

qBraid

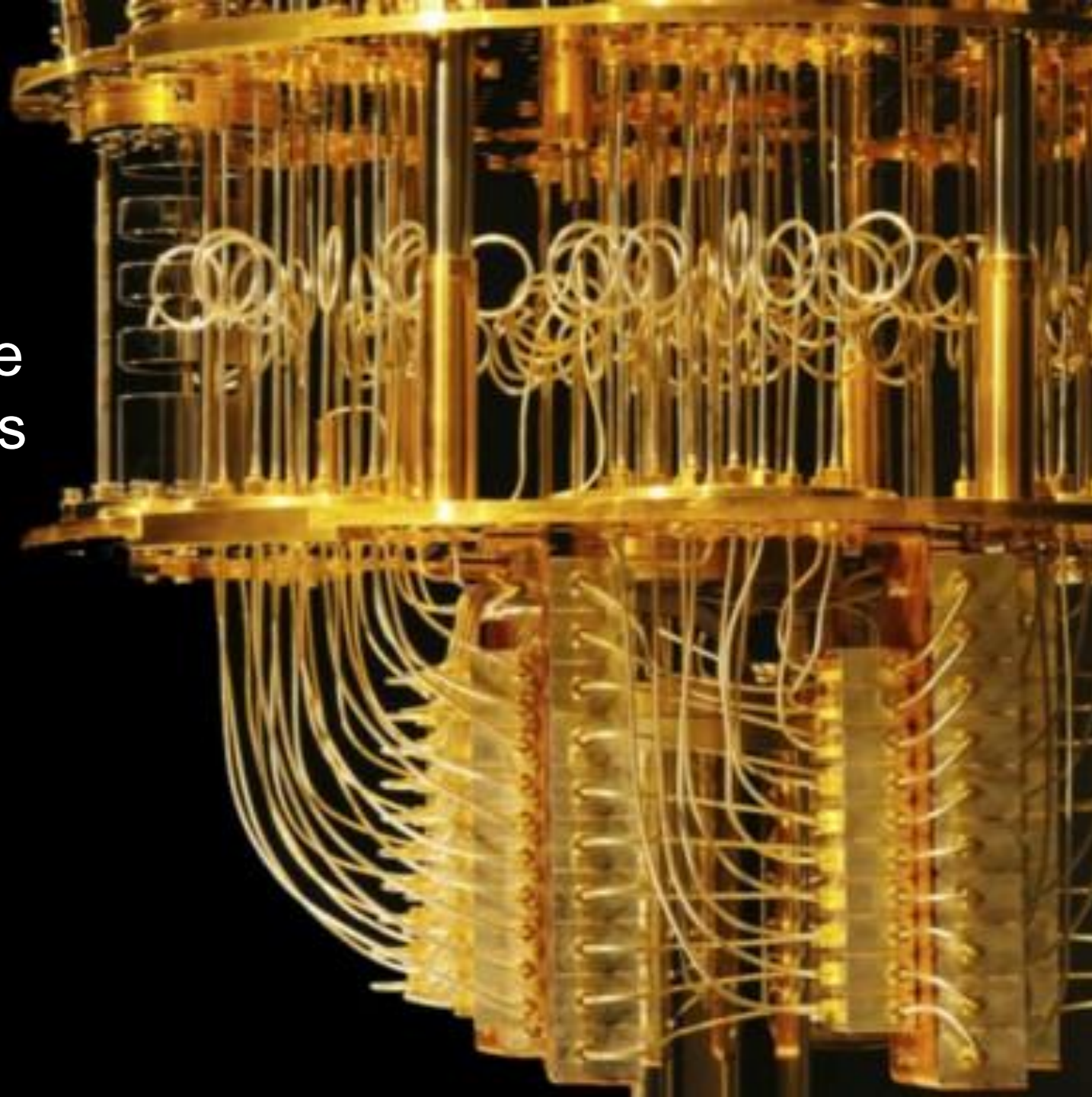
Accelerating the pace of quantum revolution.

Outline.



