

The background of the slide is a photograph of a modern, multi-story building with a glass curtain wall. The building is situated behind a paved courtyard area. In the foreground, there are several trees with green foliage, some of which are in the left and right sides of the frame. A concrete planter box is visible in the lower-left corner, containing a small tree. The overall scene is bright and clear, suggesting a sunny day.

ARCHER

Goldman Sachs Emerging Tech Series
Investor Presentation 28 April 2022

Research & Prototype Foundry Archer operates in,
Sydney, Australia.

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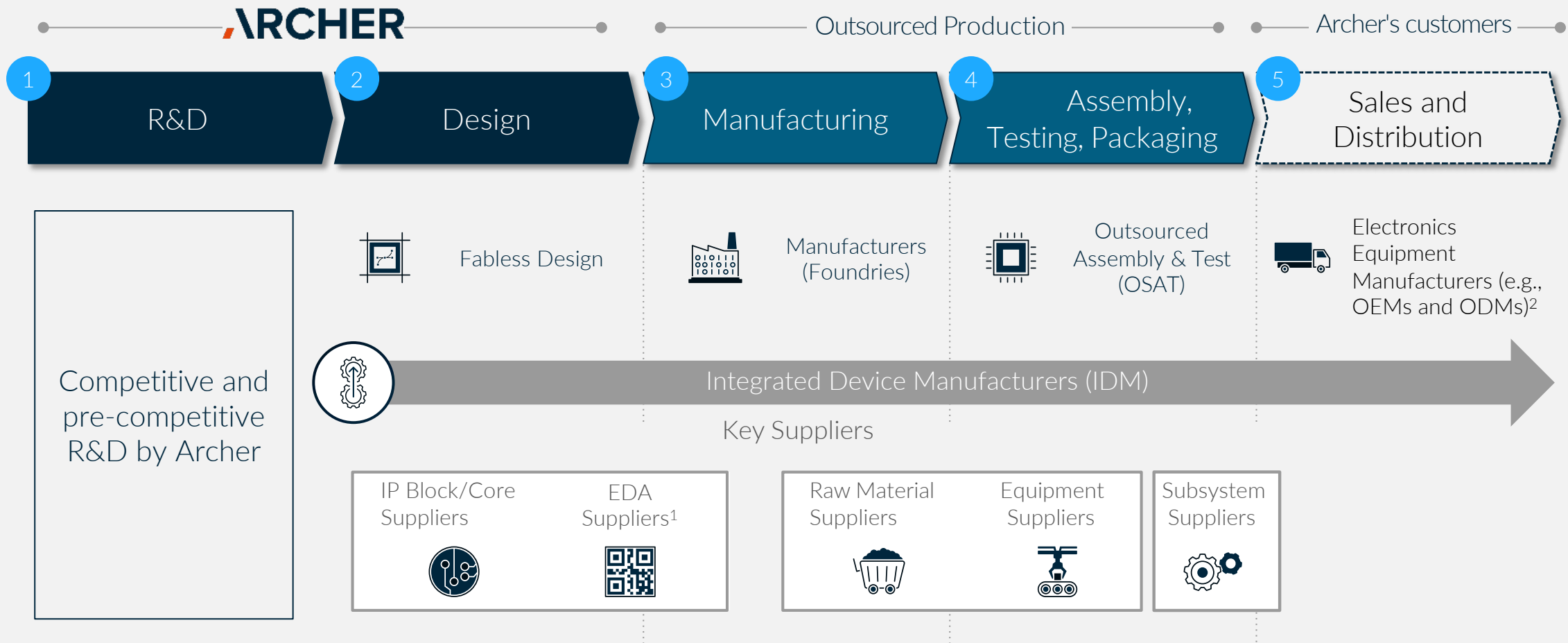
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Archer is developing advanced semiconductor devices that are relevant to quantum computing technology



1. Electronic Design Automation; 2. Firms engaged in branding, marketing, designing, and manufacturing electronic equipment that incorporates semiconductor content into electronic products including Original Equipment Manufacturers (OEM) and Original Design Manufacturers (ODM); Source: Gartner; BCG Analysis



ARCHER IS ONE OF A FEW COMPANIES IN THE WORLD DEVELOPING A QUANTUM COMPUTING PROCESSOR

Archer is a pure-play deep tech that is long-term value driven...

