

# Q&A: Q-CTRL CEO Michael Biercuk showcases Black Opal platform for curious technologists

Article







## *Q-CTRL Founder & CEO Professor Michael J. Biercuk*

Australia-based startup **Q-CTRL** is working to address quantum computing's most challenging problems—the skills deficit, error-prone hardware, and performance on practical problem solving—to accelerate the field's economic potential.

Its **CEO, Michael Biercuk**, led a session at the [TechCrunch Disrupt 2022](#) event last week in San Francisco on “Three Ways to Leapfrog your Competition using Quantum Computing—No PhD Required,” showcasing the company's quantum computing learning platform, **Black Opal**. Through its Learn, Partner, Practice mantra, the company aims to remove barriers to entry into the field so that anyone can go online and harness [cloud-accessible commercial quantum computers](#) that are already available.

“With these systems coming to reality, there's an enormous economic impact that's developing right now,” said Biercuk. “This is what **Boston Consulting Group** says is an **\$850 billion** market opportunity.”

Biercuk, who's worked in academia as a quantum physicist as well as for the US Department of Defense and Intelligence Community, says that quantum computers will be able to solve real-world problems faster than classical computers “within a few years,” providing better ways to process data related to the [financial sector](#), build [machine learning \(ML\)](#) models, mitigate climate change, and design pharmaceuticals, among other applications.

“Quantum technology promises to be as transformational in the 21st century as harnessing electricity was in the 19th,” said Biercuk.

In an interview, Biercuk talks about the need for workforce upskilling to make use of quantum technologies, the importance of international cooperation, and the industry's growth potential.

*The following has been edited for clarity and brevity.*

**Insider Intelligence (II): Since the industry hasn't yet reached the milestone of developing quantum computers that can solve practical problems, how can organizations currently make use of the technology?**

**Michael Biercuk (MB):** You hit the nail on the head—we haven't achieved something called quantum advantage, where you would actually choose a quantum computer to solve your practical computational problem over some conventional cloud machine. Many people think of that as some kind of defect. But in reality, you don't win by adopting technology after it has already become fully commercialized and successful. You win by being an early adopter. That gives you a strategic advantage.

There's an opportunity right now to start learning, build your team's capabilities, find partners in the ecosystem, and then begin practicing on real machines. Because quantum computers are here today, you can actually run programs. All you need to do is gain that expertise in-house for your business or as an individual, so that when we hit quantum advantage as a community, you're already primed and ready to go.

**II: Do you think there's enough being done to train the next generation for quantum computing?**

**MB:** I think there's a lot being done, but most of what's being done is the wrong stuff. There is an almost uniform focus on getting more people with PhDs in quantum physics and quantum computing. We do need to support the pipeline of talent trained at that super expert practitioner level, but what's being largely ignored is the fact that we need marketing professionals, DevOps engineers, front-end engineers, [professionals] who are not quantum physicists, but who are conversant in the field. We're trying to fix this.

We focus on a kind of user we call curious technologists. These are people who are either thinking about getting into the field or are already putting quantum computing into practice for their business. For them, our product, Black Opal, provides a really simple and intuitive interface to learn at their own pace. It's not a math-based university course. It's about building intuition to get you on your journey.

**II: The US federal government along with others like the EU and China are investing in quantum computing. Are you hopeful about how they're spending those dollars in terms of pushing the industry forward?**

**MB:** Yeah, I think the United States and its allies, in particular Australia and the UK, are actually doing a very good job of prioritizing investment, supporting development sectors, and supporting skills development from the high-school level up.

I see some challenges in the area you could call techno-nationalism. The EU is pushing hard to be the leader. I think the idea of emphasizing leadership and building homegrown talent is a

good thing, but our whole field has been based on cooperation. It's been the US Department of Defense for 25 years that has been funding our partners in Europe and partners in Australia, partners in Asia—that collaboration is essential. So I think the most important thing is that we need to preserve the collaborative nature, the international nature of this field before we start trying to build walls. The US's senior leadership in the White House, much to its credit, says this is a field that only works if we do it with our international partners. It's a fantastic message, and I hope more nations around the world hear it.

## **II: What's next for your company and the field of quantum computing over the next two years?**

**MB:** For us, it's a period of tremendous growth. Over the next two years, we'll probably be doubling our team, which is about 80 people right now. We have a range of massive commercial partnerships that we'll be announcing over the next few months. It demonstrates that businesses like ours can generate revenue and make money in this field. We're one of only four or five quantum computing companies in the world actually making money selling cloud computing software.

More broadly, it's exciting to see so much emphasis on use cases and big corporations and organizations leaning in to understand how they can get the advantage by partnering, learning, and building internal capabilities. I think that dynamic is going to lead to faster evolution of the application space, and that's what's needed. We need people to identify the use cases, then we'll see more pull on hardware, software, and infrastructure development.

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