

ASX Announcement ([ASX: AXE](#))

5 May 2020

Quantum computing agreement with IBM

Highlights

- Archer signs an agreement with IBM to advance quantum computing and work towards solutions for the widescale adoption of the technology.
 - Archer is the first Australian company building a quantum computing qubit processor to join the global IBM Q Network as an ecosystem partner.
 - IBM staff will work directly with the Archer team who will gain access to IBM's quantum computing expertise and resources to enable a broader hardware ecosystem using IBM's open source software framework, Qiskit.
 - Archer is considerably advancing the commercial readiness of its ¹²CQ qubit processor chip technology towards a minimum viable product.
 - The intellectual property rights protecting the ¹²CQ qubit processor chip technology are exclusively held by Archer.
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Archer Materials Limited (“Archer”, the “Company”, “[ASX: AXE](#)”) is pleased to announce that the Company has entered into an agreement with International Business Machines Corporation (“IBM”, “[NYSE: IBM](#)”). Archer and IBM will work together on the advancement of quantum computing.

As part of the agreement between Archer and IBM (“Agreement”), Archer is now a member of the IBM Q Network and the associated IBM Quantum Experience for Business program (see below *About IBM Quantum*). Archer is the first Australian company developing a quantum computing processor and hardware to join the invitation-only, IBM Q Network.

Commenting on the Agreement with IBM, Archer CEO Dr Mohammad Choucair said: “We are the first Australian company building a quantum chip to join into the global IBM Q Network as an ecosystem partner, a group of the very best organisations at the forefront of quantum computing.

“Ultimately, we want Australian businesses and consumers to be one of the first beneficiaries of this exciting technology, and now that we are collaborating with IBM, it greatly increases our chances of success”.

“We look forward to working with IBM and members of the network to address the most fundamental challenges to the wide-scale adoption of quantum computing, using our potentially complementary technologies as starting points”.



Image 1. (Left) Archer CEO and co-inventor of the ¹²CQ chip technology, Dr Mohammad Choucair *FRACI FRSN GAICD*, and (right) Quantum Technology Manager and pioneering physicist, Dr Martin Fuechsle. The Archer team, based in Sydney, Australia, will work with the IBM teams based in New York, USA, as part of the IBM Q Network.

As a member of the IBM Q Network, Archer will have access to IBM's quantum computing expertise and resources, and open-source Qiskit software and developer tools. IBM will also provide Archer access to the IBM Quantum Computation Center, which includes the most advanced quantum computers commercially available to explore practical applications for business.

All of Archer's intellectual property rights and title to pre-existing materials are unaffected by the Agreement.

Commenting on Archer's ¹²CQ progress, Archer CEO Dr Mohammad Choucair said: "The Agreement with IBM is a realisation of the substantial progress Archer has made to date. We are now in a better position to potentially scale our competitive advantage globally.

"The quantum computing economy is rapidly growing, complex, and has the potential to impact all sectors dependent on computational power. First-movers are therefore in the best position to seize the lion's share of the total value generated in this multibillion-dollar industry."

"Archer joining the IBM Q Network will help strengthen quantum computing in Australia", Dr Choucair concluded.

Next Steps

Archer's ¹²CQ chip is a disruptive quantum computing technology, and in the current stage of development, maintains a competitive advantage that is extremely difficult to erode. Archer intends to develop the ¹²CQ chip to be directly sold and the intellectual property rights to the chip technology licensed.

Archer and IBM will seek mutually beneficial collaborative opportunities on the advancement of quantum computing. Such opportunities may include demonstration and development of actual and conceptual quantum processors and hardware, algorithms, applications, and business use cases.

About Archer's ¹²CQ Chip

¹²CQ is a world-first technology that Archer aims to build for quantum computing operation at room-temperature and integration onboard modern electronic devices. For more information about Archer's quantum technology, please visit <https://archerx.com.au/advanced-materials/>.

¹²CQ® is a registered trademark of Archer Materials Limited.

About IBM Quantum

IBM Quantum is an industry-first initiative to build commercial universal quantum systems for business and science applications. For more information about IBM's quantum computing efforts, please visit <https://www.ibm.com/quantum-computing/>.

IBM Q Network™ is a trademark of International Business Machines Corporation.

Quantum Computing Market

Australia forms a significant part of the growing quantum computing economy. Archer is one of few companies globally that provides investors an on-market opportunity to invest in quantum computing¹. The highest-value in the quantum computing economy is derived from the technology's development in the US, EU, and Australia².

About Archer

A materials technology company developing materials in quantum computing, biotechnology, and lithium-ion batteries, and exploring for minerals in Australia. The Company has strong intellectual property, broad-scope mineral tenements, world-class in-house expertise, a unique materials inventory, and access to over \$300 million of technology development infrastructure.

The Board of Archer authorised this announcement to be given to ASX.

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Website:

<https://archerx.com.au/>

Twitter:

<https://twitter.com/archerxau?lang=en>

YouTube:

<https://bit.ly/2UKBBmG>

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<https://medium.com/@ArcherX>

Sign up to our Newsletter:

<http://eepurl.com/dKosXI>

¹ <https://www.nature.com/articles/d41586-019-02935-4>

² <https://www.bcg.com/publications/2019/quantum-computers-create-value-when.aspx>