

# PsiQuantum

**First invested:** May 2021

**Status:** Private

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## What does it do?

PsiQuantum is building the world's first fault-tolerant quantum computer – a system capable of running quantum algorithms at a commercial scale. By leveraging the existing technologies in the semiconductor industry, PsiQuantum has manufacturable versions of all the components needed and is now focused on system integration and deployment, with its first-generation facilities scheduled to go live by the end of the decade.

## Why do we invest?

Quantum computing can open the doors to solving complex scientific problems, much faster and for a fraction of the cost. Unlike traditional computing which operates in binary bits, on or off, quantum computing uses qubits, which can exist in multiple states simultaneously. This allows to simulate the world around us in far greater detail than ever before.

For example, in the energy space, quantum computers could model exactly how individual electrons and ions move through materials and use this to develop much more powerful batteries and solar panels. In healthcare, they could reveal precisely how proteins fold and combine into lifesaving drugs. In agriculture, we could reverse engineer the catalysts that bacteria use to make their own fertiliser or reveal the secrets of efficient carbon capture behind photosynthesis.

We think PsiQuantum has an advantage in developing a truly useful quantum computer. By pioneering photonics, when most others were focussed on superconducting, they've led a path that – though initially harder – holds more long-term promise. Their approach uses existing semiconductor manufacturing capabilities, making it much more likely to be scalable than other alternatives. With all key components ready, the company is moving to the next stage of deployment.

It continues to pass deep technological review processes by third parties and has brought in government funding from the US and Australia – a further proof of the credibility of their approach.

## Who is key?

The founding team of leading quantum scientists, Mark Thompson, Jeremy O'Brien, Terry Rudolph, and Pete Shadbolt, brings together expertise across photonics, quantum architecture, and algorithms. The founders have cultivated a culture of long-term focus, scientific rigor, and commercial pragmatism.

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