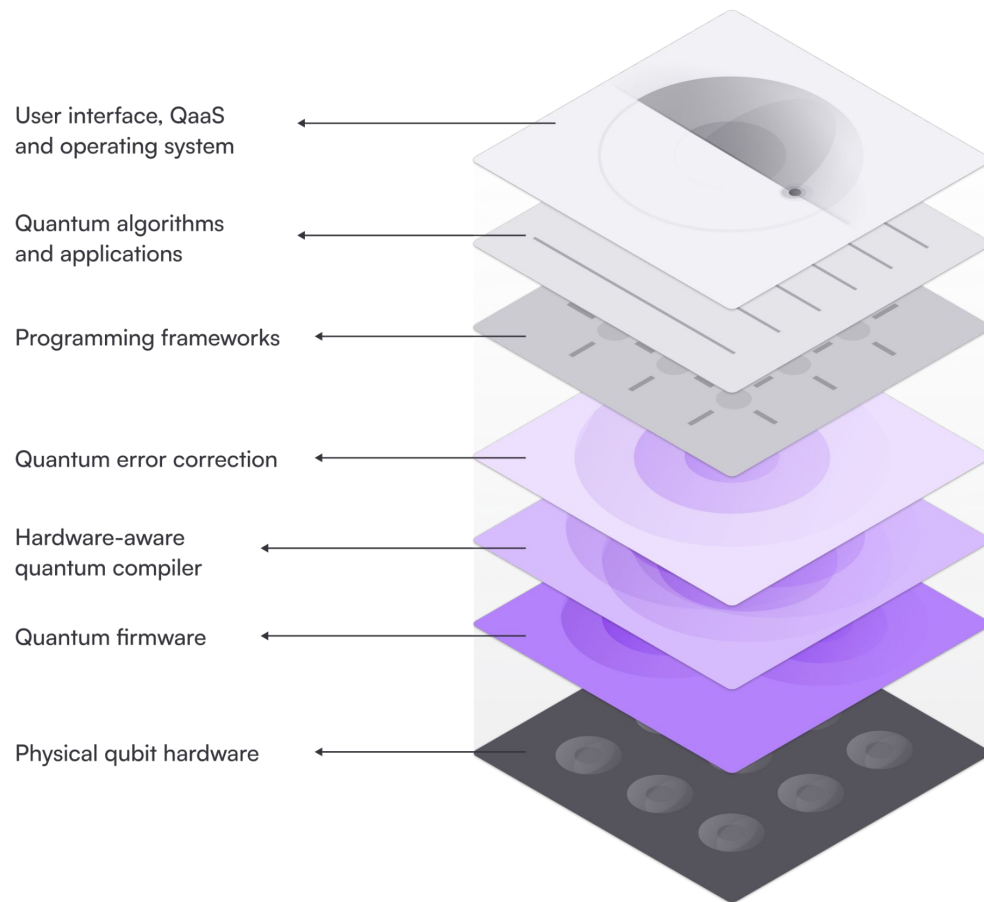




Q-CTRL Performance Management on IBM Quantum Services



We build AI-powered
quantum infrastructure
software to make
quantum useful



[IEEE Spectrum, \(2021\)](#). Physics Today 74, 28 (2021)

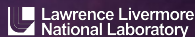
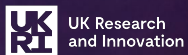
Trusted by industry leaders

