Quantum computer applications (UTokyo & Business alliance)

QIH Quantum Innovation Hubs

1. Mission

○ Realize the world's first social implementation of a quantum computer by promoting technical cooperation and close mutual exchange of information among industry, government, and academia to boost development in Japan as a whole and accelerate the realization of quantum computing technology

○ Build a quantum ecosystem using commercial quantum computers from IBM

2. Activities

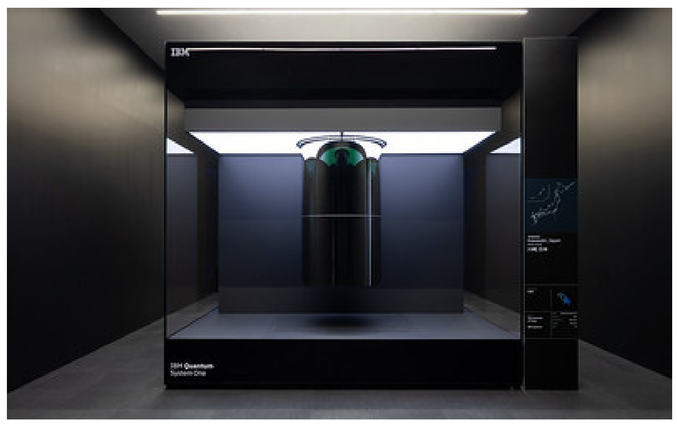
(1) Quantum Innovation Initiative (QII) Consortium

Conduct industry-academic joint research using IBM® Quantum System One*

*Japan's first gated commercial quantum computing system is installed and operated by IBM at the Kawasaki Business Incubation Center (KBIC) and is owned by the University of Tokyo (access was provided to regular members of the Consortium from July 2021).

Accelerate research by sharing the latest R&D trends and research results on quantum technology from researchers at universities and companies

Image Source：IBM Japan



IBM Quantum System One

正会員

UTokyo 慶應義塾 JSR株式会社 SONY
SoftBank Color & Comfort TOSHIBA TOPPAN
TOYOTA IBM HITACHI Inspire the Next MIZUHO みずほフィナンシャルグループ
SuMi TRUST SUMITOMO MITSUI TRUST GROUP MITSUBISHI CHEMICAL MUFG 理化学研究所

準会員

Eat Well, Live Well. Ajinomoto AGC Your Dreams, Our Challenge SUNTORY muRata INNOVATOR IN ELECTRONICS
YOKOGAWA RESONAC

アカデミア会員

TAT 東京農工大学

QII Consortium Members

Orient Microwave KEYCOM Characteristic Technologies

QHTC Members

(2) IBM - UTokyo lab.

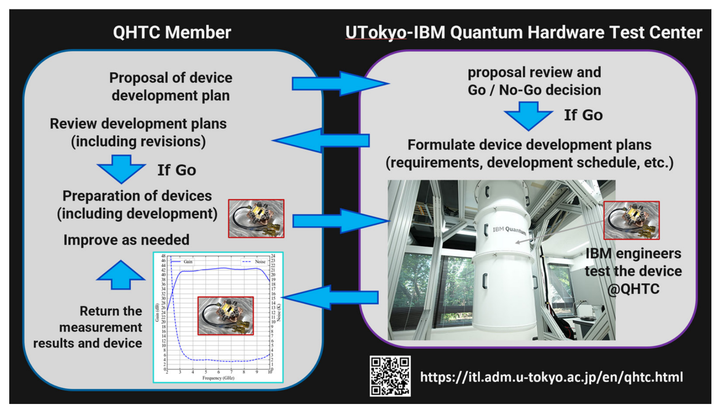
Establishment of the University of Tokyo - IBM Quantum Hardware Test Center(QHTC)

→Promotion of testing and research on quantum computer components through the Quantum System Testbed

- Advanced cryogenic microwave components and subsystems
- Control electronics
- High-frequency components and wiring required for high-quality signal transmission, etc.

Implementation of collaborative research

Researchers from the University of Tokyo and IBM develop software applications and hardware related to quantum computing

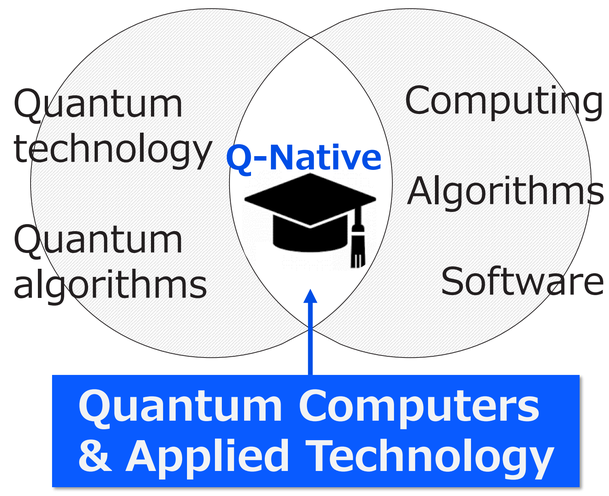


Device Development Process @QHTC

(3) Quantum Native Education Center

Implementation of an educational program through practical training on actual quantum computer equipment with the aim of fostering quantum natives

- 1st and 2nd year undergraduates: Advanced education for selected personnel (Advanced Science Course)
- 3rd and 4th year undergraduates: Development of interdisciplinary and international human resources
- Graduate School: Cutting-edge education and research



Q-Native Training Program

(4) Quantum Initiative

Visualization and dissemination of various educational and research projects in quantum-related research areas at the University of Tokyo

→67 projects listed (as of December 1, 2024)

(5) Center of Innovation for Sustainable Quantum AI (SQAI)

SQAI Center of Innovation for Sustainable Quantum AI

Cooperation with the COI-NEXT Center for Sustainable AI Research through Co-creation of Quantum Software and HPC/Simulation Technologies: in regard to research and development of quantum machine learning, quantum simulation, etc.

→44 institutions participating in SQAI (as of December 2024)

Quantum & AI Experiential Learning