... creating value by



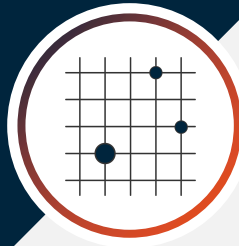
Attracting and retaining pioneering innovators and technologists



Working with global computing giants, high growth venture SMEs, and Tier 1 international tech institutes



Technology development backed by world-class R&D



Patents granted in the US, China, South Korea, Japan, and Europe – including UK and Germany



Efficient use of funds with A\$28.3M cash and no corporate debt*



Access to \$1B+ of deep-tech infrastructure and facilities

The Archer team is led by pioneering nanotechnologists, physicists, chemists, and semiconductor engineers



Dr Mohammad Choucair *FRACI FRSN GAICD*, CEO. RACI Cornforth Medallist for the most outstanding Chemistry PhD in Australia. Alumni of AGSM UNSW Business School. Former World Economic Forum Global Councillor. Inventor of the ^{12}CQ quantum computing technology. Honorary Fellow of the University of Sydney.

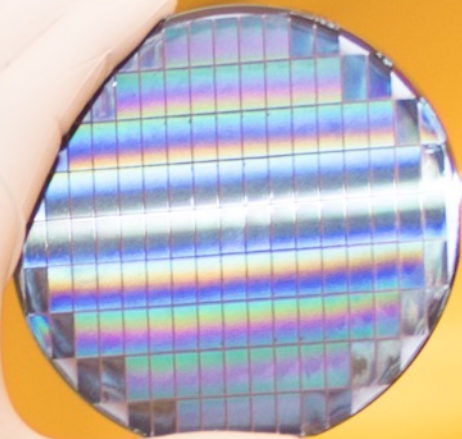


Dr Martin Fuechsle *MRSN*, Quantum Tech Manager. AIP Bragg Gold Medallist for the most outstanding Physics PhD in Australia. Inventor of the single-atom transistor heralding the limit of Moore's Law. Honorary Associate of the University of Sydney.



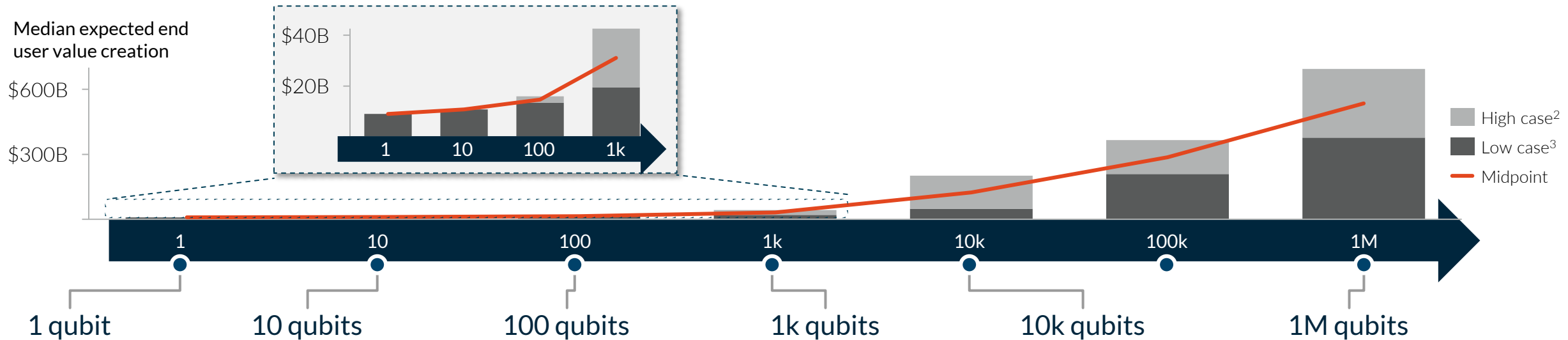
A/Prof. Dr Matthew Broome *MinP*, Quantum Tech Manager. Awarded the prestigious Marie Curie Fellowship. Fabricated and measured the world's first two-qubit device in a donor-based silicon quantum processor.