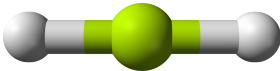
1. What is quantum computing?
2. Why is it relevant?
3. Where does qBraid come in?
4. Demo/writing your first quantum program.

1. What is quantum computing?

Quantum computing uses the quantum mechanical properties such as superposition and entanglement to perform computation.



1. What is quantum computing?

	Classical computers	Quantum computers
Data format	 Either 1 or 0	 1 or 0 at the same time
Sample representation	8 bits - 01100001 Letter "A"	3 qubits- $\frac{ 000\rangle + 111\rangle}{\sqrt{2}}$  7 qubits Beryllium hydride
Time to hack the internet	300 trillion years	8 hours

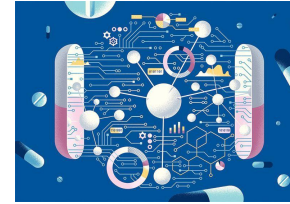
2. Why is this relevant?

Applications of quantum computing



Transportation

Optimization of
Traffic routes



Drug discovery

Simulation of new
drugs



Cryptography

Breaking RSA encryption
and post-quantum
cryptography



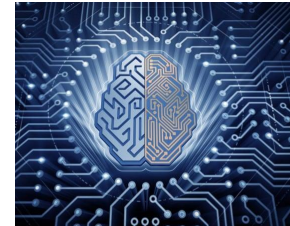
Financial modeling

Optimal pricing of derivatives



Material research

Predicting properties of complex
material



Quantum AI

Improving AI beyond classical
computing limits

What some of the **companies** are **involved**?



And many more
are **getting**
involved every
year




JPMORGAN CHASE & CO.



What some of the **companies** are **involved**?

From: BCG

EXHIBIT 2 | The Expected Phases of Quantum Computing Maturity

	NISQ era 3–5 years	Broad quantum advantage 10+ years	Full-scale fault tolerance 20+ years
 Technical achievement	Error mitigation	Error correction	Modular architecture
 Example of business impact	Material simulations that reduce expensive and time-consuming trial-and-error lab testing	Near-real-time risk assessment for financial services firms (e.g., quant hedge funds)	De novo drug design with large biologics that have minimal off-target effects
 Estimated impact (operating income)	\$2 billion–\$5 billion	\$25 billion–\$50 billion	\$450 billion–\$850 billion

Source: BCG analysis.

Link to the article



3. Where does qBraid come in?

We are creating the first platform for developers to *learn*, *build*, and *deploy* quantum software.

1

qBook

A platform for quantum computing content. Enables people to develop and share courses.

