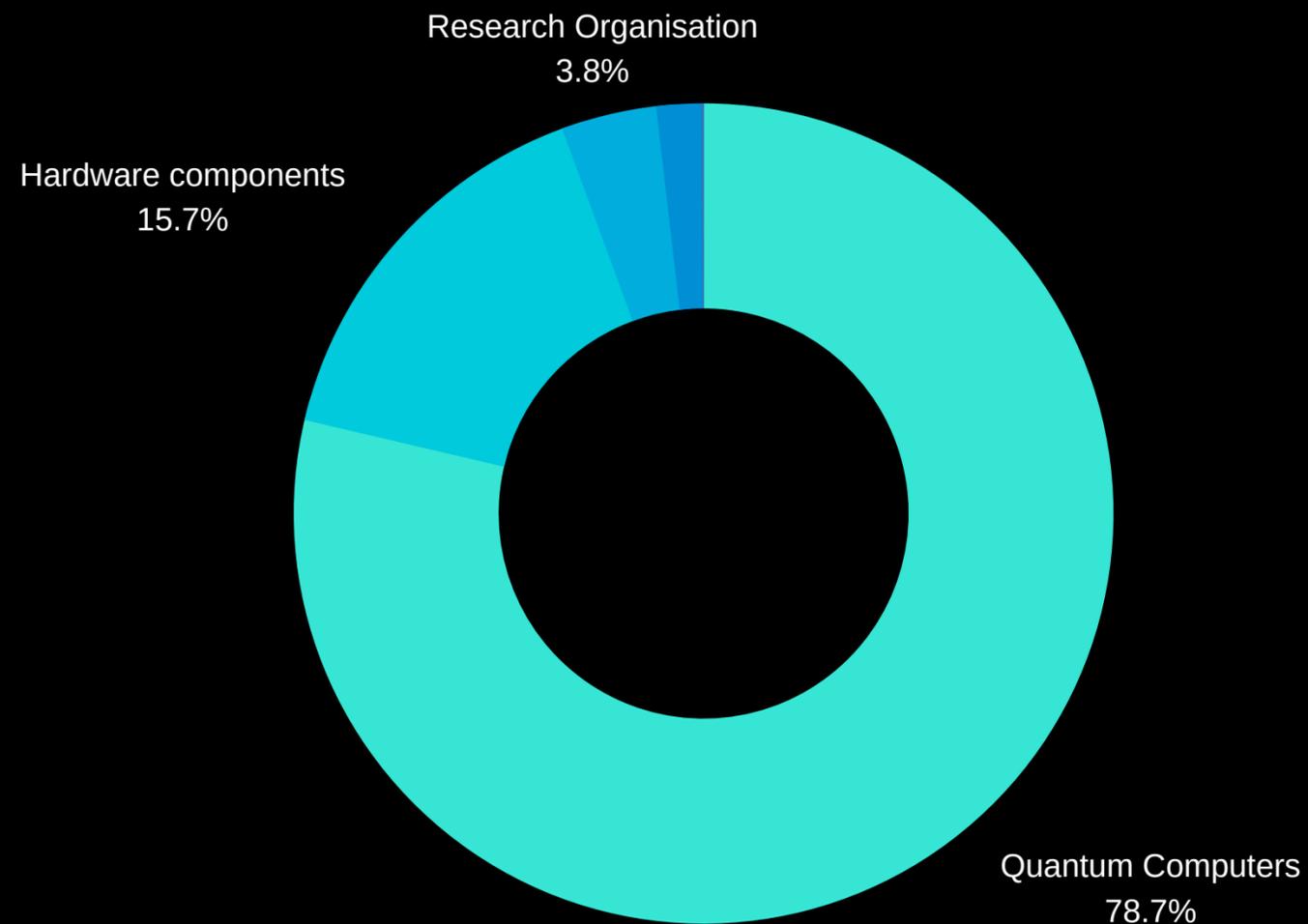
# 39

investors involved in Quantum  
Technology transactions in Q2 2020

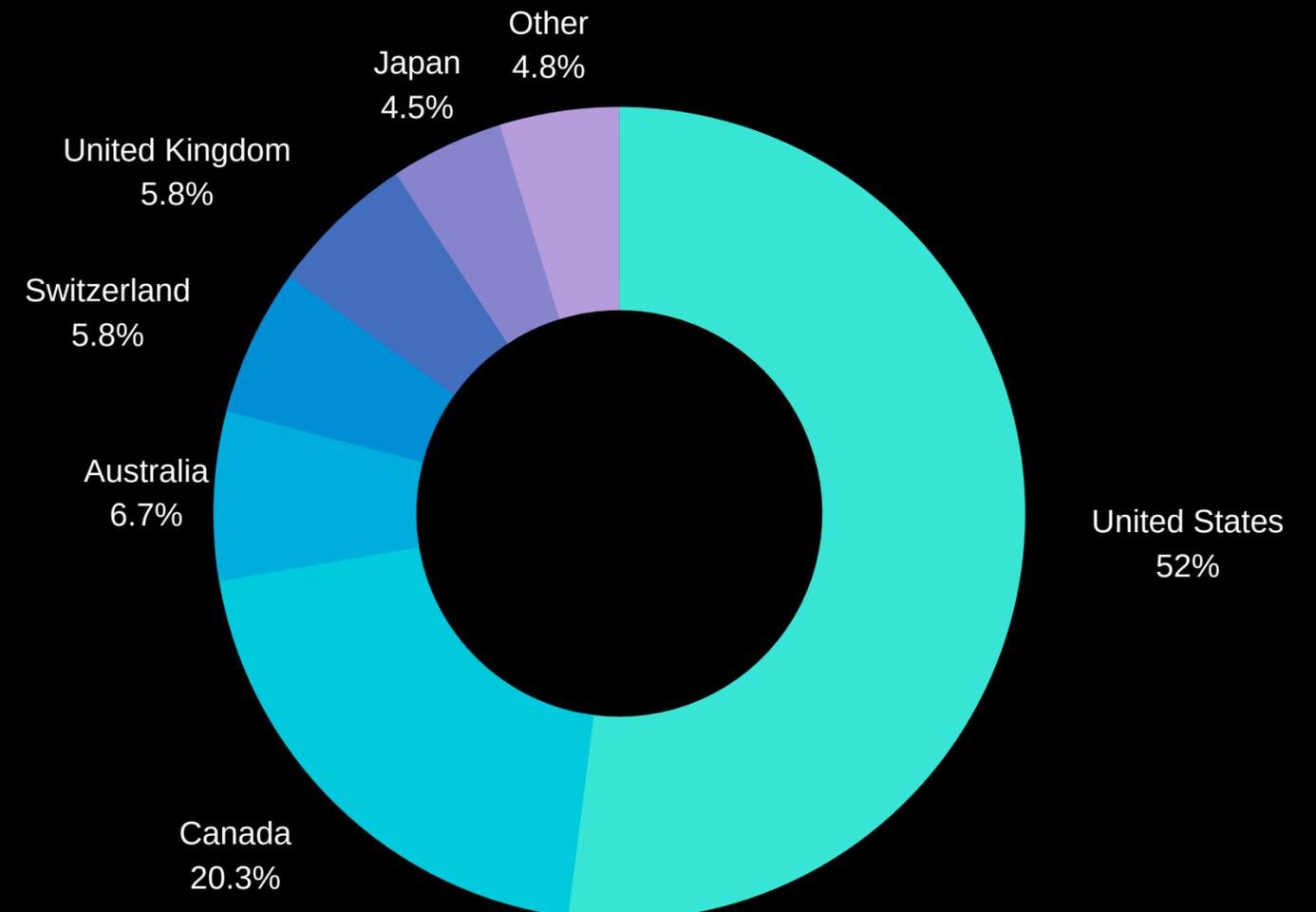
# FUNDING SPLITS

Q2 2020 funding splits heavily influenced by PsiQuantum fundraise

Split of Q2 2020 \$m investment by type



Split of Q2 2020 \$m investment by geography



# FUNDRAISES IN THE QUARTER (1 OF 3)



is aiming to build the first general purpose quantum computer using silicon photonic qubits

**\$215M**

of new capital raised from 8 investors announced on 6th April 2020



Notes: All fundraises shown in \$m and converted at spot rate on the day of announcement

