

Transformative Research Innovation Platform of RIKEN platforms (TRIP)

Value Creation by Quantum-Classical Advanced Computing Platform for Accelerating Research DX

- ◆ RIKEN will build the next-generation research DX platform by accumulating and integrating high-quality data to connect RIKEN's cutting-edge research platforms (bioresources, synchrotron radiation facilities, etc.) while **introducing quantum-classical hybrid computing and integrating mathematical science**, thereby **advancing the existing research DX infrastructure**.
- ◆ Through new initiatives, RIKEN will pioneer the “prediction and control science for the future” beyond the boundaries of individual fields and **provide an engine for social change to the broader domestic and international community**.

(1) High-quality data acquisition (Accumulation and integration)

Acquire high-quality data from world-class research, accumulate and integrate data from diverse fields, and build and release (in collaboration with NII) data analysis infrastructures to accelerate research DX.

(2) AI + Mathematical science (Prediction science)

Connect supercomputers, AI, and quantum computers through mathematical science to develop algorithms for quantum-classical hybrid computation in diverse fields.

(3) Quantum-classical hybrid computing (Expansion of computable domain)

Develop a hybrid computing infrastructure for quantum computers and supercomputers.

(4) Use case

Implement use cases utilizing the three platforms for value creation.

- ✓ Prediction and control of the transmutations of elements
- ✓ Prediction and control of novel functionalities in many-body electron system
- ✓ Green digital transformation

(5) Establishment of an operational structure that enables concentrated research on advanced technologies of national and social importance

- Conduct cross-center research based on the results and findings of RIKEN centers and bring together outstanding researchers from universities and research institutes in Japan and overseas.
- Strengthen the management system for technology security and research integrity and create a secure research environment with sophisticated research management.