QUANTUM COMPUTING IS REVOLUTIONARY DEEP-TECH



The potential of quantum computing increases with qubit volume, but even one qubit could bring incredible value to end users

End user value creation expected to reach between US\$450B and US\$820B at 1M qubits



Applications where quantum surpasses classical solutions based on number of qubits¹

Quantum sensing
Quantum random
number generation
(‘QRNG’)

Improved sensing and
QRNG
Classical-assisted Monte
Carlo simulations
Non-quantum
advantaged compute

Classical assisted
quantum algorithms
(e.g. VQE)

Classical-assisted
machine learning

Quantum network
applications
(e.g. transmitting
quantum information)

Advanced search
Optimisation
Machine learning
and AI
Materials research, chemical
simulation

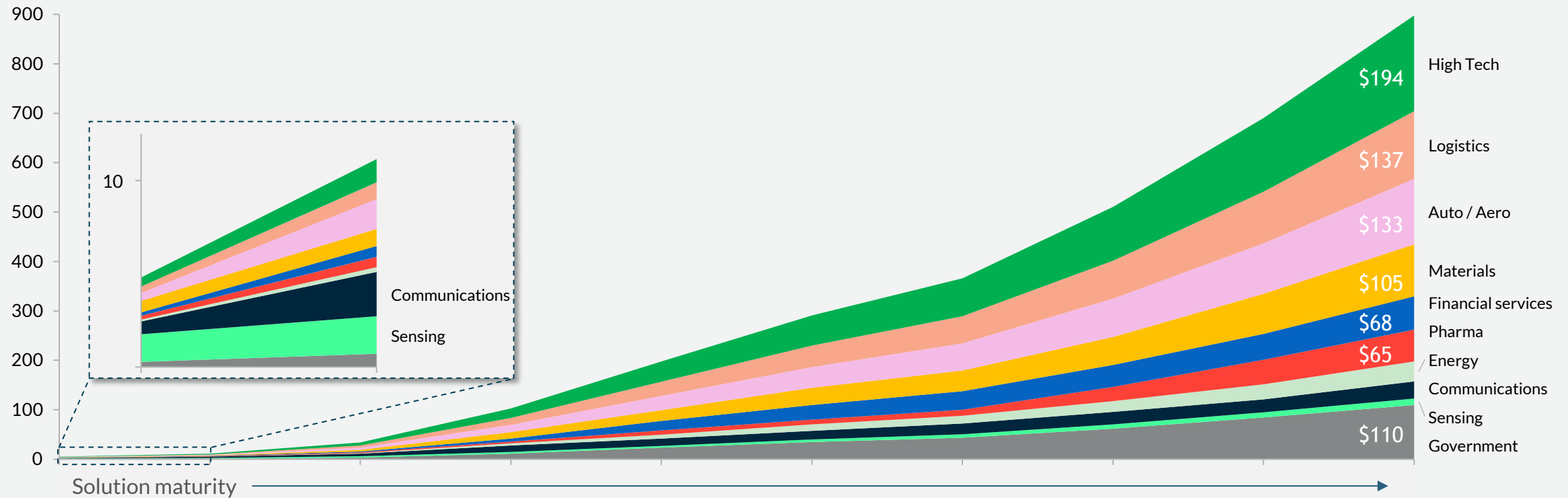
1. Physical qubits. 2. High case based on 100:1 ratio of physical to logical qubits. 3. Low case based on 1000:1 ratio of physical to logical qubits.
Source: Krelina, "Quantum technology for military applications" EPJ Quantum Technology (2021); Perdomo-Ortiz et al, Quantum Sci. Technol. (2018)