# FUNDRAISES IN THE QUARTER (2 OF 3)

Company	Type	Date	\$m	Investors*
 IQM	Quantum Computers: Superconducting	11th June	19.8 (Series A + grant)	
 IONQ	Quantum Computers: Ion Trap	16th June	9.0 (Series B top up)	  
 Terra Quantum	Research org: Multiple focus areas	27th April	10.8	
 QUANTUM MOTION	Hardware Components: Processors and Chips	14th May	9.8	     
 ColdQuanta	Hardware components: laser cooled tech	12th April	7.4	

 [Click to read the full article](#)

Notes: All fundraises shown in \$m and converted at spot rate on the day of announcement \*In latest round

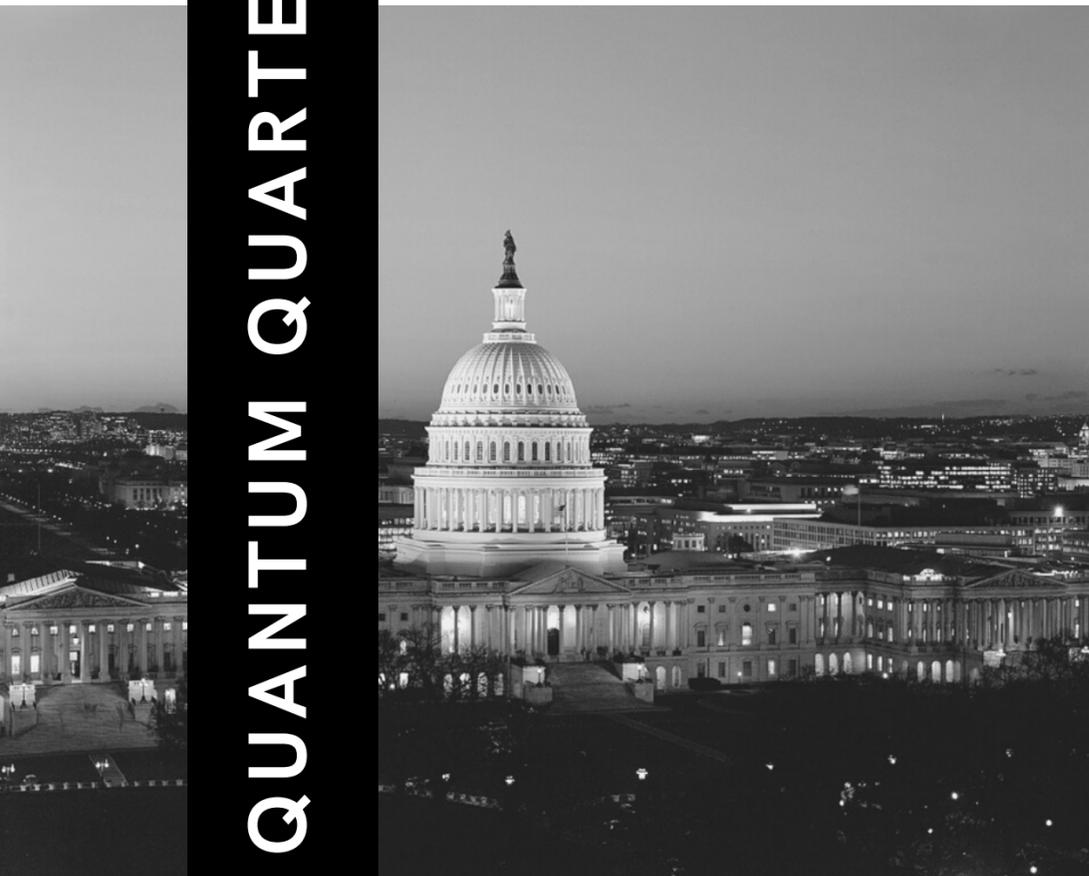
# FUNDRAISES IN THE QUARTER (3 OF 3)

Company	Type	Date	\$m	Investors*
 seeqc	Hardware Components: Processors and Chips	9th April	5.0	
 Alice & Bob	Hardware components: Processors and Chips	27th May	3.3	 
 ENTROPICA LABS	Software: Quantum Computing Algorithms	12th May	1.9	  + angel investors
 APEXQUBIT	Quantum Applications: Life Sciences	1st April	0.2	
 Q-CTRL	Software: Firmware and enablers	14th April	Strategic Investment	

 [Click to read the full article](#)

Notes: All fundraises shown in \$m and converted at spot rate on the day of announcement \*In latest round

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# GOVERNMENTS

## BILLIONS FOR A QUANTUM GERMANY



German Chancellor Angela Merkel announced a 2 billion euro innovation program for quantum technology, including investing in two quantum computers.