>12,500 Individual software users

>15 Billion jobs on IBM Quantum

>20 partner hardware validations

Government



Commercial



Academia



Awards

Gartner “Cool vendor”, 2023

Gartner®

Finalist, Business Technology, 2023

//CODiE//

2023 SIIA CODiE FINALIST

Most innovative companies, 2021

FINANCIAL REVIEW

Top 100 innovators, 2021-2023

 **THE AUSTRALIAN**

“Australian Hero”, 2021

 **InnovationAus.com**
PUBLIC POLICY AND BUSINESS INNOVATION

Quantum computing end-users face challenges in securing quantum advantage

Quantum hardware suffers from performance-degrading errors



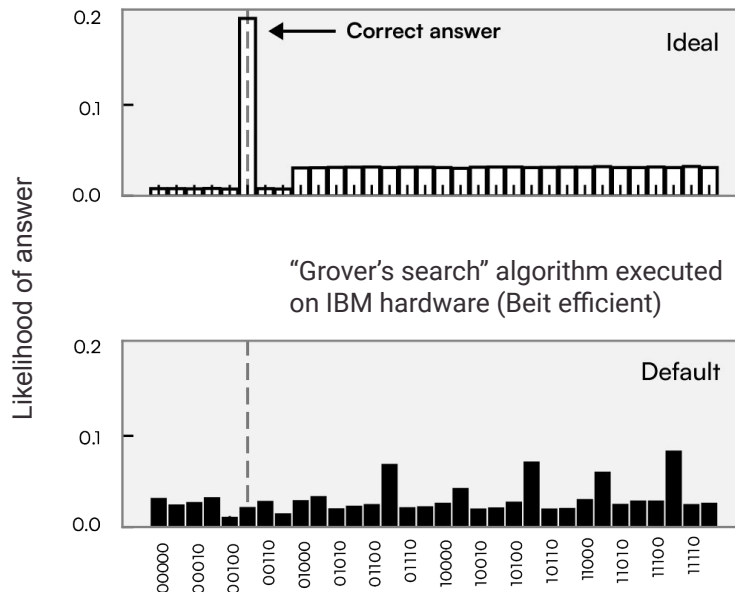
Errors limit accessible circuits



Noisy outputs waste compute time

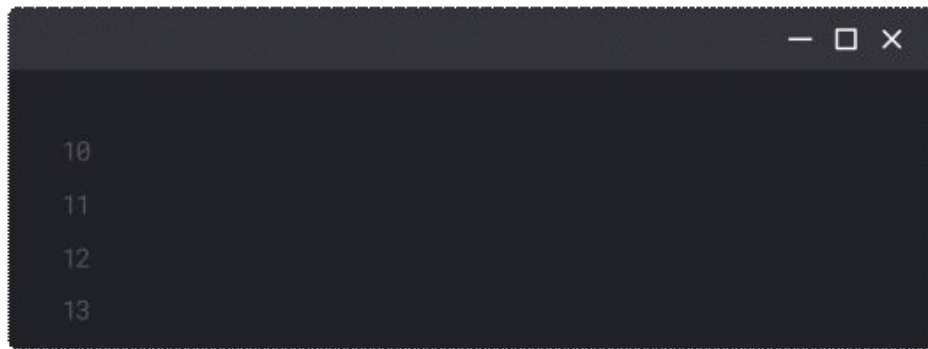


Reducing errors requires deep understanding of the hardware



Introducing Q-CTRL performance management

Q-CTRL performance management
is now natively integrated with
Qiskit Runtime on IBM Cloud



Unleash latent performance with a single setting on IBM Quantum services



10X

Capability

Deeper circuits, up to
hardware limits



100X

Savings & Simplicity

Reduced compute cost,
no sampling overhead



1,000X

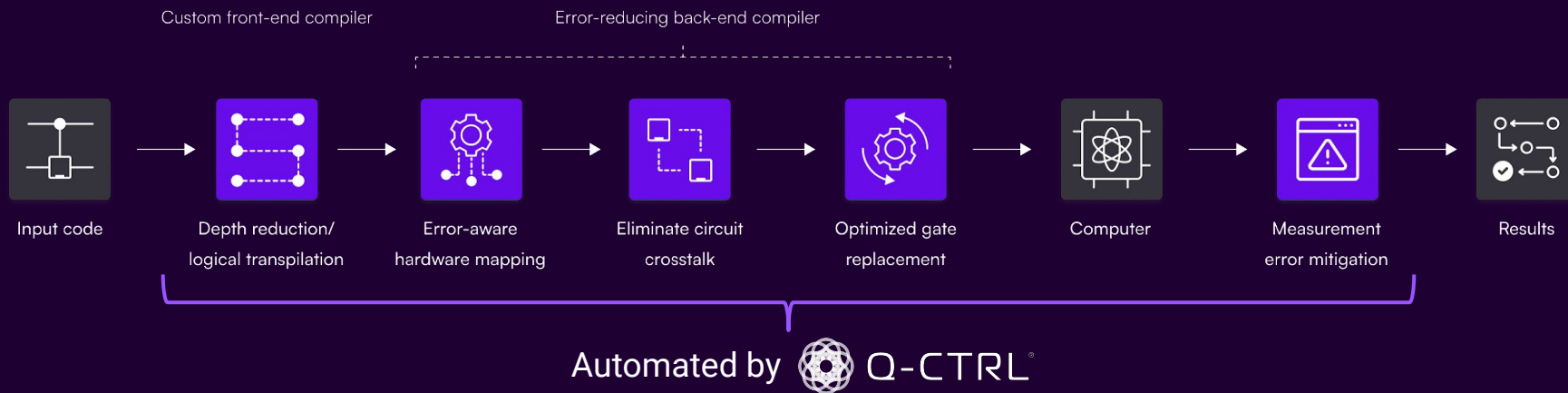
Performance

Improved output accuracy
in benchmarks

Results in peer-reviewed technical manuscript: “Experimental benchmarking of an automated deterministic error suppression workflow for quantum algorithms” Phys. Rev. Applied 20, 024034 (2023).

