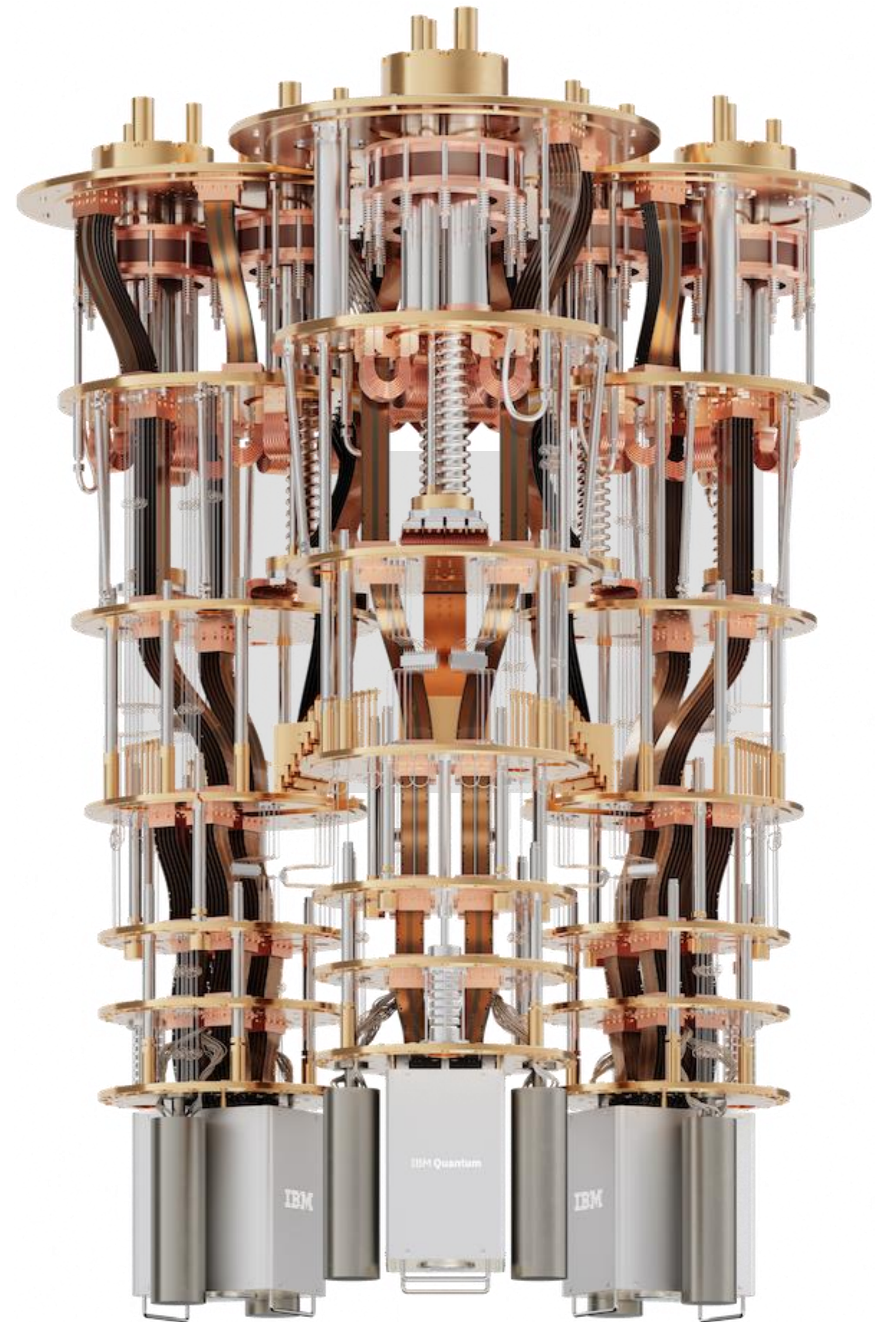


2026년 「글로벌기업 협업프로그램(Around X)」

IBM Quantum 사업설명

2026.3



IBM Quantum mission

Bring useful
quantum
computing to
the world



What is quantum computing?

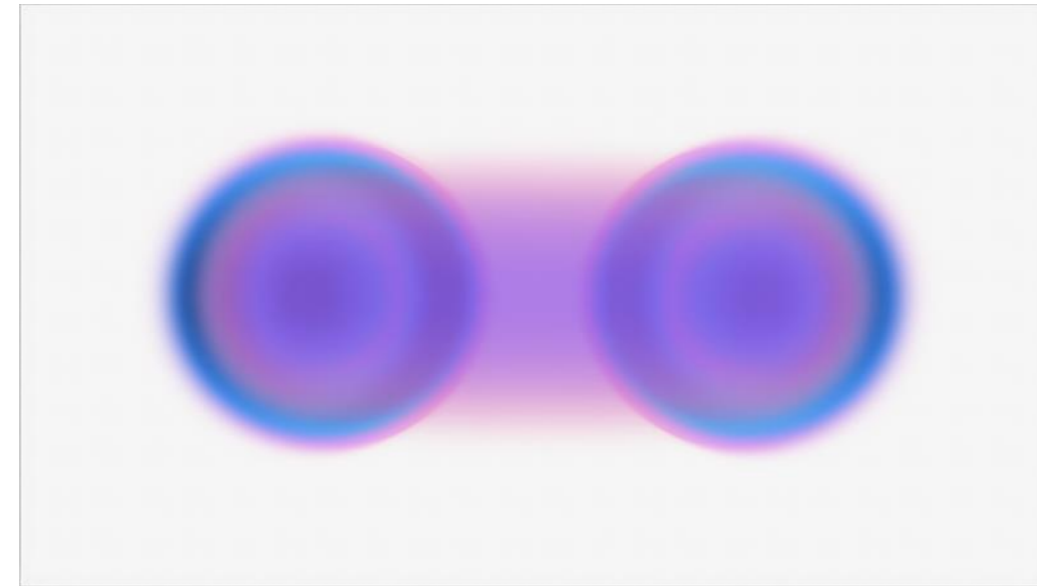
Uniquely quantum

Some problems are classically intractable and will never be solvable with traditional computers



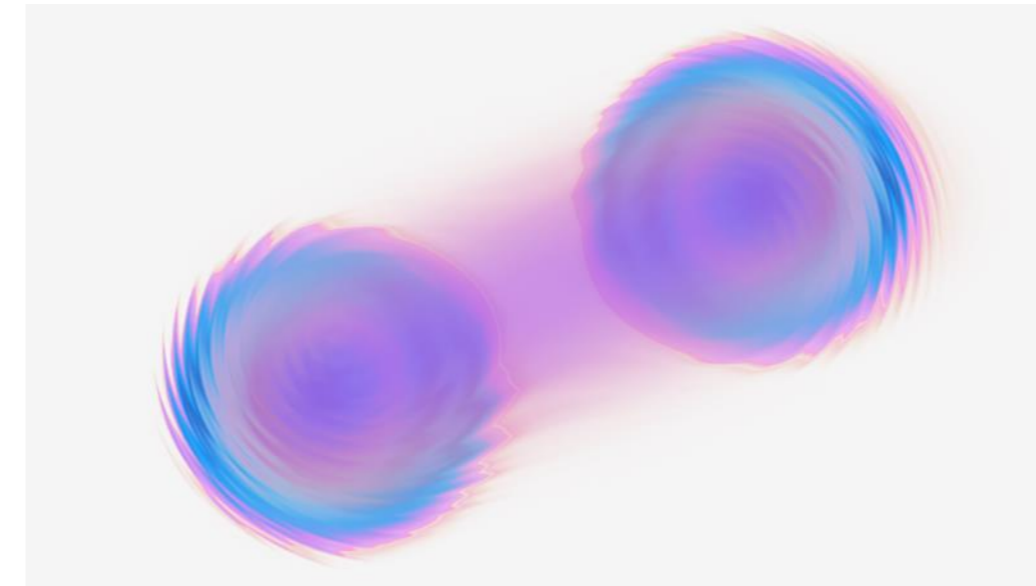
Superposition

A quantum system existing in a complex linear combination of two states until it is measured



Entanglement

Information shared jointly between entangled pairs or groups



Interference

Interaction that affects likelihood of solutions

Moore's law: the number of transistors in a classical integrated circuit doubles about every two years ... but we are approaching the end due to physical limitations

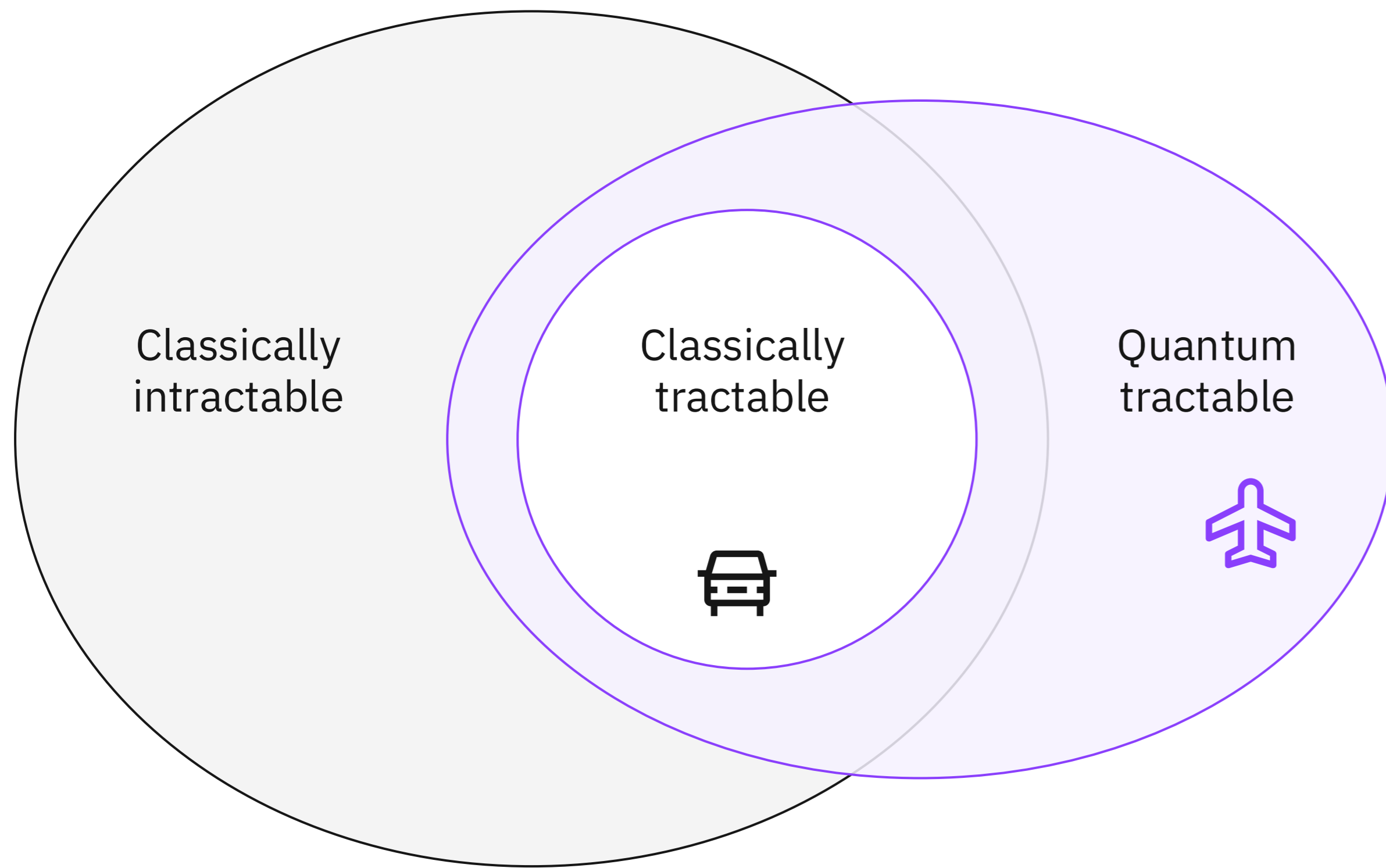
[Approaching the physical limit: IBM created the world's first 2 nm node chip in 2021, with transistors as small as 10 silicon atoms](#)