US\$900B in value creation for end users as quantum computing reaches maturity

Current: Quantum Comms. and Sensing most mature markets

Future: Quantum computing expected to drive transformative value across sectors

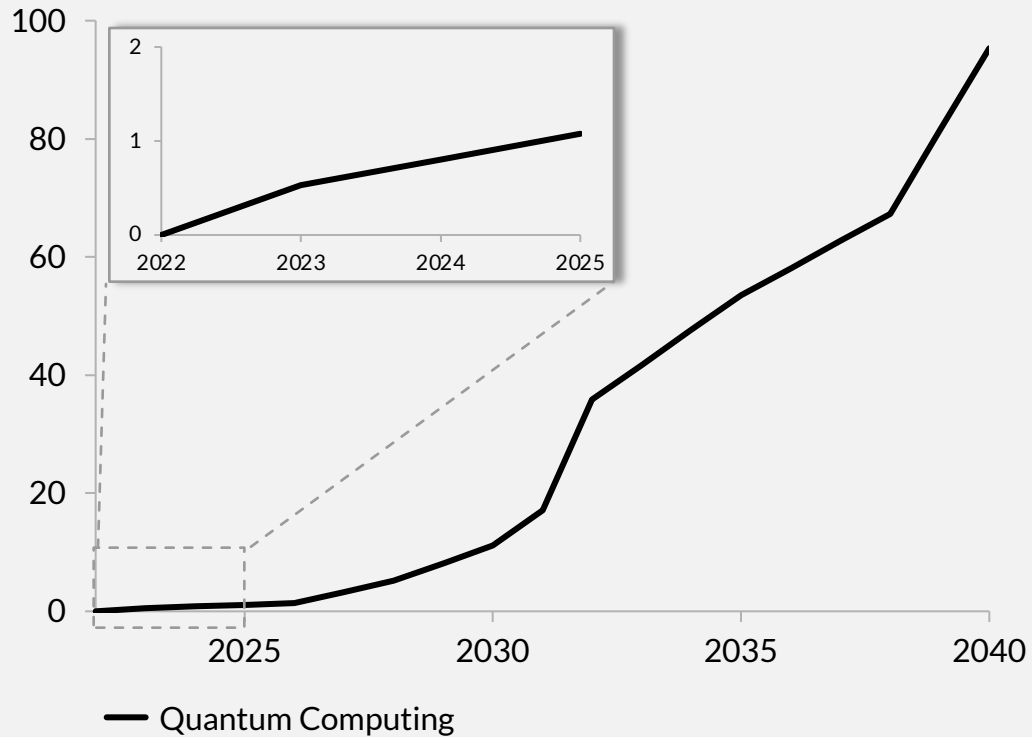
Value created for end users (US\$B)



Note: End user value creation defined as incremental revenue/value generated for the end user in using quantum technology, including Quantum Computing, Quantum Communications and Quantum Sensing. Auxiliary revenue from quantum technology not included.
Source: BCG analysis

The quantum market is growing rapidly...

Estimated market size (US\$B)

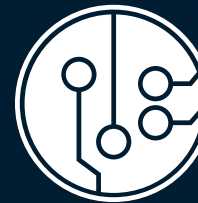


Note: Auxiliary revenue from quantum technology not included.
Source: BCG analysis

...expected large scale adoption **after 2030**



Adoption of quantum computing expected to increase with quantum hardware maturity



Quantum cloud providers have announced a goal of moderate to high quantum maturity by 2030

Source: Krelina, "Quantum technology for military applications" EPJ Quantum Technology (2021); IBM quantum roadmap; IonQ quantum roadmap



Era of Quantum Computing

Value for investors in the quantum computing economy is expected to increase as quantum hardware is developed:

- + The Australian Government's Blueprint and Action Plan for Critical Technologies sets a national vision & strategy for critical technologies, including quantum technology[‡].
- + The CSIRO[§] reported Australian quantum tech could create A\$4 billion revenue and 16,000 new jobs by 2040.
- + The US National Quantum Initiative Act was signed into US law on Dec 21, 2018* with the US planning to invest US\$170+ billion on advanced tech**.
- + The International Roadmap for Devices and Systems lists Quantum Computing a key tech in the 'post-Moore' era[‡].

[‡] <https://www.pmc.gov.au/resource-centre/domestic-policy/blueprint-critical-technologies> and <https://www.pmc.gov.au/resource-centre/domestic-policy/action-plan-critical-technologies>

[§] <https://www.csiro.au/en/work-with-us/services/consultancy-strategic-advice-services/csiro-futures/futures-reports/quantum>

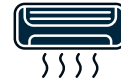
* <https://www.congress.gov/bill/115th-congress/house-bill/6227>

