To the quantum computing skeptics, enthusiasts, and undecideds:

BIG TECH LEADERS have demonstrated that they don't fully understand the nuances of quantum computing. They speculate about its potential hitting in 15, 20, or even 30 years, but what they fail to mention is that quantum computing technology is delivering tangible value today.

By the time you finish reading this letter, D-Wave™ quantum computing systems will likely have solved highly complex optimization problems for customers ranging from airlines to logistics companies to retailers. These calculations would have taken hours or days to complete on a classical computer, costing businesses precious time, energy, and money. We can address these problems in minutes. Is the value of quantum computing 15 years out? No, it isn't. It's happening right now.

From the amazing science and engineering involved to the remarkable benefits quantum computing is bringing to market, I see every day how the technology is helping our customers gain competitive advantages. That's why it is unfortunate when other Big Tech leaders aren't aware of its value today as clearly as I am. And that is why I am writing this letter.

I want to clarify a few things so that you can understand the current state of quantum computing. D-Wave has developed a no-nonsense framework that deflates the hype, helping you to formulate an informed position on quantum. We call it **Quantum Realized,** and it presents three simple benchmarks to consider when assessing a particular quantum company's value.

Quantum Realized Today

1 _ The company provides quantum technology that is better or faster at solving computationally complex problems than a classical computer alone.

2 _ Its quantum systems are highly performant, highly reliable, and highly available.

3 _ It has proven commercial customer successes in proof-of-concepts and in-production application deployment.

I'm proud to say that, currently, **D-Wave is the only company that meets all of the above criteria.**

Computers have arguably created more value than any other tool humans have invented. Until recently, computers occupied the realm of classical computation with the ubiquitous CPU and GPU. Quantum computing requires a new architecture centered around the quantum processing unit, or QPU, and it has instantly broadened the computation landscape. To put it simply, it's a new tool in our toolbox, and a powerful one at that.

In fact, our technology has been proven to solve important problems beyond the reach of classical computers – with clear demonstrations of our system's outperformance. Recently, the solution to a complex materials simulation problem was solved in 20 minutes on our system. It would have taken 1 million years to solve this on one of the world's most powerful supercomputers (a massively parallel GPU system). And this is only the beginning.

What's undeniable about computers, whether they are classical or quantum, is that no matter how advanced they are, innovators are always exploring how to make the technology better. Think about AI today versus 15 years ago. It's night and day. Now think about AI today versus 15 years into the future. We can scarcely imagine what AI will become in that time. The same goes with quantum. Yes, quantum will be even more amazing in 15 years, but it's also amazing now – and I can prove it.

D-Wave is advancing quantum technology to address our world's most computationally complex problems. We made a strategic decision to initially focus on delivering a specific type of quantum computer that incorporates an annealing architecture. Our decision was based on two factors: a quicker path to develop and commercialize a useful quantum computer, and annealing's unique ability to solve complex optimization problems – something that businesses have been struggling with for decades.

We are the only annealing quantum computing company with 5,000+ qubit systems solving customer problems now. More than 100 organizations trust D-Wave with their toughest computational challenges such as optimizing mobile networks, creating more efficient workforce scheduling for e-commerce delivery drivers, and streamlining automotive manufacturing processes. Over 218 million problems have been submitted to quantum computers and quantum-hybrid solvers available in our cloud service to date.

We are also developing gate-model quantum computers, which may, in the future, be used for a different range of problems such as developing personalized medications or everlasting batteries. These are the types of quantum computers the Big Tech leaders have recently commented about. Gate-model quantum computers are still in the research and development phase, and I believe they remain 7 to 15 years away from being commercially viable. But let me be clear: Even when gate-model systems come to market, annealing quantum computers will still be better for optimization, as research has proven.

D-Wave's systems are commercial-grade. Our Leap™ quantum cloud service delivers 99.9% uptime and availability and sub-second response times. The Leap service is accessible in 42 countries, with enterprise-ready performance, security, and scalability. Our hybrid quantum solvers can extend solution quality for larger and more complex problems with up to 2 million variables. And finally, our customers, including more than two dozen of the Forbes Global 2000 companies, are experiencing firsthand the power of annealing quantum computing.

This is Quantum Realized. It's here, brought to you by D-Wave.

Sincerely,
Dr. Alan Baratz
CEO of D-Wave

D-Wave
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