These Quantum concepts can reduce the number of computational steps required for certain algorithms & At a ~100 qubit scale, with sufficient circuit depth and complexity, classical computers can no longer simulate exactly

Unlock discovery with quantum computing

Harnesses the capacity to advance conceptual and tools-based discovery

Quantum computers are **exponentially more powerful** than classical computers



1. **A new way of computing**
New paradigm of problem-solving and thinking
2. **Solving new problems**
Unlock classically unsolvable problems, cutting computation time down from hours to minutes
3. **Discovery of new use cases**
Expand discovery into new computational spaces

Why quantum?

Graphics processing units (GPUs)

- Apply principles of classical physics
- Bits are either 0 or 1
- Rely on quantum-inspired methods to obtain expected answers
- Struggles to simulate utility-scale quantum systems and large problems with many gates
- Effective at tackling hard AI problems and driving advances in quantum computing

Quantum processing units (QPUs)

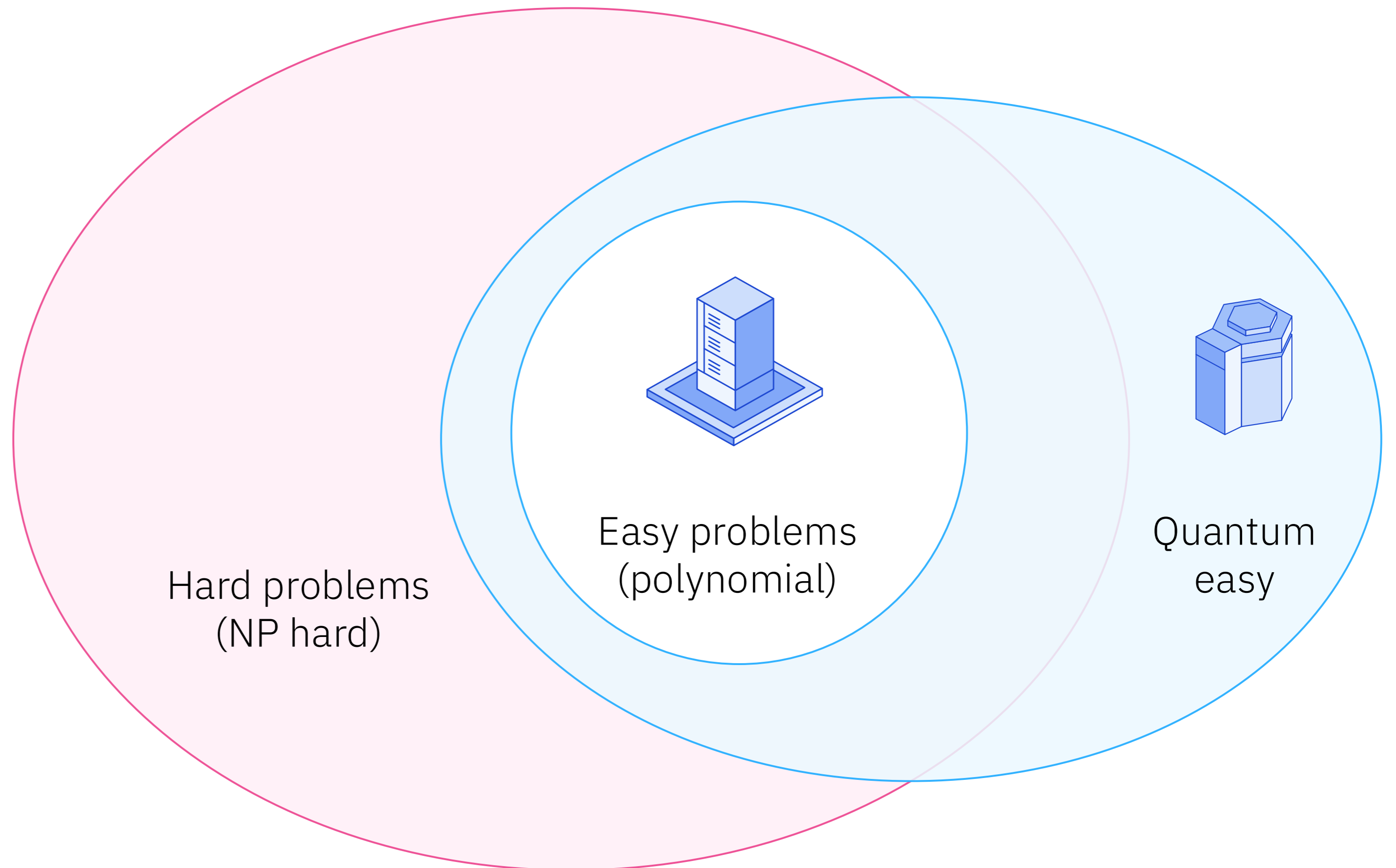
- Apply principles of quantum mechanics
- Qubits can be in more states than 0 and 1
- Use new computational paradigm to obtain answers to previously intractable problems
- Error mitigation lets us run larger, longer circuits
- Computational advantages expected in simulations, search and optimization, and processing data with complex structure

Quantum computers are the only novel hardware that changes the game

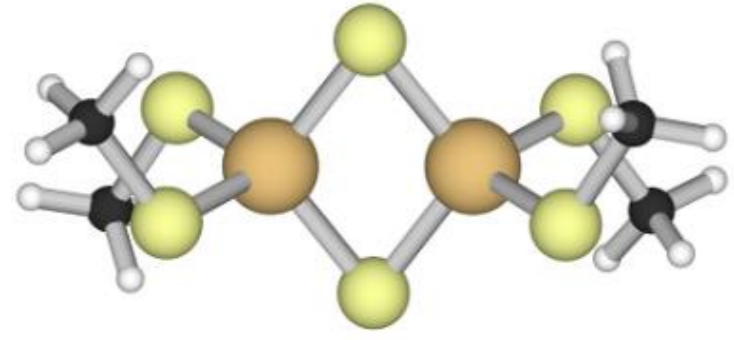
Quantum computing is not just a faster or better version of classical systems. *It is an entirely new branch of computing.*

Quantum computing follows the laws of nature to represent data in ways that mimic the randomness and unpredictability of the natural world.

Ultimately, *GPUs and classical hardware are not built for this.*



양자컴퓨팅(Quantum Computing)의 주요 활용 분야

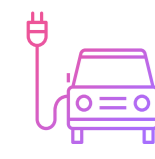


Hamiltonian simulation (해밀토니안 시뮬레이션)

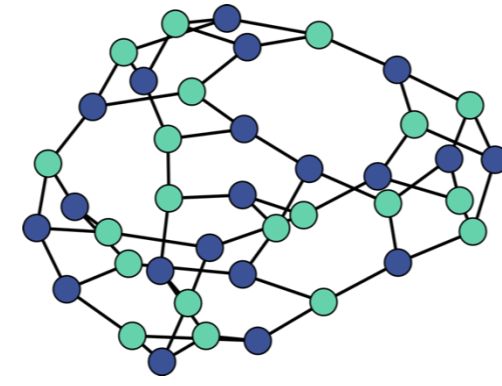
자연에서 발견되는 양자역학적 과정을 시뮬레이션 :



새로운 항생제 개발을 가속화



전기차, 전자기기, 전력망 저장을 위한 더 가볍고 오래가는 배터리 개발



Optimization (최적화)

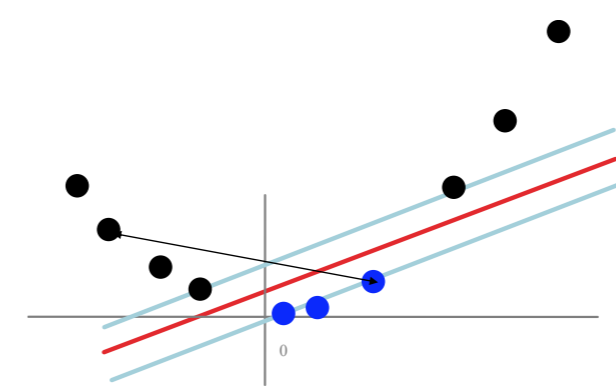
여러 제약 조건 속에서 문제 해결 방안 확보 :



투자 포트폴리오 구성을 최적화하여 리스크 관리 강화

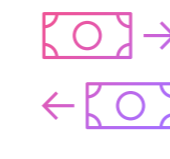


단백질 구조를 더 정확히 예측해 표적 치료제 설계



Machine learning (머신러닝)

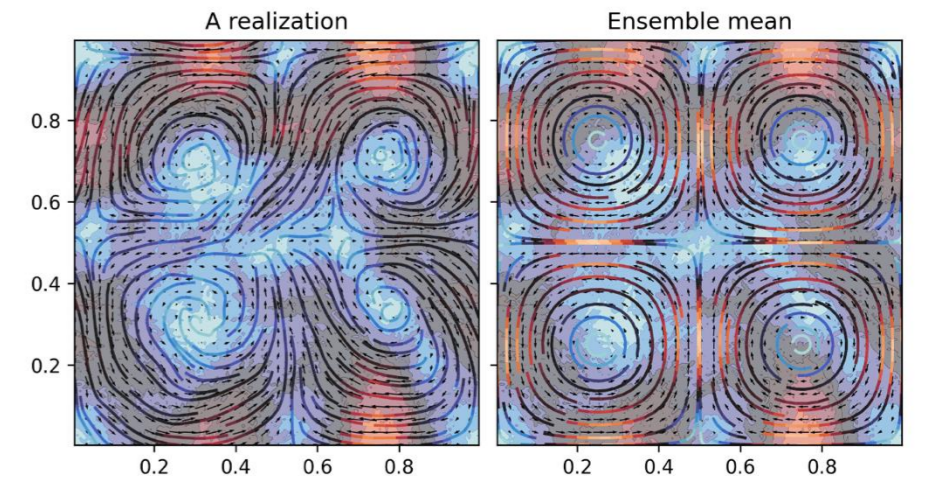
양자 기술을 활용해 머신러닝 성능을 향상 :



