Qcloud project to allow online users a taste of quantum computing

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Officials with Bristol University in the U.K. have announced at this year's British Science Festival, that they intend to put their two-quantum bit (qubit) processor online for use by some people on the Internet. Called the Qcloud project, the idea is to get scientists, those in academics and even the general public used to the idea of quantum computing so as to be prepared when real quantum computers arrive.

Quantum computers are based on quantum processors that use qubits instead of electricity to represent data. The processor at Bristol computes results by first firing two photons from a blue laser—special optics cause them to become entangled. Programming is done via phase shifters which alter the speed of the photons. The idea is that quantum computers—because a qubit can exist in multiple states at once, allowing it to generate multiple solutions to a problem simultaneously—should be able, eventually, to far outstrip the abilities of current machines. Most computer scientists believe it's only a matter of time before truly useful quantum computers are built and put into service—estimates range from a couple of years to a couple of decades.

The Qcloud quantum "computer" is housed at the Centre for Quantum Photonics on the University's campus. Because it uses just two qubits, the machine isn't capable of doing much, but that isn't the point. Instead, it's to get people ready for the time when such computers become a reality. Bristol officials note that currently there are just a handful of people who have any idea of how to program a real quantum computer.

To prevent a glut of programs that don't work from accessing the real computer, Bristol will first require prospective programmers to create a program on a web based simulator. If users are optimistic about their results, they can then submit them for review. If the program they've written is deemed worthy, it will be run on the real quantum processer. The university has already made the simulator available online—the processor will be made accessible via the Internet next week, September 20.

By providing access to a real quantum computer, officials at Bristol are hoping to excite the next generation of programmers who will be creating new types of code that hasn't even been envisioned yet.

More information: www.bristol.ac.uk/physics/rese … ntum/qcloud/project/

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