How Q-CTRL performance management works

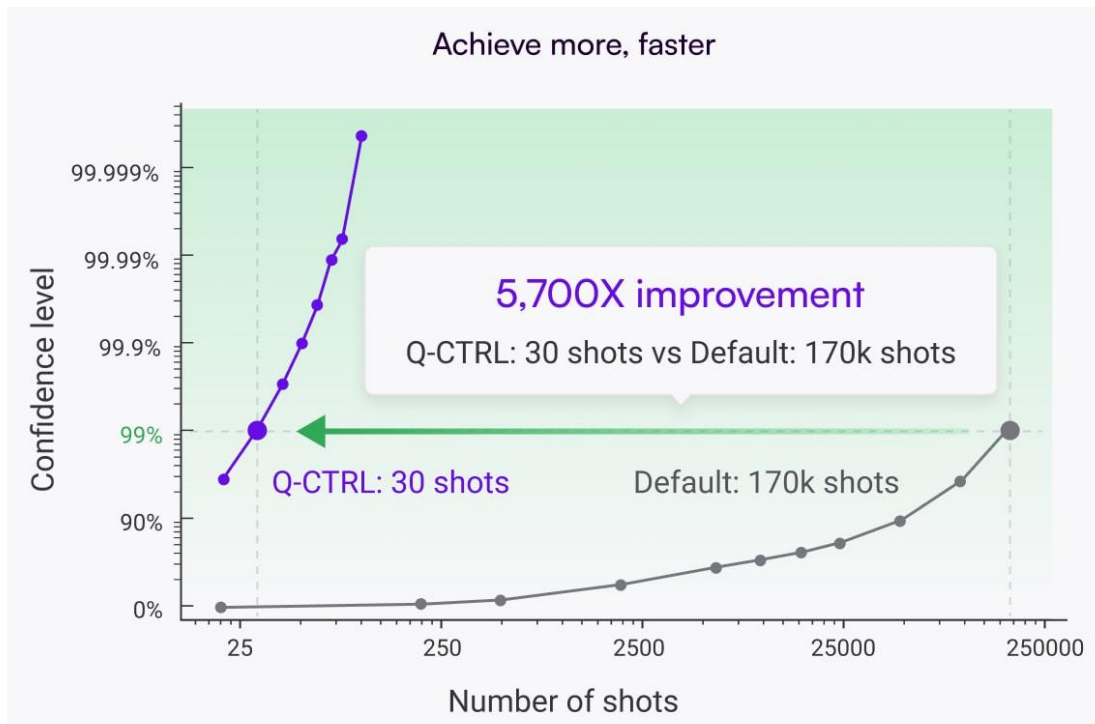
A fully-autonomous toolchain to suppress errors in any application



Get more value from your compute time

Get accurate results with high confidence, in fewer iterations


Q-CTRL performance management makes your workloads more efficient, and it comes at **no additional cost!**



10-qubit Quantum Fourier Transform

Customer testimonials

"We have previously explored Q-CTRL's performance management capabilities and were impressed by the order of magnitude improvement seen across both the inverse quantum Fourier transform and quantum phase estimation. With this technology natively embedded within IBM Quantum services, we can get more value from current hardware and push our applications further."

Julian van Velzen – CTIO & Head of Quantum Lab, *Capgemini* 

One of the Big Four firms ran a compare-and-shift quantum gate algorithm for DNA sequencing and received a boost of 2x with the Q-CTRL's performance management over the default 14 qubit configuration, resulting from unlocked latent performance. Building on this, the firm was able to increase the circuit complexity, and with 26 qubits the combination of Q-CTRL's native integration with IBM Quantum returned useful solutions for the first time.

Big 4 Firm, Private Alpha Customer





Demo

Try out Q-CTRL on IBM Quantum today!

Create a new Qiskit Runtime instance on IBM Cloud
<https://cloud.ibm.com/catalog/services/qiskit-runtime>

Questions?
Send them over! rowen.wu@q-ctrl.com