2

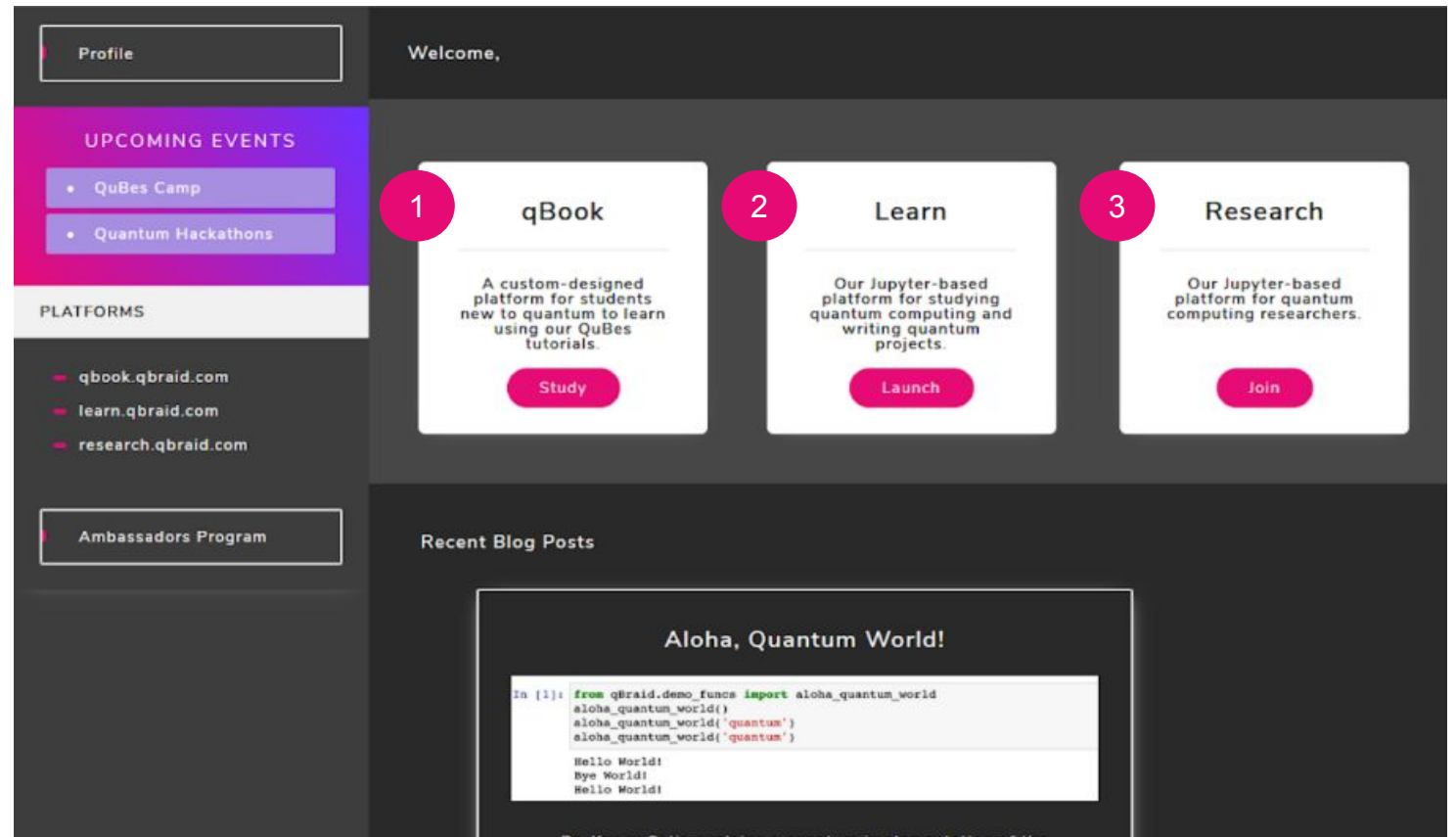
Learn

A development environment aimed at a new developer.

3

Research

A platform for researchers to develop code for new quantum algorithms and test them on quantum hardware.



Explore Quantum Computing

Where does qBraid come in?

Develop for top quantum computing hardware and platforms

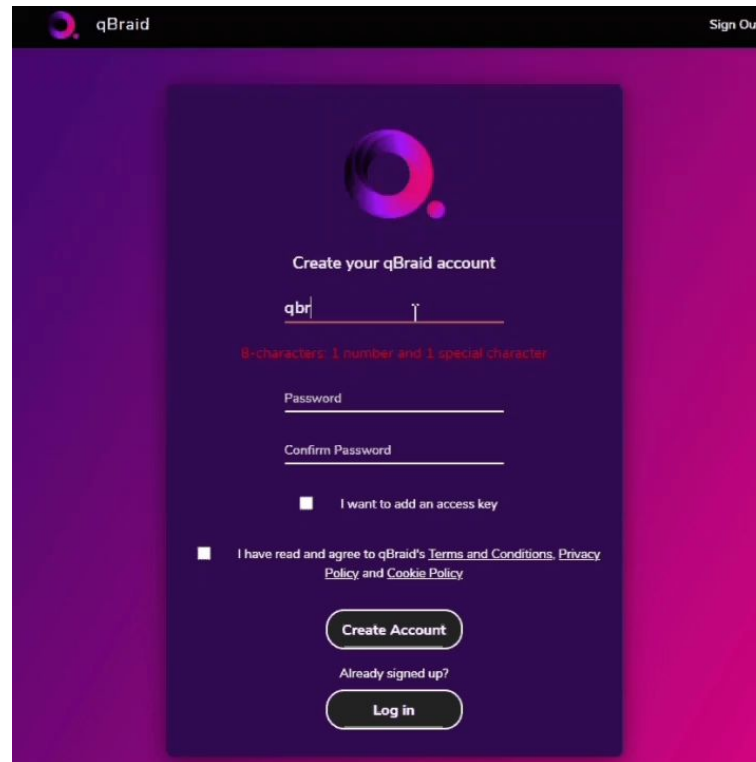
The screenshot shows the qBraid web interface with a navigation bar at the top containing a logo, 'Home', 'Token', the email 'qbraid@qbraid.com', and a 'Logout' button. The main heading is 'Launch an environment'. Below this, five environment cards are displayed:

- Qiskit Textbook** (IBM logo): Includes tags for qiskit, textbook, hardware, machine learning, and quantum chemistry. Description: 'This is an environment optimized for accessing qiskit-textbook. All the code and widgets available in qiskit-textbook work out of the box in this environment. This environment can be used to play with the code snippets available in qiskit textbook, and also to develop using qiskit libraries.' Resources: 110 packages, 2 vCPU • 1GB RAM. Buttons: Customize, Launch.
- AWS Braket** (AWS logo): Includes tags for AWS, hardware, simulator, machine learning, and quantum chemistry. Description: 'AWS Braket is a quantum computing ecosystem by Amazon. It comes with a simulator as well as access to Hardware from D-Wave, Ion-Q, and Rigetti. Use this platform to develop quantum computing applications using AWS libraries and various hardware.' Resources: 18 packages, 2 vCPU • 1GB RAM. Buttons: Customize, Launch.
- Xanadu** (Xanadu logo): Includes tags for xanadu, simulator, and machine learning. Description: 'This is a quantum computing environment for developing applications using Xanadu's libraries, including pennylane and strawberryfields. PennyLane can be used for developing machine learning applications and strawberryfield applications provide API access to Xanadu's photonic quantum computer. Hardware access may not be available through qBraid.' Resources: 99 packages, 2 vCPU • 1GB RAM. Buttons: Customize, Launch.
- Cirq & OpenFermion** (Google logo): Includes tags for google, hardware, compiler, quantum chemistry, and quantum algos. Description: 'This environment is optimized for using Google's quantum computing libraries. Currently, Google has made only OpenFermion available, which is a Python library for doing quantum chemistry on quantum computers.' Resources: 37 packages, 2 vCPU • 1GB RAM. Buttons: Customize, Launch.
- pyQuil** (Rigetti logo): Includes tags for rigetti, hardware, compiler, quantum chemistry, and quantum algos. Description: 'This environment is optimized for using Rigetti's quantum computing libraries.' Resources: 86 packages, 2 vCPU • 1GB RAM. Buttons: Customize, Launch.



Sign up for qBraid

Go to: <https://account.qbraid.com/join>



The screenshot shows the qBraid account creation interface. At the top, there is a header with the qBraid logo and a 'Sign Out' link. The main content area is a dark blue card with a white qBraid logo at the top. Below the logo, the text 'Create your qBraid account' is displayed. There are three input fields: a username field with 'qbr' entered, a password field, and a confirm password field. Below the password fields, there is a checkbox labeled 'I want to add an access key'. At the bottom, there is a checkbox labeled 'I have read and agree to qBraid's Terms and Conditions, Privacy Policy and Cookie Policy'. Below the checkbox, there is a 'Create Account' button. At the very bottom, there is a link 'Already signed up?' and a 'Log in' button.

qBraid Sign Out

Create your qBraid account

qbr

8 characters: 1 number and 1 special character

Password

Confirm Password

☐ I want to add an access key

☐ I have read and agree to qBraid's [Terms and Conditions](#), [Privacy Policy](#) and [Cookie Policy](#)

Create Account

Already signed up?

Log in