알고리즘 트레이딩을 위한 특성 선택(feature selection) 최적화



소재의 물리적·화학적 특성을 더 잘 이해



Differential equations (미분방정식)

고전적 방식으로 풀기 어려운 미분방정식을 새로운 방식으로 해결 :



시장 성과를 더 정확하게 예측



난류(turbulence) 시뮬레이션을 정밀화해 항공기·자동차 설계 개선

2016–2019 ✓

2020 ✓

2021 ✓

2022 ✓

2023 ✓

2024 ✓

2025 ✓

2026

2027

2028

2029

2033+

Development Roadmap



Applying algorithms to applications

Discovering new algorithms for advantage

Orchestrating workloads for quantum + HPC

Accurately and efficiently executing on quantum computers

Ran quantum circuits on IBM Quantum Platform	Released multi-dimensional roadmap publicly with initial focus on scaling	Enhanced quantum execution speed by 100x with Qiskit Runtime	Brought dynamic circuits to unlock more computations	Enhanced quantum execution speed by 5x with Quantum Serverless and execution modes	Demonstrated accurate execution of a quantum circuit at a scale beyond exact classical simulation (5K gates on 156 qubits)	Deliver quantum + HPC tools that will leverage Nighthawk, a new higher-connectivity quantum processor able to execute more complex circuits	Enable the first examples of quantum advantage using a quantum computer with HPC	Improve quantum circuit quality to allow 10K gates	Improve quantum circuit quality to allow 15K gates	Deliver a fault-tolerant quantum computer with the ability to run 100M gates on 200 qubits	Beyond 2033, quantum computers will run circuits comprising a billion gates on up to 2000 qubits, unlocking the full power of quantum computing
					Code assistant ✓						
					Functions ✓	Use case benchmarking toolkit		Computation libraries			
					Advanced classical transpilation tools ✓	Advanced classical mitigation tools ✓	Utility mapping tools				Circuit libraries
					Resource Management						
					Qiskit Serverless ✓	Plugins for HPC ✓	C API ✓	Profiling tools	Workflow accelerators		
					Execution modes ✓						
IBM Quantum Experience ✓		Qiskit Runtime								Fault-tolerant ISA	
		OpenQASM 3 ✓	Dynamic Circuits ✓	Error mitigation ✓	200K CLOPS ✓	Utility-scale dynamic circuits ✓					

Innovation Roadmap



Software innovation

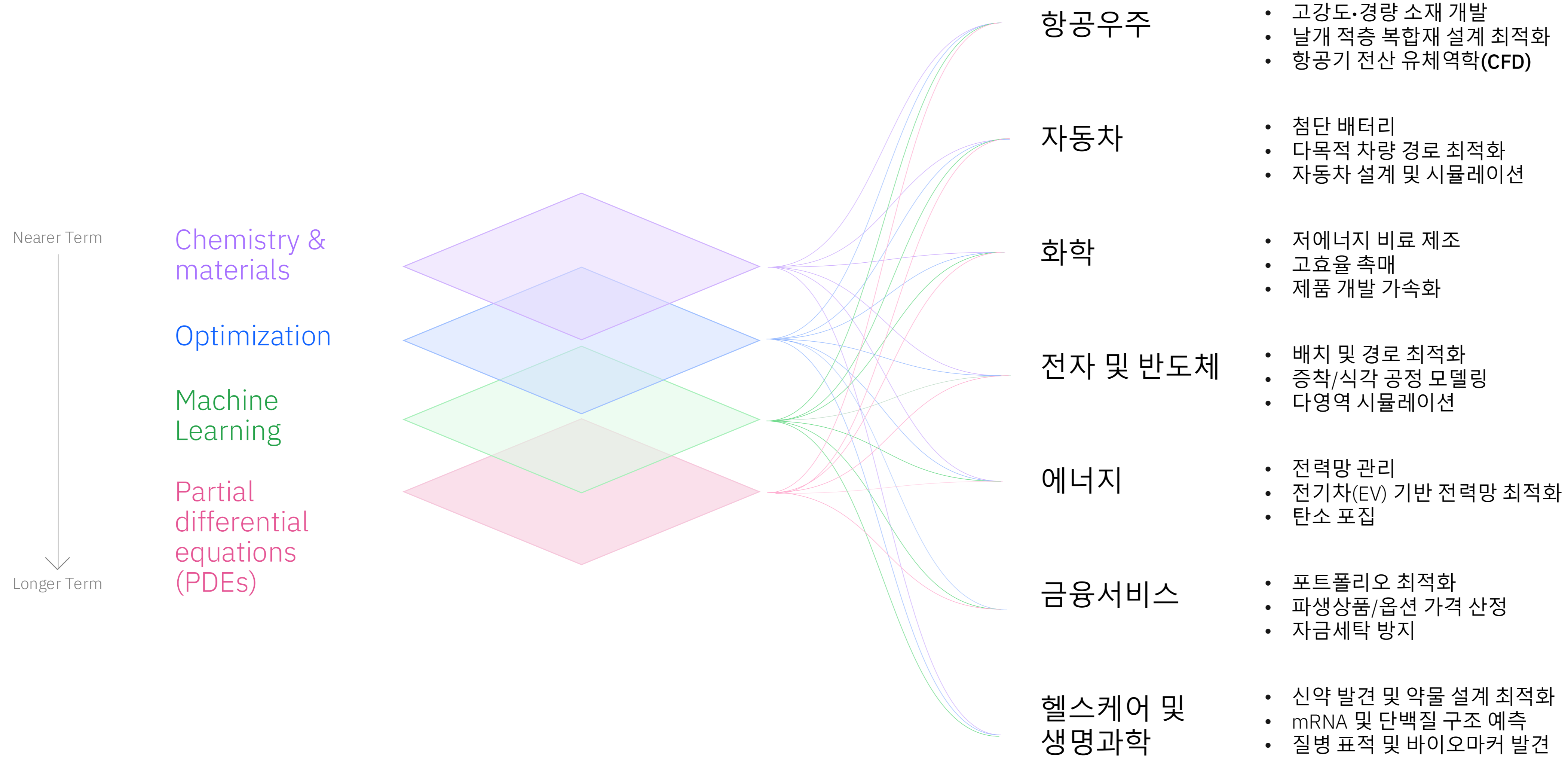
Hardware innovation

Early ✓	Falcon ✓	Eagle ✓	Heron (5K) ✓	Nighthawk (5K) ✓	Nighthawk (7.5K) ⚙️	Nighthawk (10K)	Nighthawk (15K)	Starling (100M)	Blue Jay (1B)	
Canary 5 qubits Albatross 16 qubits Penguin 20 qubits Prototype 53 qubits	Benchmarking 27 qubits	Benchmarking 127 qubits	Error mitigation 5K gates 133 qubits	Error mitigation 5K gates 120 qubits	Error mitigation 7.5K gates 120 qubits Up to 120x3 = 360 qubits	Error mitigation 10K gates 120 qubits Up to 120x9 = 1080 qubits	Error mitigation 15K gates 120 qubits Up to 120x9 = 1080 qubits	Fault-tolerant 100M gates 200 qubits	Fault-tolerant 1B gates 2000 qubits	
IBM Quantum Experience ✓	Qiskit ✓	Application modules ✓	Qiskit Runtime ✓	Quantum Serverless ✓	AI-enhanced quantum ✓	HPC-Quantum integration ✓	Advantage candidates ✓	Error correction decoder ✓	Workflow accelerator ✓	Fault-tolerant ISA ✓
	Open-source SDK for building and compiling circuits for quantum hardware	Modules for domain specific application and algorithm workflows	Performance and abstraction through primitives	Demonstrate concepts of managing quantum and cloud classical compute for an end to end workflow	Prototype demonstrations of AI-enhanced circuit transpilation	Realize an integration of classical HPC and a quantum computer at utility scale	Define problem types for advantage in 2026	Demonstrate a real-time error correction decoder	Demonstrate a workflow accelerator that streamlines execution for a known advantage workflow	Demonstrate a complete instruction set architecture including magic state distillation for FTQC
Early ✓	Falcon ✓	Hummingbird ✓	Eagle ✓	Osprey ✓	Condor ✓	Flamingo ✓	Loon ✓	Kookaburra ⚙️	Cockatoo	Starling
Canary 5 qubits Albatross 16 qubits Penguin 20 qubits Prototype 53 qubits	Demonstrate scaling with I/O routing with bump bonds	Demonstrate scaling with multiplexing readout	Demonstrate scaling with MLW and TSV	Enabling scaling with high density signal delivery	Single-system scaling and fridge capacity	Demonstrate scaling with l-couplers	Demonstrate c-couplers and next-generation packaging for FTQC	Demonstrate a complete module consisting of a logical processing unit and quantum memory	Demonstrate entanglement of modules using a universal adapter	Demonstrate multiple modules and magic state distillation
			Egret ✓		Heron ✓	Crossbill ✓				
			Tunable coupler demonstration		Architecture based on tunable couplers	Demonstrate m-couplers				