** <https://www.congress.gov/bill/117th-congress/senate-bill/1260>

[‡] https://en.wikipedia.org/wiki/International_Roadmap_for_Devices_and_Systems

**^{12}CQ has unique advantages
over other quantum tech...**

... with potential for



Room-temperature operation



Integration with common electronics



Compatibility with smaller form factors, e.g. mobile



Simplicity in operation and maintenance

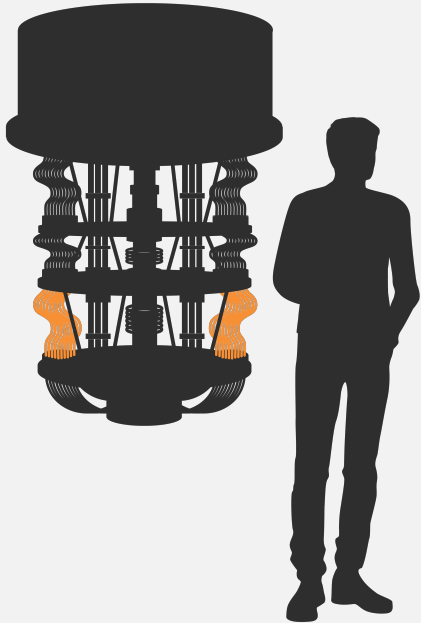


Low-latency, on-premise integration inside data centres



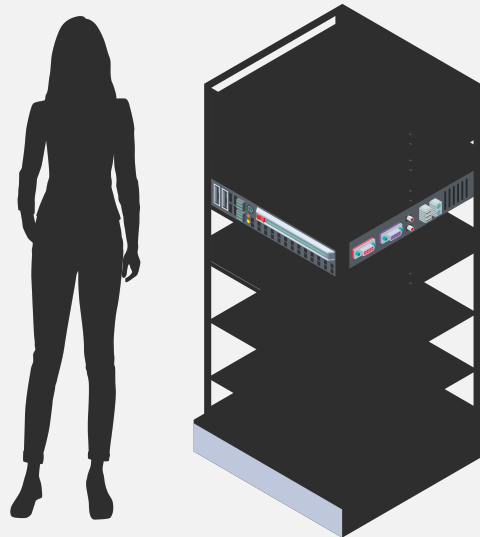
Highly sensitive mobile use cases with co-located encryption and compute

Potential solution to push quantum access and use beyond cloud and edge...



Cloud-based

Require ultra-low temperatures and infrastructure to operate.
Accessed via the cloud.
e.g. Superconductor, silicon, topological.



Edge and/or Cloud-based

Operate at room temperature but are difficult to integrate into modern devices. Installed on-site.
e.g. Photonic, ion-traps, diamond.