## INNOVATE UK



Innovate UK awarded a Oxford Quantum Circuits-led consortium the largest ever Government grant aimed at the commercialisation of superconducting quantum technologies.

## U.S. DOE GRANT

Qunnect, Inc., a deep tech company committed to globalizing Quantum Communications, received a \$1.5M Phase-II Small Business Innovation Research award from the US Department of Energy.

## FINLAND FUNDING



VTT Technical Research Centre of Finland launched a years-long project to establish an ecosystem with companies and universities with a view to acquiring the first quantum computer in Finland.

ABOUT TQD



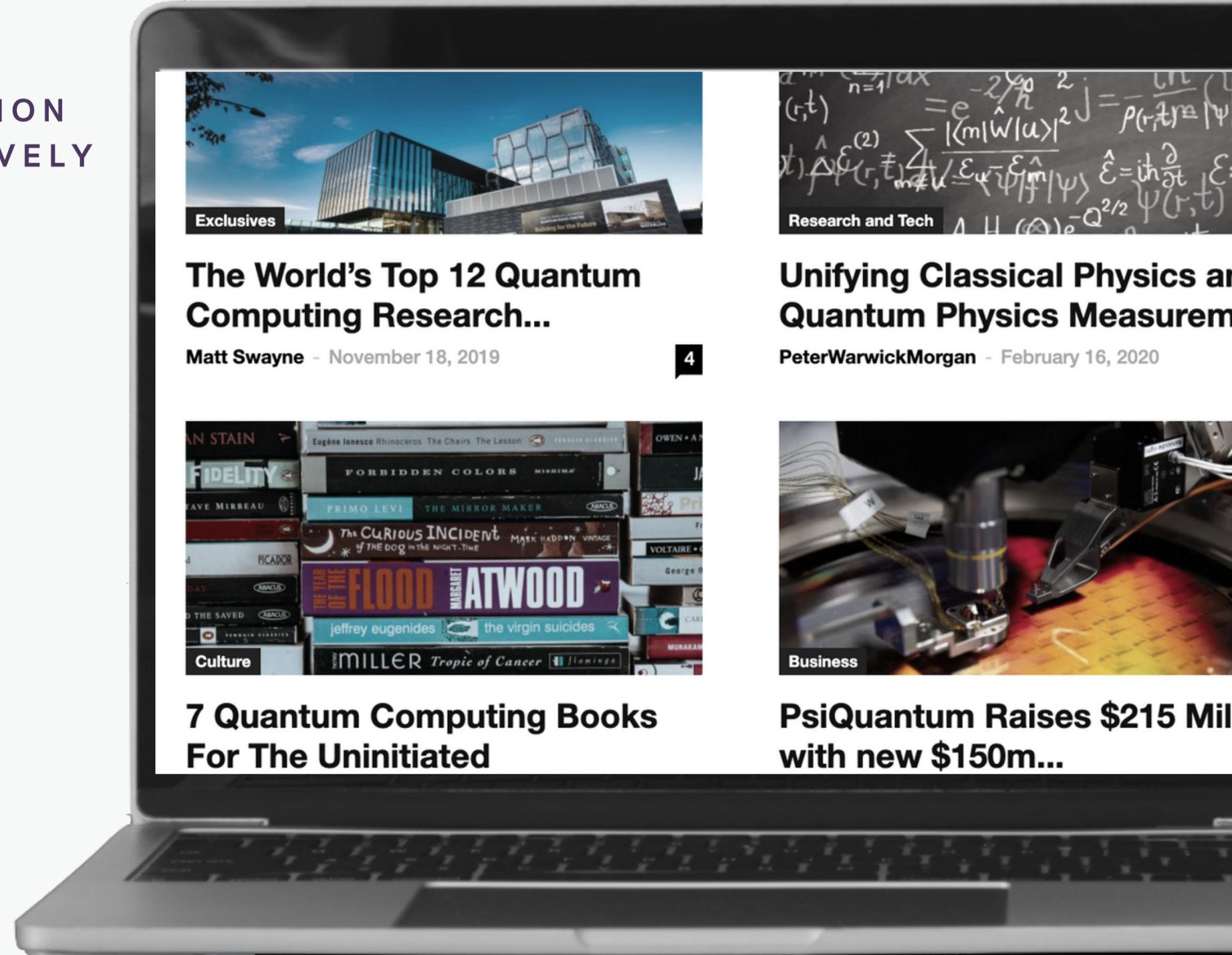
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# THE QUANTUM DAILY