✓ Completed
⚙️ On target

양자컴퓨팅은 산업 전반에 걸쳐 혁신적인 변화를 이끌 것으로 기대

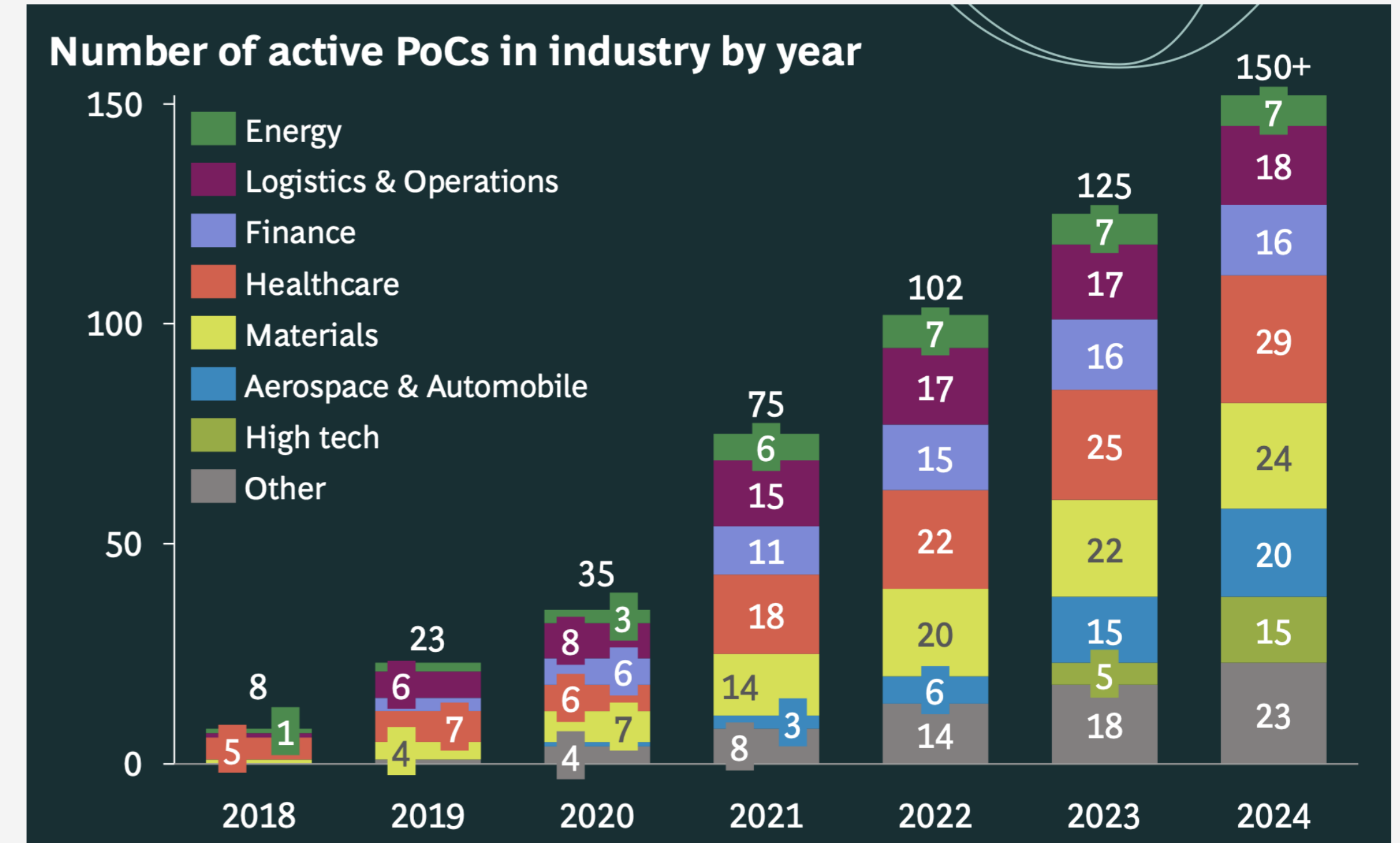
주요 활용 사례 예시



산업 전반의 양자 컴퓨팅에 대한 투자가 전례 없는 속도로 빠른 속도로 가속화되고 있습니다.

- 고객 지출 연평균 성장률 48%¹
- 글로벌 투자 규모 550억 달러(76조원)²
- 초기 사용자 중 62%가 연간 100만 달러 이상 지출 – 2022년 대비 11% 증가³
- 2022년 이후 기업 활용 사례 활동 50% 이상 증가⁴

➔ 양자 기술의 성숙, 비즈니스 가치 입증



Source 1: IDC, IDC's Worldwide Quantum Computing Forecast: 2023–2027: Surfing the Next Wave of Quantum Innovation," IDC #US49198322, 2023.

Source 2: Sylvain Duranton (BCG), "Quantum Computing Takes Off With \$55 Billion In Global Investments,"

Source 3: BCG, "Fantastic applications and where to find them," 2024.

Source 4: BCG, "Fantastic applications and where to find them," 2024.

Ecosystem

IBM Quantum Network

IBM은 양자컴퓨팅 발전을 선도하는 세계 최고 수준의 생태계를 구축하고 있습니다.

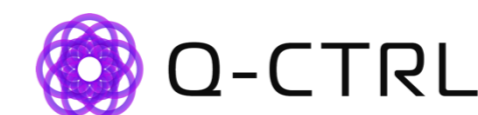
The IBM Quantum Network has 300+ members

Industry members **50+**

Commercial partners and startups **65+**

Academic and research institutions **170+**

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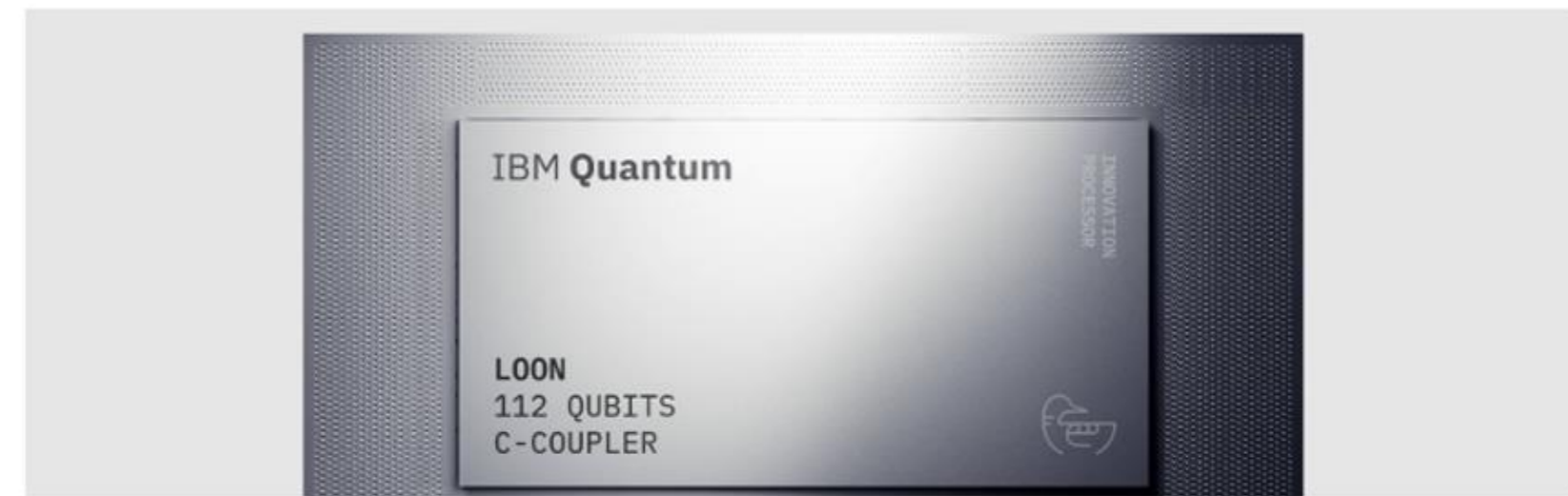
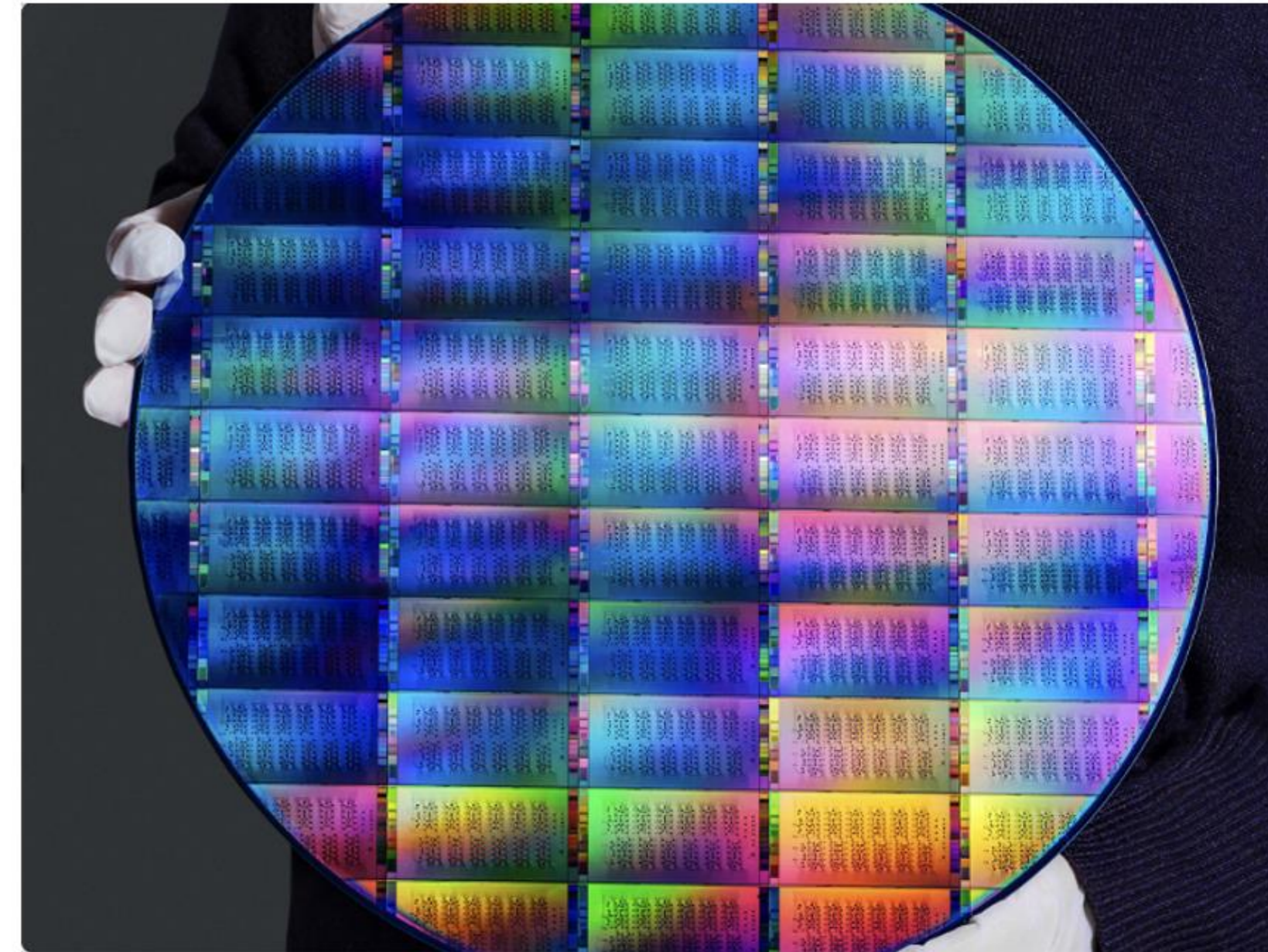


산업계 평가 | Gartner® AI Vendor Race (2025.12.8)

IBM, 양자컴퓨팅 분야 ‘Company to Beat’

- IBM은 수십 년간의 양자컴퓨팅 연구 경험과 실제 시스템 배포를 통해
축적한 운영 경험을 바탕으로, 대규모 초기 도입 고객 확보에서 경쟁우위를 보유
- 로드맵 기반 장기 전략을 규율 있게 실행하는 역량이 IBM의 핵심 강점으로 평가됨
- IBM의 양자 포트폴리오는 다양한 산업과 활용 사례를 포괄하며,
폭넓은 고객 지원과 확장성을 제공.
- 연구 경험, 제품 포트폴리오, 생태계 규모 측면에서 **IBM은 경쟁사 대비 선두로 평가됨**

Gartner, AI Vendor Race: IBM Is the Company to Beat in Quantum Computing, 8 December 2025. GARTNER is a trademark of Gartner, Inc. and/or its affiliates. Gartner does not endorse any company, vendor, product or service depicted in its publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner publications consist of the opinions of Gartner's business and technology insights organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this publication, including any warranties of merchantability or fitness for a particular purpose.