... to your mobile

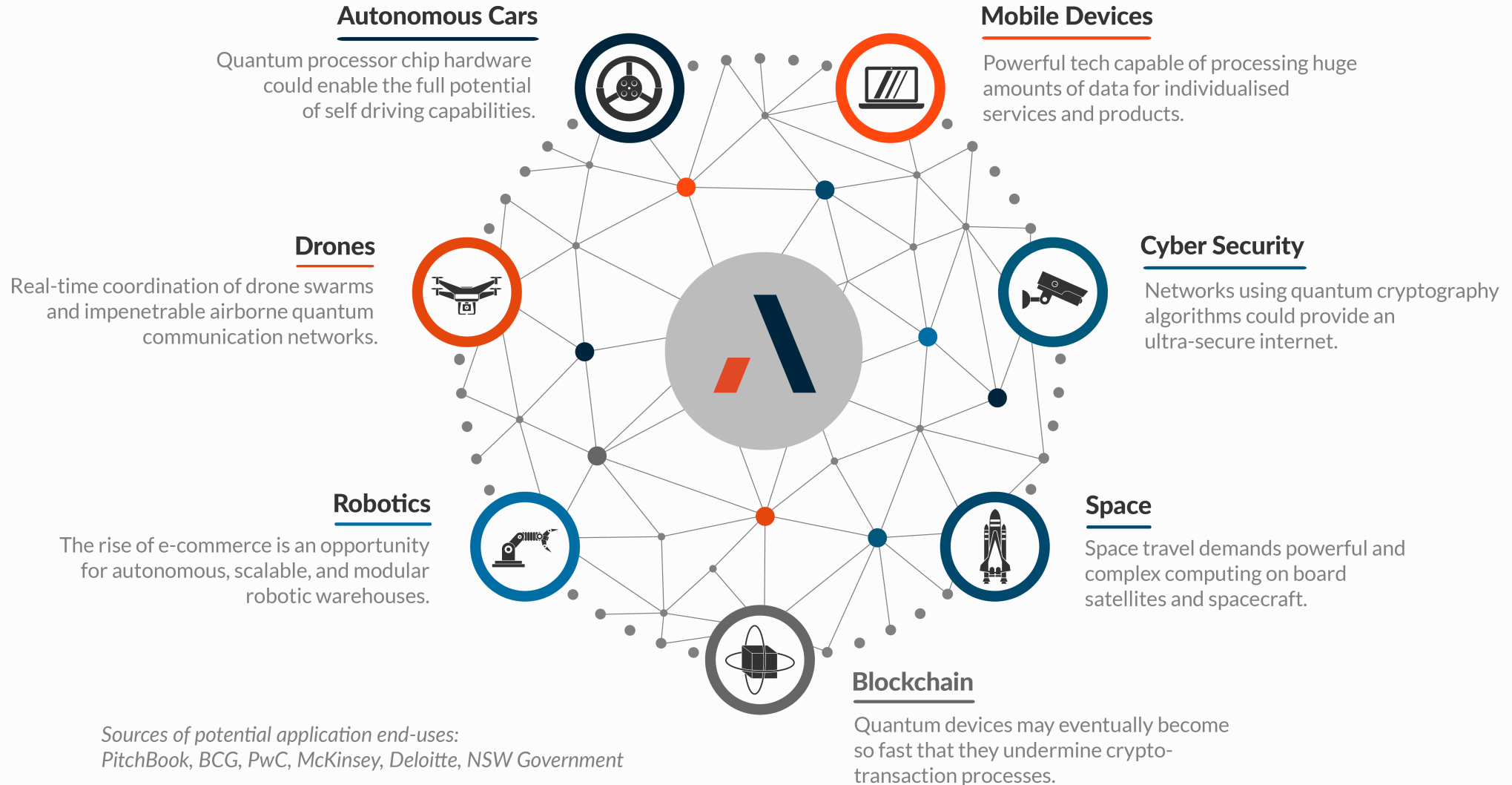


Quantum Powered Mobile Devices

QPMDs will require practical qubit processors that integrate into modern devices.
e.g. ^{12}C chip development.

In-depth analysis: <https://www.bcg.com/en-au/publications/2021/building-quantum-advantage>
More information, by Dr M. Choucair, Mar 26 2021: <https://www.ibm.com/blogs/ibm-anz/why-quantum-deserves-your-attention/>

