

Stock story: PsiQuantum

May 2024

Investment manager Luke Ward explains why quantum computing could be a superpower to rival AI, and how PsiQuantum is harnessing existing production methods to deploy this technology at scale.

Luke Ward: Imagine a world where we could solve complex scientific problems in a week rather than a decade, and for a fraction of the cost. While most eyes are focussed on AI, there's another superpower in the making, quantum computing.

Unlike traditional computing which operates in binary bits, on or off, quantum computing uses qubits, which can exist in multiple states simultaneously. This allows them to simulate the world around us in far greater detail than ever before. As a result, things which are considered impossible today, could very soon become a reality thanks to these devices.

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.

The historic challenge, however, has been that qubits are very hard to make and control. They are sensitive to even the slightest disturbance, and so researchers have been restricted to using exotic materials and small systems, much more suited to scientific demonstration than commercial application. Progress towards transformational use cases has been limited as a result.

This is where PsiQuantum comes in. PsiQuantum is a company on a mission to build and deploy the world's first useful quantum computer. It was founded on the premise that scalability, not just science, is the key to success here. Whilst there are many ways to make one qubit, there's probably only one way to make the millions of qubits needed for quantum computing to change the world.

PsiQuantum's innovation is having designed its chips and qubits to fit in with traditional silicon manufacturing processes. This is allowing it to leverage the billions of dollars and decades of experience already accumulated by the semiconductor industry, to help mass produce its quantum hardware.

On the strength of this approach the company has attracted significant funding and is now getting ready to build its first facility in Australia. The plan is for this to be operational within the next five years, far sooner than competitors, and become one of the most important tools for innovation that has ever existed.

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