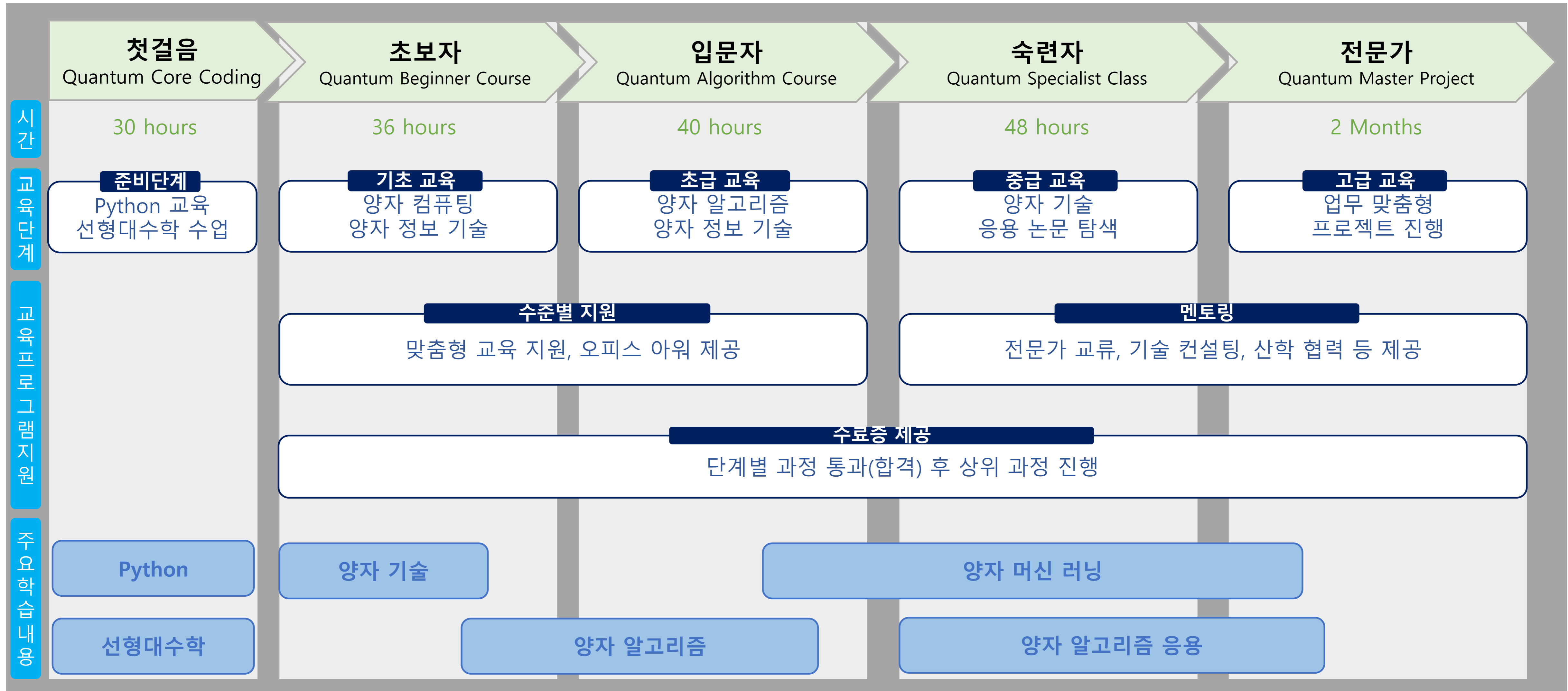
IBM Qauntum 사업을 통해 유망한 양자컴퓨팅 관련 창업기업의 양자컴퓨팅 역량을 강화하여, 우리 창업기업이 다가오는 양자기술 시대에 선제적으로 대응할 수 있도록 기술 리더십을 확보 하고자 합니다.

- 각 기업 및 개인 별 양자 컴퓨팅 지식 기반에 맞춰 차별화 된 교육 프로그램 구성
- 연세대학교에서 양자 컴퓨팅 교육, 세미나 및 양자 전문가 성장을 위한 멘토링 시스템 제공
- 성공적인 프로젝트 수행을 위한 자문, 컨설팅, 산학 협력 모색 등 지원
- IBM Quantum 세미나 및 MeetUp 행사 초대 및 참여를 통해 우수 기업과의 사업/기술 협력 논의 기회 마련

상세지원 사항

구분	지원 항목		주요 내용
증기부	제품 및 서비스 고도화	제품개선·개발	<ul style="list-style-type: none"> ■ 제품 및 서비스 개발, 기술 개선, 기업 운영 등 기업 성장동력 마련을 위한 사업화 자금 최대 3억원 지원
		주관기관 특화프로그램	<ul style="list-style-type: none"> ■ 주관기관에서 보유한 인프라(인력, 네트워크 등)를 연계하여 제품·서비스 고도화 지원
	네트워킹	성과공유회	<ul style="list-style-type: none"> ■ 우수사례 발표, 성과공유, 네트워킹 자리 마련
IBM + QIC	서비스 지원		<ul style="list-style-type: none"> ■ IBM Quantum system access 제공
	교육 및 세미나		<ul style="list-style-type: none"> ■ IBM QIC (Quantum Innovation Center) 교육 제공
	컨설팅		<ul style="list-style-type: none"> ■ 양자 사업 및 역량 개발 컨설팅
	마케팅		<ul style="list-style-type: none"> ■ PR기사 리뷰 등 지원
	판로개척		<ul style="list-style-type: none"> ■ Qiskit Meetup 행사/경진대회 초대 및 참여
기타지원 (IBM Quantum Network 가입시 지원가능)		<ul style="list-style-type: none"> ■ IBM Quantum 세미나 및 Meet-up 행사 초대 및 참여 <ul style="list-style-type: none"> - IBM Think Event, IBM Quantum Partner Forum, IBM Startup Kick-off, IBM Demo Day for Startups showcase 등 ■ IBM Quantum Network : Startups 등록 및 협업방안 모색 	

양자컴퓨팅 교육 프로그램



* 참여기업의 프로젝트 및 보유 역량에 따른 변경 가능

양자 컴퓨팅 인력 양성 프로그램

- 기간 : 주 2회 (1회 3시간 강의), 총 4주
- Quantum Education Syllabus: 단계별 세 강좌로 구성
양자컴퓨터 입문 /양자컴퓨터 중급 /양자컴퓨터 고급

1. 양자컴퓨터 입문 (Introductory Quantum Computing)

수업 목표 및 개요: 양자정보기술의 혁신적인 발전과 NISQ 시대 양자컴퓨터의 출현에 대응하기 위하여 양자정보기술에 대한 기초적인 이해는 필수적이다. 본 과목에서는 (1) 양자컴퓨터와 양자정보에 대한 기본적인 개념을 이해하고, (2) 양자 알고리즘에 대한 소개와 함께 양자 코딩을 실습한다. 이를 통하여 다가오는 양자정보기술 시대를 대비하기 위한 기초를 다진다.

양자 컴퓨팅 인력 양성 프로그램

- 기간 : 주 2회 (1회 3시간 강의), 총 4주
- Quantum Education Syllabus: 단계별 세 강좌로 구성
양자컴퓨터 입문 /양자컴퓨터 중급 /양자컴퓨터 고급

2. 양자컴퓨터 중급 (Intermediate Quantum Computing)

수업 목표 및 개요: 양자정보기술의 혁신적인 발전과 NISQ 시대 양자컴퓨터의 출현에 대응하기 위하여 양자정보기술에 대한 이해는 필수적이다. 본 과목에서는 (1) 양자컴퓨터와 기본 양자 알고리즘을 이해하고, (2) 양자 알고리즘의 구체적인 응용에 대한 소개와 함께 양자 코딩을 실습한다. 이를 통하여 다가오는 양자정보기술 시대를 적극적으로 활용하기 위한 기반을 마련한다.

양자 컴퓨팅 인력 양성 프로그램

- 기간 : 주 2회 (1회 3시간 강의), 총 4주
- Quantum Education Syllabus: 단계별 세 강좌로 구성
양자컴퓨터 입문 /양자컴퓨터 중급 /양자컴퓨터 고급

3. 양자컴퓨터 고급 (Advanced Quantum Computing)

수업 목표 및 개요: 양자정보기술의 혁신적인 발전과 NISQ 시대 양자컴퓨터의 출현에 대응하기 위하여 양자정보기술에 대한 이해는 필수적이다. 본 과목에서는 양자컴퓨팅에 대한 기초적인 이해를 바탕으로 (1) 기본 양자 알고리즘을 이해하고, (2) 다양한 응용 양자 알고리즘에 대한 소개와 함께 양자 코딩을 실습한다. 이를 통하여 다가오는 양자정보기술 시대를 선도하기 위한 발판을 다진다.

양자컴퓨팅은 막대한 경제적 파급효과를 수반하는

새로운 알고리즘 발견의 시대를 열 것입니다.



“양자컴퓨팅은 기술 성숙 단계에서 **5,000억 달러 이상의 가치를** 창출할 잠재력을 가지고 있습니다” – 보스턴 컨설팅그룹(BCG)

Sources: BCG, “The Quantum Leap: Navigating the Future of Computing,” 2025; “The Long-Term Forecast for Quantum Computing Still Looks Bright,” 2024.

산업 전반의 기업들이 IBM과 협력하여, 양자 컴퓨팅을 통해 비즈니스 목표를 실현하고 있습니다.

