ABCI-Q

Hybrid Computing Infrastructure

- A platform for experimenting with various quantum computing technologies
- Promoting the integration of quantum computers with a large-scale HPC system
- Contributing to the creation of use cases for socially implementable quantum computing technologies

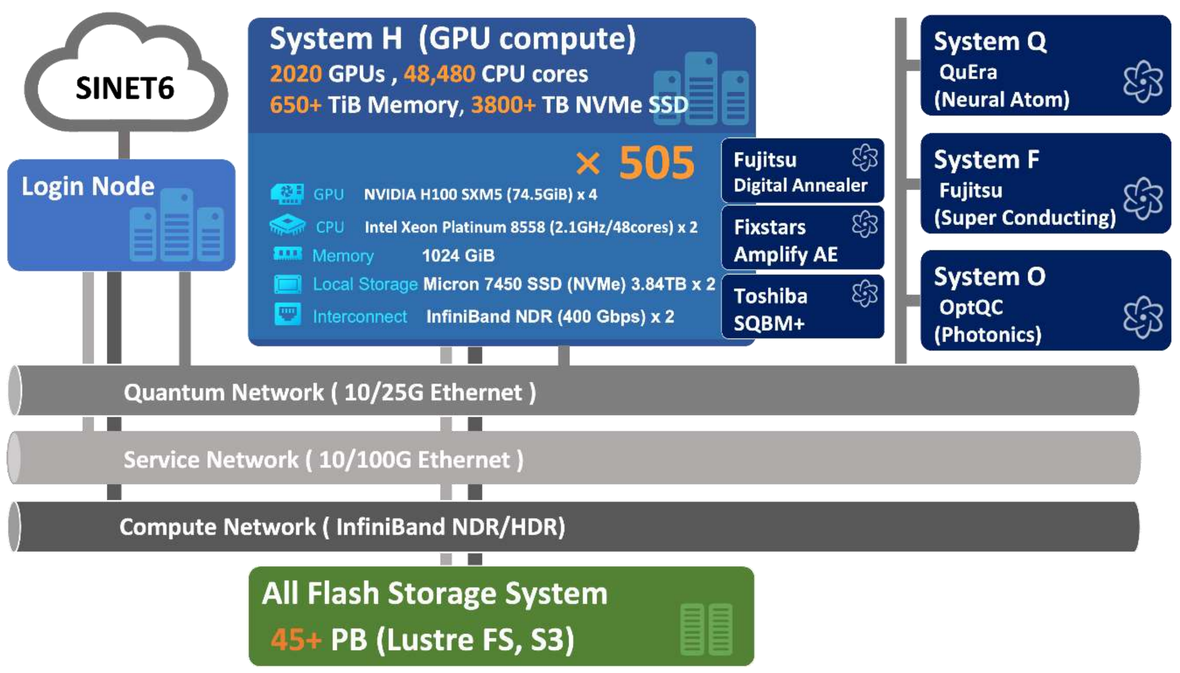
Overview

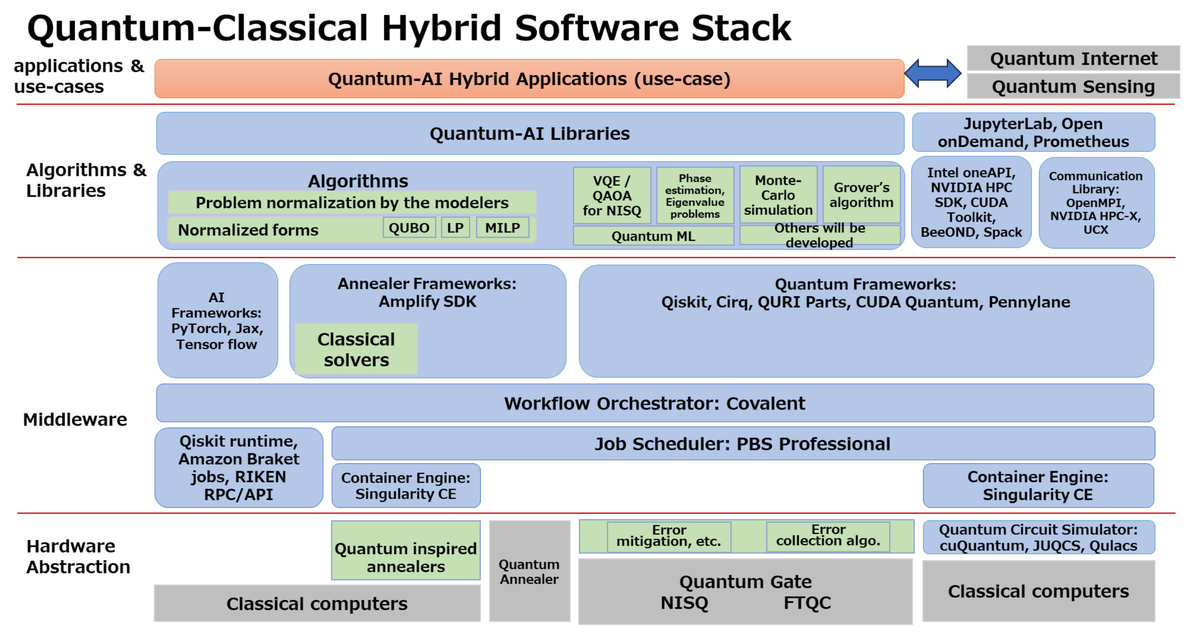
A cutting-edge quantum-classical hybrid computing platform centered around a HPC system (System H) equipped with 2,020 state-of-the-art NVIDIA GPUs, enabling the combination and selective use of various quantum computers depending on the application

- Superconducting, neutral atom and photonic quantum computers installed in AIST
- Quantum circuit simulator
- GPU-based quantum-inspired annealing engines
- Cloud services for quantum computers

Brief Specification

- System H hardware
  - AI performance: 2.1 EFLOPS
  - Simulation performance: 138.4 PFLOPS
  - Storage capacity: 45 PB
- Quantum circuit simulator: NVIDIA cuQuantum
- Quantum-inspired annealing engines:
  Fujitsu Digital Annealer, Fixstars Amplify AE, Toshiba SQBM+
- Hybrid application development environment
  - Hybrid workflow orchestration tool:
    Covalent
  - Hybrid programming framework:
    CUDA-Q, QURI Parts
  - Web-based quantum circuit editor & simulator:
    QNI





G-QuAT

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AIST
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