Archer expects ^{12}CQ quantum technology to enable industry-wide innovation



Opportunity to integrate ¹²CQ into 150 million+ devices



Datacentres

12 million

Units ordered globally 2021



Mobile

147 million

US smartphone shipments in 2021



Computers

19 million

US personal computer shipments Q1 in 2022

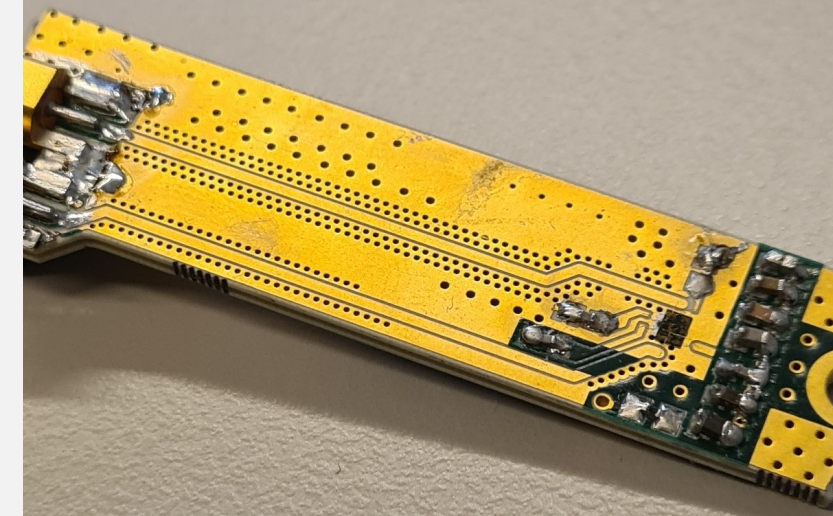
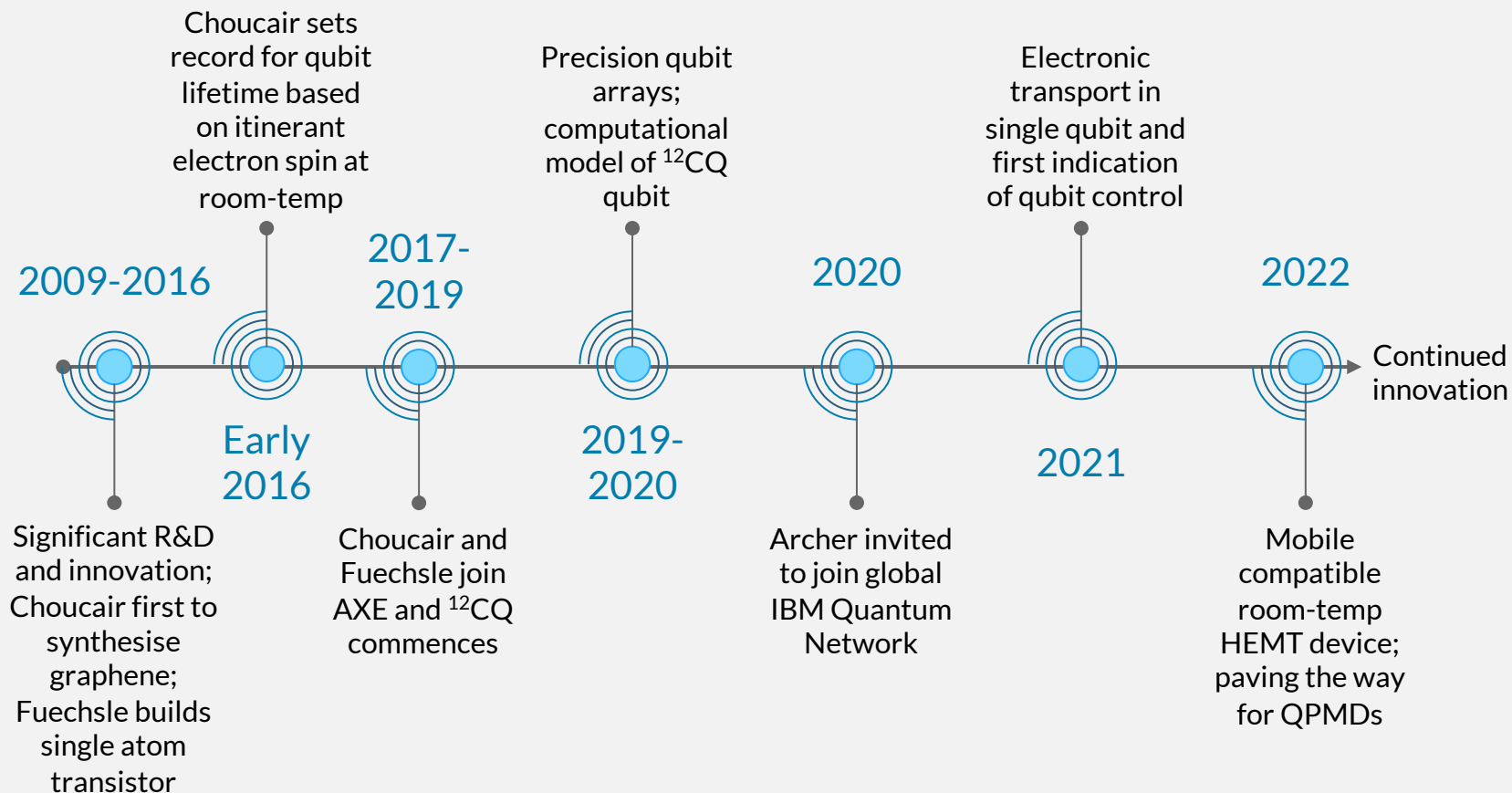