95+

산업 파트너와 함께 완성한 프로토타입



라디칼에 의해 발생하는 소재 열화 메커니즘 연구

arXiv:2508.08229

Hamiltonian simulation



제약 분야 관련 시스템에서 초분자 상호작용 시뮬레이션

Communications Physics 8, 396 (2025)

Hamiltonian simulation



양자 최적화 기법을 활용한 mRNA 2차 구조 예측

arXiv:2405.20328

Optimization



채권 등 고정수익 자산 포트폴리오 최적화

arXiv:2508.13557

Optimization



분산 에너지 시스템 최적화

arXiv:2407.20802
arXiv:2412.07915
arXiv:2509.10657

Optimization

QML



회사채 거래 실행 전략 고도화

arXiv:2509.17715

QML



이류-확산 및 유사한 편미분방정식(PDE) 시뮬레이션

arXiv:2508.16728

PDEs

A PLATFORM for quantum computing

IBM Quantum Platform

The IBM Quantum Platform feature grid includes:

- Multi-language support (represented by a stylized 'A' with a character)
- EU region (represented by a globe)
- Enhanced analytics and filters (represented by a bar chart)
- Platform privacy & security (represented by a padlock)
- Queue transparency (represented by a queue icon)
- 40+ hours of educational resources (represented by a person at a computer)
- 30-Day trial with Heron access (represented by a Heron chip)
- Rest API documentation and robust error code registry
- Accessibility (represented by a person icon)
- Introducing the Qiskit Functions catalog (represented by a globe)

A cloud platform that allows us to deliver the most performant 100Q+ quantum computers for global distribution

A set of runtime and application services that enable you to unlock advantage on today's systems

Qiskit

- Qiskit for:
 - Algorithm research
- Qiskit for:
 - High Performance Computing
- Qiskit for:
 - Quantum information science research

The Qiskit ecosystem diagram shows:

- Add-ons: mapping problems**: OPT-Mapper, MPF, AQC
- Add-ons: optimizing hardware**: SLC, PNA, OBP, Circuit-cutting
- Add-ons: Post-processing**: SQD, M3
- Functions templates**
- Quantum-HPC**: Slurm, QRMI, Prefect
- Qiskit C++**
- Qiskit SDK**: Circuits, Transpiler, Runtime Primitives, Quantum info, Rustworkx, Samplomatic
- Quantum Resource Plugins**: Superstaq, IonQ, IQM, Rigetti, ALICE & BOB, AQT, Amazon braket, Pasqal, IBM Quantum

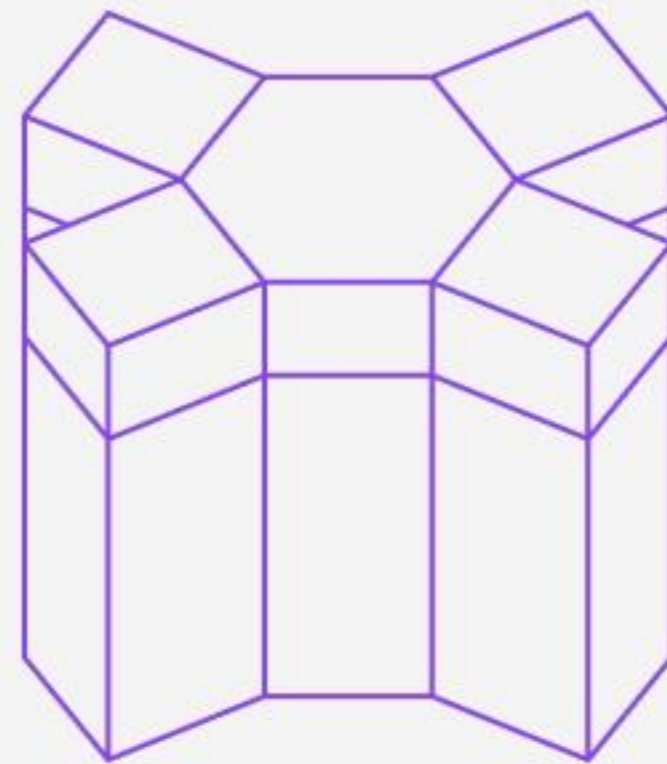
An open SDK that provides flexible and comprehensive interfaces for building, optimizing, and executing quantum circuits at scale

A collection of open science tools for designing QCSC and developing novel algorithms



Qiskit

+



IBM QPUs

=



Utility Scale Work

Qiskit

Accelerate application research with a high-performance software stack powered by Qiskit

Qiskit SDK

Preferred by 74% of the developer community

7400+ dependent projects

83x faster mean transpilation time than nearest competitor TKET

Qiskit Runtime

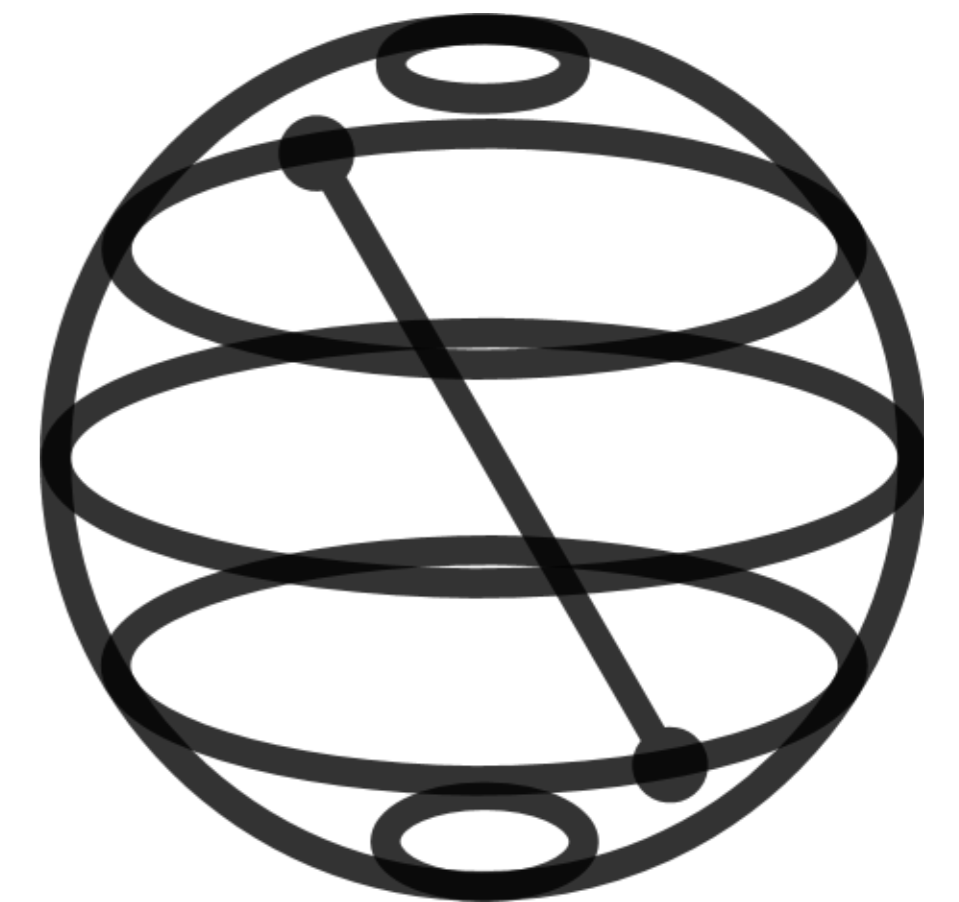
Accurately and efficiently execute estimation and sampling tasks in a near-time environment

Quality: Up to 5K gates
Speed: 330K CLOPS

Qiskit Serverless

Run quantum-centric supercomputing workloads across QPUs, CPUs, and GPUs in the cloud