IS THE WORLD'S FIRST DIGITAL INFORMATION AND DATA PLATFORM DEDICATED EXCLUSIVELY TO QUANTUM COMPUTING

- Leading provider of content and information on the Quantum Computing industry
- Focus on the commercial applications of the technology
- News, analysis, exclusive interviews, long-form reviews and data (see next page)



# DATA

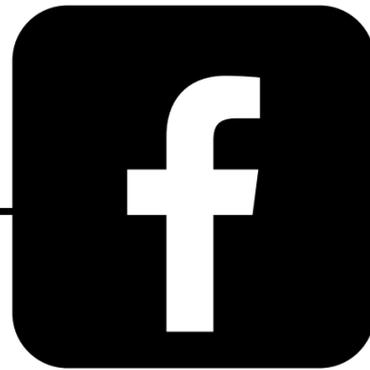
## PRICE UPON REQUEST

- For Advertisers: Appear on our industry leading dataset being used daily by our community.
- For Companies: Map your market and competitors.
- For Investors: Complete industry map with key insights and subsectors profiling the various QC stakeholders and their technological developments all the way to capital market players and the investments they make.

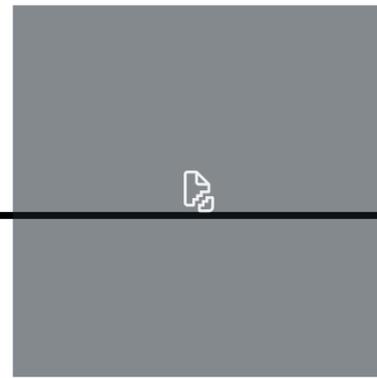
Logo	Name	Description	Primary Classification	Country	Details
	1QBit	1QBit develops and sells hardware-agnostic quantum software tools	Software	Canada	<a href="#">More Info</a>
	Agnostiq	Agnostiq develops solutions to provide secure access to remote quantum computers	Quantum Access	Canada	<a href="#">More Info</a>
	Alibaba Quantum Lab	Quantum Lab, part of Alibaba's DAMO Academy	Full stack	China	<a href="#">More Info</a>
	Alice&Bob	Developing quantum error correction solutions	Hardware components	Paris	<a href="#">More Info</a>
	Aliro Quantum	Aliro Quantum provides a hardware-independent toolkit for developers of quantum algorithms and applications	Quantum Access	United States	<a href="#">More Info</a>



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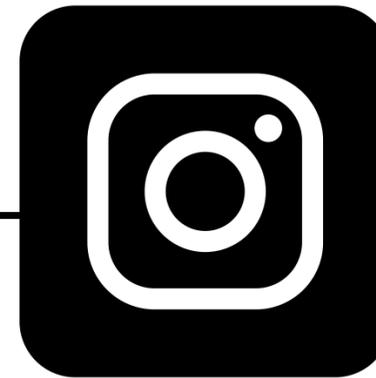
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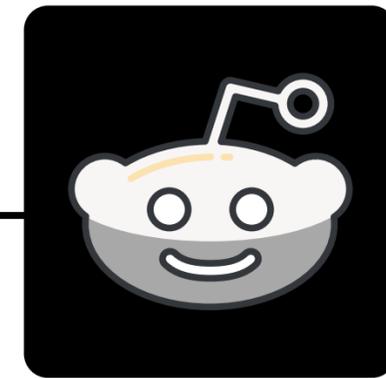
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We would love to hear your feedback on our work.  
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