Point-of-sale

659 thousand

Restaurants needing POS terminals in the US in 2020

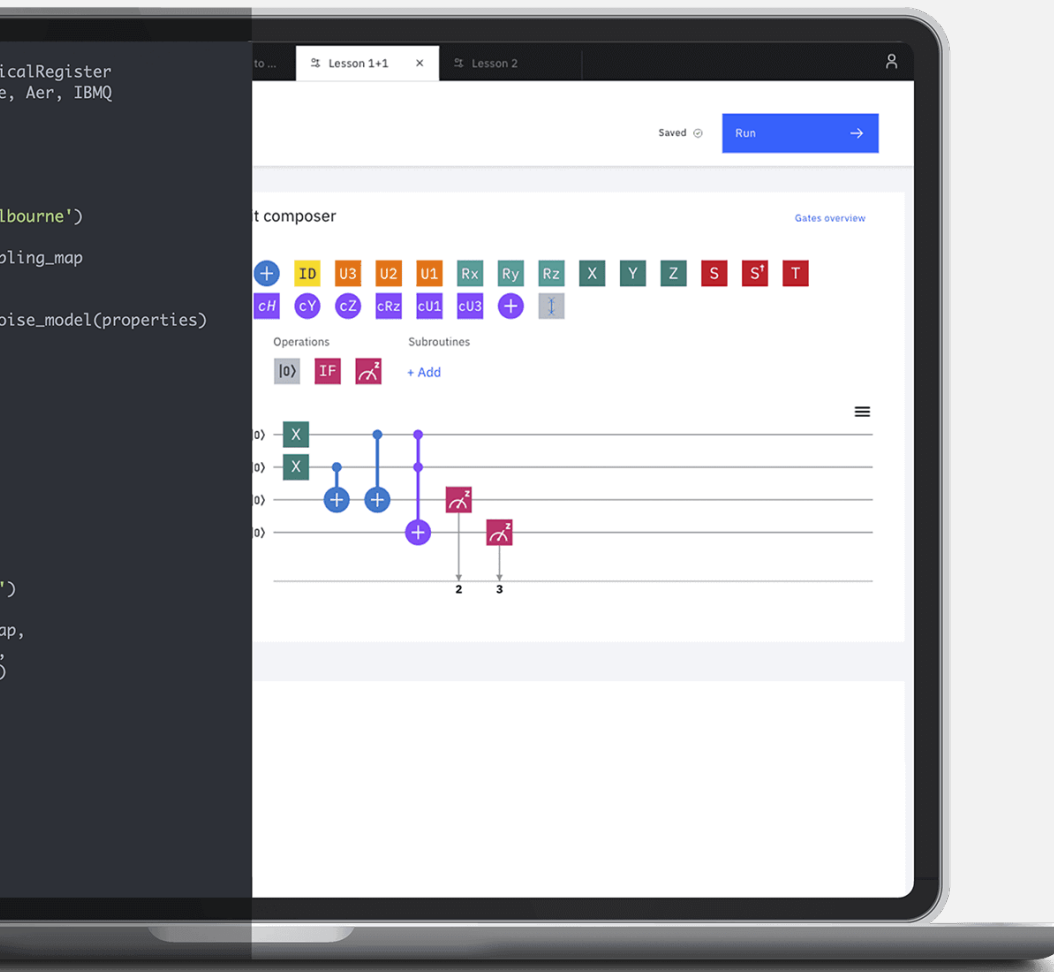
Archer's record setting innovation is at the forefront of international quantum development



Mobile compatible HEMT device developed to detect quantum information in Archer's ^{12}CQ qubit material.



† References: <https://www.nature.com/articles/nnano.2008.365>; <https://www.nature.com/articles/nnano.2012.21>; <https://www.nature.com/articles/ncomms12232>; <https://pubs.acs.org/doi/10.1021/nl202866q>; <https://doi.org/10.1016/j.carbon.2014.03.046> <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2017091870>



IBM's Qiskit interface showing a quantum computing gate compiler. Image sourced from IBM website.

Global Partnerships

Archer entered into an agreement with IBM to collaborate on the advancement of quantum computing, supporting:

- + Archer's plans to use Qiskit as the software stack for ^{12}CQ chip processors and to participate in the global IBM Quantum Network[†].
- + The Company's access to the IBM Quantum Computation Center, which includes the most advanced quantum computers available to explore practical applications.
- + The demonstration of Qiskit's flexibility, integrating with different quantum hardware (e.g. ^{12}CQ chip processors) to accomplish the goal of enabling *practical* quantum computing applications.

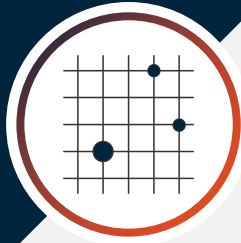
[†]ASX announcement 4 May 2021.

The quantum journey requires Archer to break through barriers...

...by systematically pushing each limit



World-first tech development towards
1 qubit with mobile compatibility



Patent prosecution and portfolio growth towards
grant in Australia and Hong Kong



Establishing and strengthening strategic commercial
partnerships



Growing the Archer team and expanding access to world-class tech
development infrastructure in Australia and abroad

ASX Code: AXE

ACN: 123 993 233

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

ADELAIDE

Lot Fourteen, Frome Road
Adelaide SA 5000 Australia
Phone: +61 8 8272 3288

SYDNEY

Level 4, 17-19 Bridge Street
Sydney NSW 2000 Australia
Phone: +61 2 8091 3240

Email: hello@archerx.com.au

Website: www.archerx.com.au

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

LinkedIn: <https://www.linkedin.com/company/archerxau>

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