Simplifies heterogeneous application development for researchers

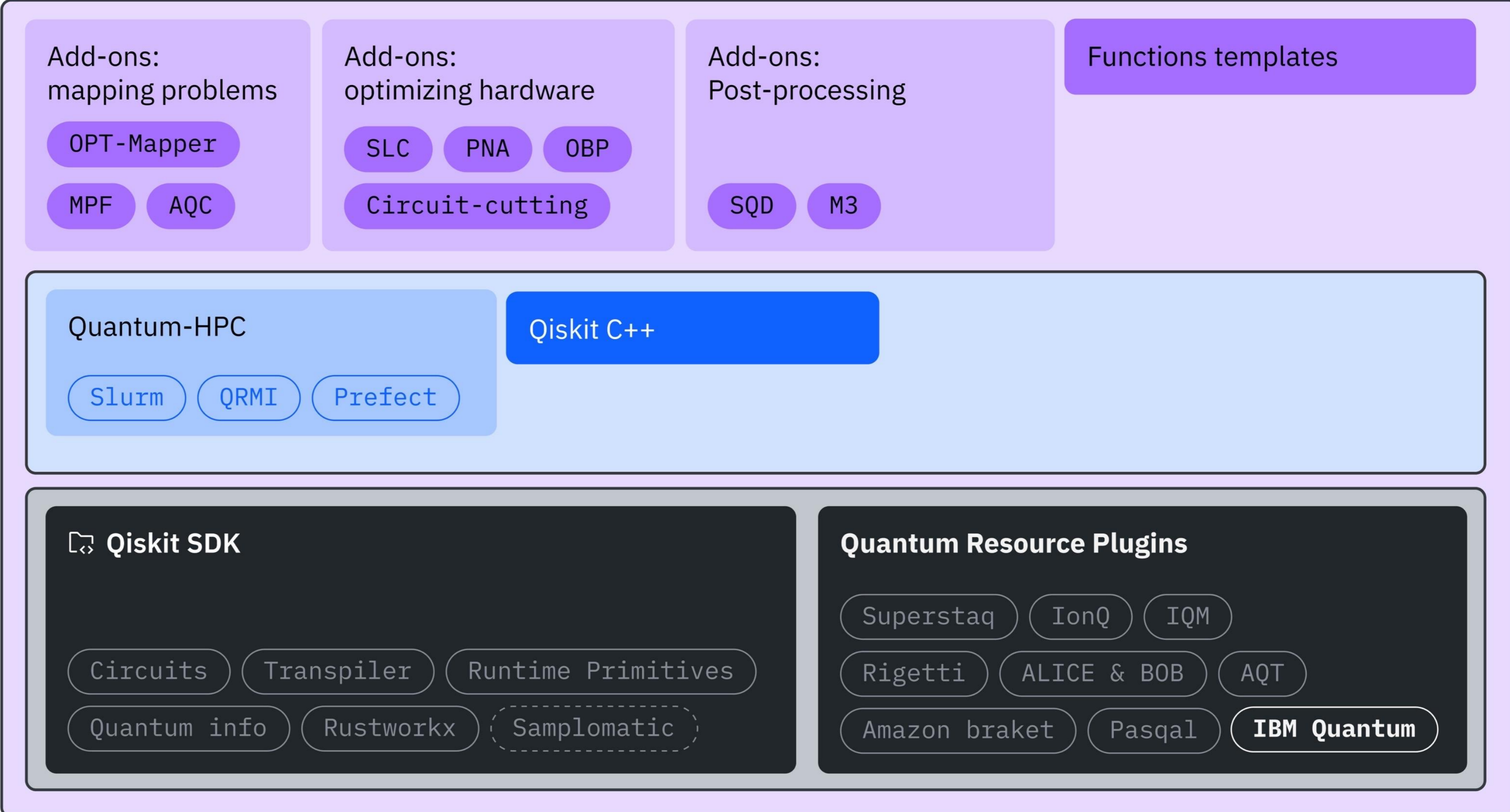


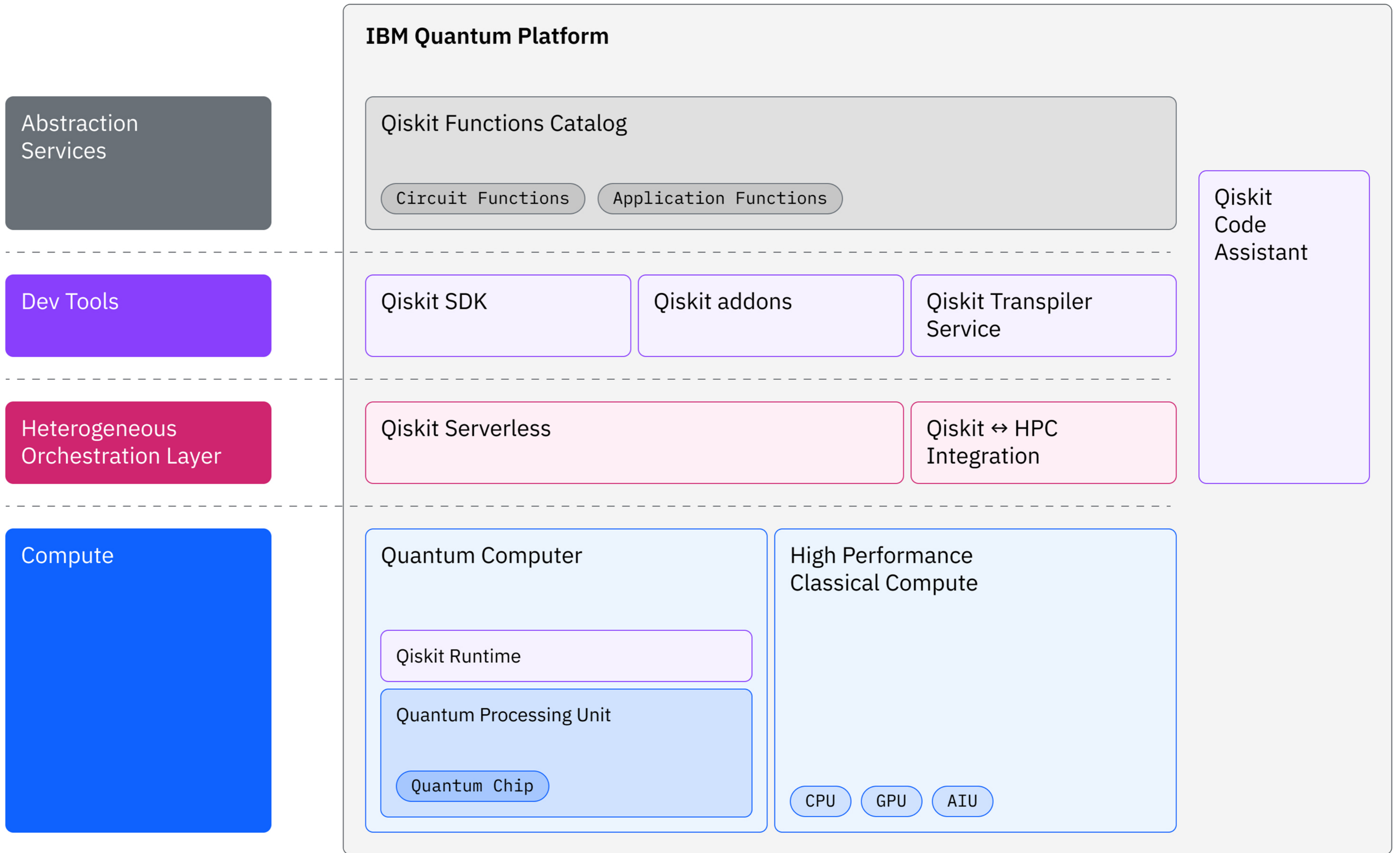
Qiskit – Open ecosystem for quantum computing

- Qiskit for:
 - Algorithm research

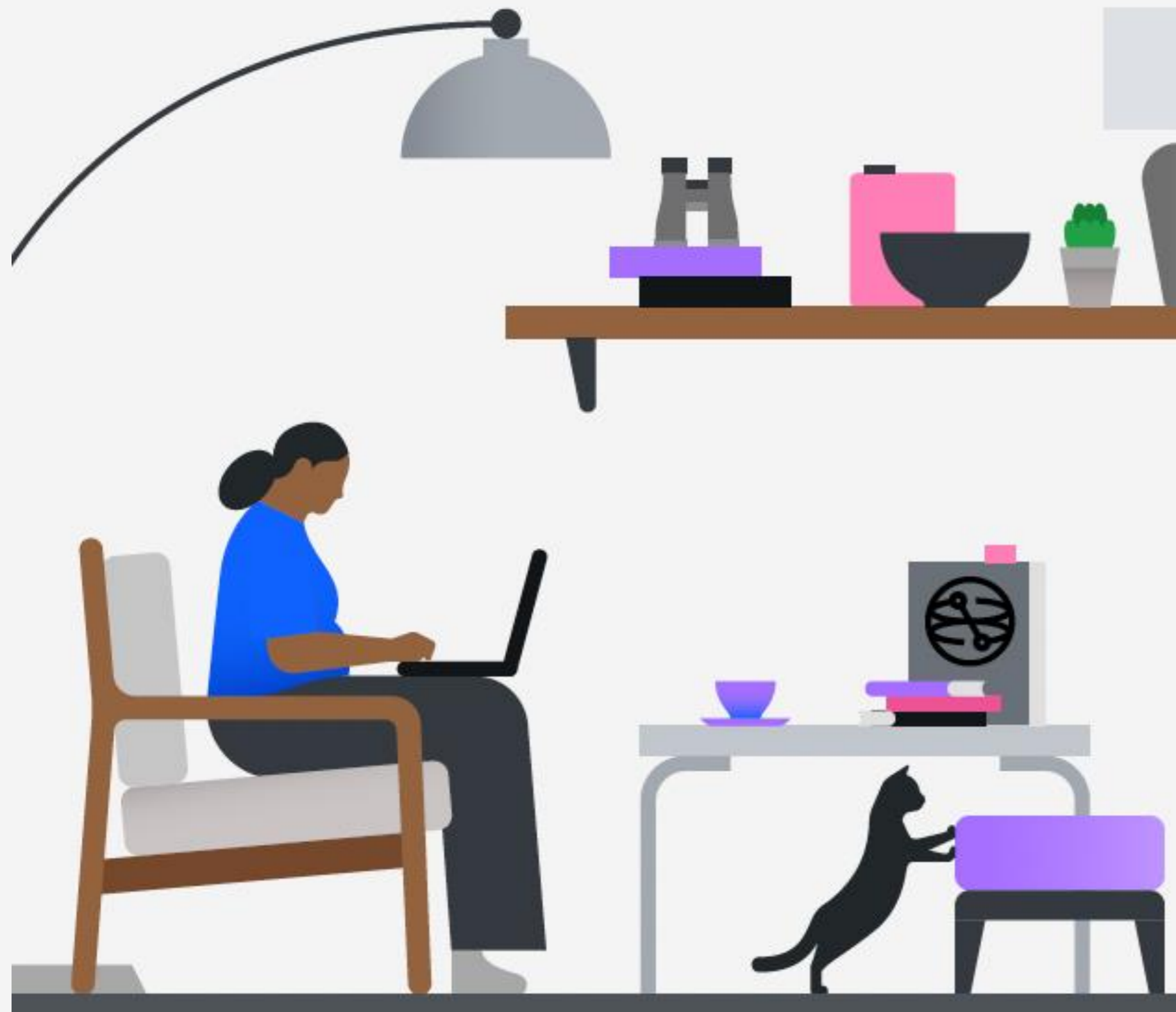
- Qiskit for:
 - High Performance Computing

- Qiskit for:
 - Quantum information science research





IBM Certified Quantum Computation using Qiskit v2.X Developer



1370

Developers with Qiskit certification

71

Countries with Qiskit-certified developers

The new and updated Qiskit certification is available on IBM Training now!

Validate your Qiskit 2.X skills, with topics such as performing quantum operations, creating quantum circuits, as well as running quantum circuits.

A free [study guide](#) and [sample test](#) are available through IBM Training.



www.ibm.biz/qiskit-cert

Learning & enablement

Qiskit classroom modules

<https://quantum.cloud.ibm.com/learning/ko/modules/quantum-mechanics>

Modules are ~1-2 hour-long, Jupyter notebooks on key concepts from a quantum-computing related course.

Text and Qiskit code, check-in questions and coding activities for the learner to check their understanding.

Designed to be easily plugged into courses with **minimal effort from the instructor.**

Optional **videos** paired with each module.

The image displays a Jupyter notebook interface for a quantum computing module. The notebook contains the following code and outputs:

```
observables = [[Pauli("X")]]
pubs = (qcoin,observables)
job = estimator.run([pubs])

result = job.result()[0]

print(result.data.evs)
[[1.]]
```

[14]:

```
qcoin_0 = QuantumCircuit(1)
qcoin_0.h(0)
qcoin_0.h(0)
qcoin_0.measure_all()
qcoin_0.draw('mpl')
```

[14]:

[15]:

```
sampler = StatevectorSampler()

pubs = ([qcoin_0])
job = sampler.run([pubs],shots = nflips)
result = job.result()
data_pub = result[0].data
counts0 = data_pub.meas.get_counts()
plot_histogram(counts0)
```


[15]:

IBM Quantum Learning

<https://quantum.cloud.ibm.com/learning/ko>

Learn the basics of quantum computing and how to solve real-world problems with IBM Quantum services and systems

Courses, tutorials, and educational resources by leading quantum experts.



Quantum learning

Kickstart your quantum learning journey with a selection of courses designed to help you learn the basics or explore more focused topics. If you're an instructor, explore content specifically tailored to incorporating quantum in the classroom.

Foundations


Courses to learn about quantum information and how quantum computing works, from the basics onward.

- Quantum information and computation I**
Basics of quantum information
Learn about quantum information, from states and measurements to quantum circuits and entanglement.
[Course](#)
- Quantum information and computation II**
Fundamentals of quantum algorithms
Learn how quantum algorithms beat classical algorithms for problems including integer factoring and search.
[Course](#)
- Quantum information and computation III**
General formulation of quantum information
Dive deeper into quantum information, including density matrices, channels, and general measurements.
[Course](#)
- Quantum information and computation IV**
Foundations of quantum error correction
Learn how quantum computations can be protected against noise through quantum error correcting codes and fault tolerance.
[Course](#) [New lesson](#)
- Quantum computing in practice**
Learn potential use cases and best practices for experimenting with quantum processors having 100+ qubits.
[Course](#) [New lesson](#)

Focused topics

Continue your learning journey by diving into more focused topics related to quantum computing.



- Quantum machine learning**
Learn to leverage the power of quantum computing in machine learning methods.
[Course](#) [New](#)
- Variational algorithm design**
An overview of variational algorithms: hybrid classical quantum algorithms.
[Course](#)
- Quantum chemistry with VQE**
An introduction to VQE that covers basic building blocks and applications.
[Course](#)
- Quantum diagonalization algorithms**
Multiple quantum approaches to matrix diagonalization are explored, including VQE, QKD, SKD, and variations of these.
[Course](#) [New](#)
- Utility-scale quantum computing**
A collection of learning assets from a 14-lesson course on utility-scale quantum computing.
[Course](#)





Sean Carroll
From Quantum Mechanics to Spacetime


Qiskit Quantum Seminar

Qiskit
153 videos 29,763 views Updated today


 


Stay up to date with the latest academic and research topics in the quantum community by joining our live discussions every Friday at 12PM EDT. Tune in to gain insights from experts and engage with a community of quantum enthusiasts!

- 


1 Qiskit Quantum Seminar
Anushya Chandran
1:05:40

Efficient classical shadow tomography with number conservation with Anushya Chandran
Qiskit • 116 views • Streamed 1 hour ago
- 


2 Qiskit Quantum Seminar
Elisa Bäumer
1:04:34

Efficient Long-Range Entanglement using Dynamic Circuits with Elisa Bäumer
Qiskit • 2.4K views • Streamed 3 weeks ago
- 


3 Qiskit Quantum Seminar
Amira Abbas
56:03

On quantum backpropagation and information reuse | Qiskit Quantum Seminar with Amira Abbas
Qiskit • 2.6K views • Streamed 4 weeks ago
- 

4 Qiskit Quantum Seminar
Ashley Montanaro
1:00:58

Near-Term Quantum Algorithms for Optimization with Ashley Montanaro
Qiskit • 2.4K views • Streamed 1 month ago
- 

5 Qiskit Quantum Seminar
Matthew Fisher
1:05:07

Quantum Many-body theory in the Quantum Information era with Matthew Fisher |Qiskit Quantum Seminar
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- 

6 Qiskit Quantum Seminar
Frank Pollmann
1:03:10

Realization and Characterization of Topological Phases on Quantum Processors
Qiskit • 2.9K views • Streamed 2 months ago

IBM Quantum community

[IBM Quantum Learning](#)

An online platform for learning the basics of quantum computing, and how to use IBM Quantum services and systems to solve real-world problems.

[Qiskit Global Summer School](#)

An annual event featuring online lectures delivered by various IBM Quantum experts, as well as live Q&A sessions.

[Qiskit YouTube channel](#)

The Qiskit YouTube channel hosts hundreds of useful videos on quantum computing.

[Qiskit Developer Certification](#)

The world's first ever developer certification for programming a quantum computer, setting the benchmark for quantum developer skills.

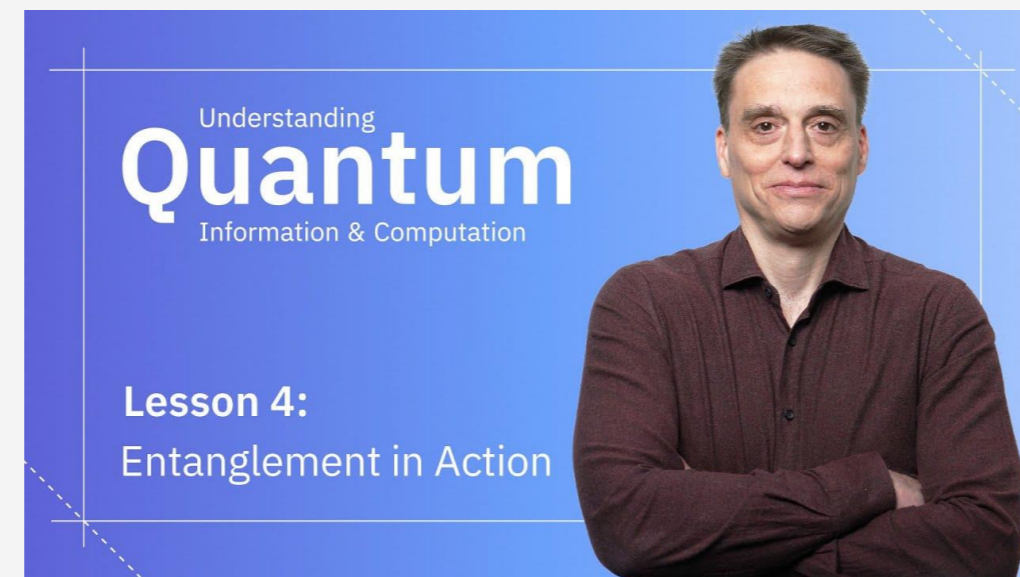
[Qiskit Advocates](#)

A global program that provides support to individuals who actively contribute to the Qiskit community. There are hundreds of Qiskit advocates representing many countries who contribute to the Qiskit community.

Expanding education and research

In-depth quantum education and workforce development by world renowned experts

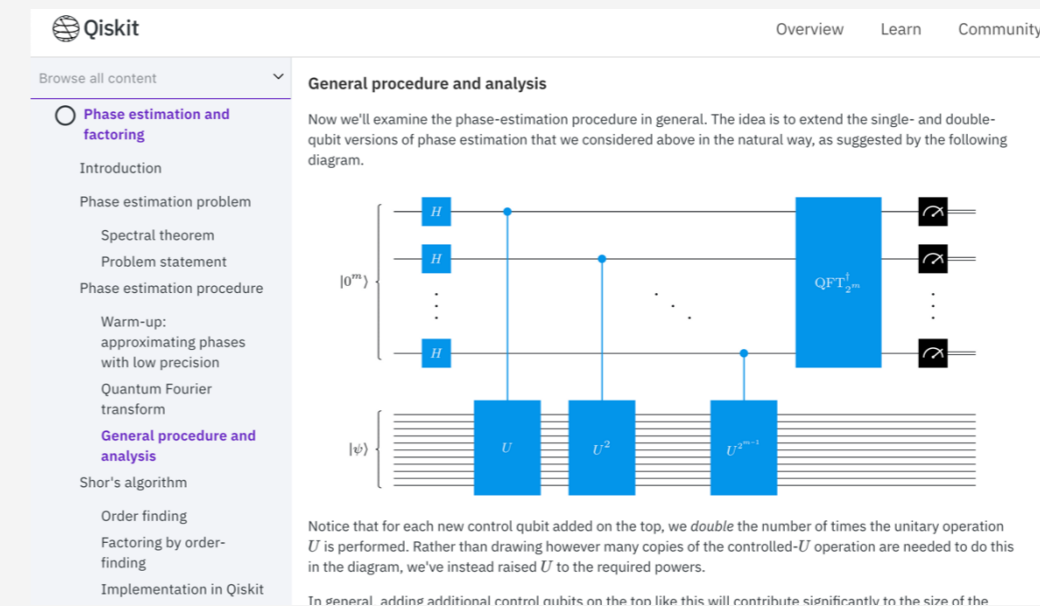
Understanding quantum information and computation by John Watrous



Quantum computing courses using Qiskit

700+

Online companion textbooks with problem sets and progress tracking, utilizing Qiskit and IBM Quantum hardware

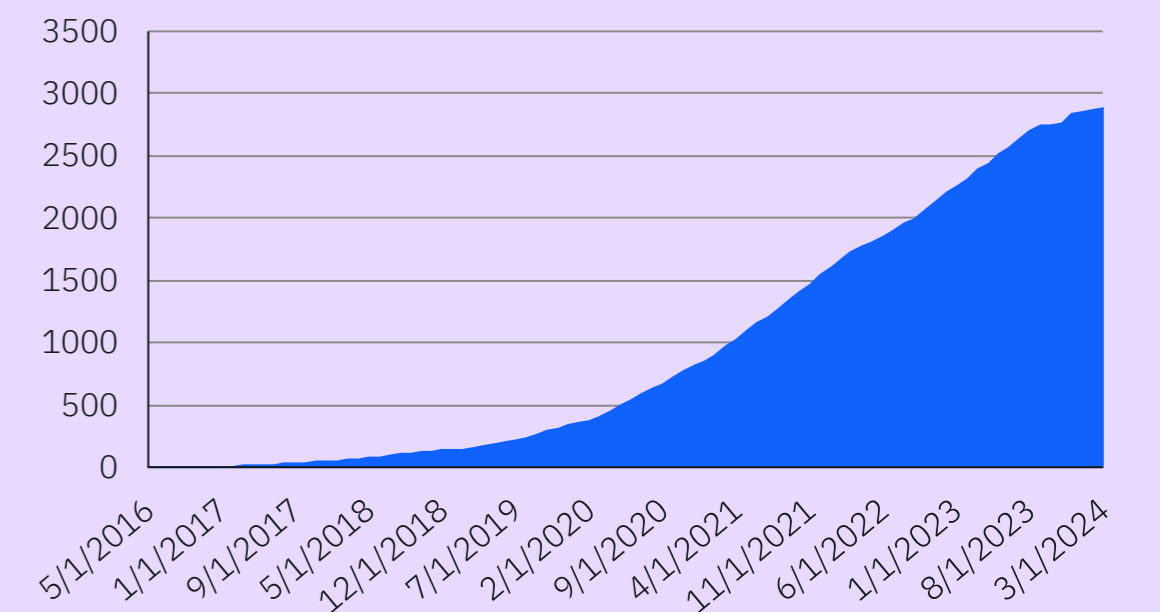


Learners accessing digital content

9M+

Science in the era of emergence

Research in this era was heavily focused on characterizing quantum hardware, error mitigation and suppression, and proof-of-concept applications



Published research papers since 2016

3K+

We have entered the era of **Quantum Utility**.

Our offerings are changing for this new era.





<https://www.ibm.com/thought-leadership/institute-business-value/report/quantum-decade>

IBM Quantum