

Request for Information (RFI) on Hybrid Quantum Computer Procurement

February 2026

1. Background

The National Center for High-performance Computing (hereinafter referred to as NCHC) of the National Applied Research Laboratories, mandated by the National Science and Technology Council (NSTC), is currently drafting a medium-to-long-term project in accordance with the "Guidelines for the Preparation and Review of Medium-to-Long-Term Individual Projects of Agencies Affiliated to the Executive Yuan" to promote the implementation of quantum computers and quantum computer infrastructure. The scope of this project covers the quantum computer host body, quantum control and readout measurement systems, vibration isolation systems, and related supporting mechanical and electrical (MEP), network, and information security protection facilities.

This document, "Request for Information" (RFI), is formulated for the aforementioned project goals. This RFI aims to broadly collect the latest market information related to quantum computer implementation, in accordance with Article 34, Paragraph 1 of the Government Procurement Act of the Republic of China, openly soliciting technical data and suggestions from equipment and system manufacturers. NCHC hopes to further understand the technical specifications, R&D capabilities, and cooperation intentions of various manufacturers through this process, in order to grasp the latest technological trends related to quantum computing, and to gather and condense implementation concepts and available product information. The feedback gathered will assist NCHC in planning a quantum computer system architecture that best meets user needs, serving as a crucial reference for forming the final Request for Proposal (RFP).

2. Brief Description of Requirements

- Complete hardware implementation of a quantum computer with no less than 150 qubits.
- The total implementation period is five years.
- Payment is planned to be made using the percentage of completion method.
- Equipment location: NCHC Cloud Computing Center in Tainan Science Park.
- The quantum computer implemented in this project must be integrated with NCHC's supercomputers (NANO4, NANO5).
- A cloud operation platform must be provided.
- An integration and operation & maintenance (O&M) plan must be proposed. Joint O&M will be conducted in the third year, and NCHC will take over primary O&M from the

fourth year onwards.

- This is not solely a hardware procurement; a technical cooperation plan with Taiwan manufacturers must be proposed.
- This project does not allow bids from foreign manufacturers, Mainland China manufacturers, third-region manufacturers with Mainland capital components, or Mainland capital manufacturers in Taiwan. The origin of the properties or labor services supplied by the manufacturer must not be Mainland China, and the supplied targets must not be Mainland brands.

3. Solicitation Items

With the rapid development of quantum technology, various implementations and software technologies capable of achieving quantum computing are constantly evolving. The system implemented in this project must consider the domestic quantum industry layout, scientific research, and application fields to ensure it meets domestic usage and development needs. Therefore, we broadly solicit information from all parties and reference the latest hardware and software technical specifications and capabilities of various manufacturers to build a system suitable for domestic requirements. Contents include but are not limited to:

- **Core System Suggestions:** QPU (e.g., Qubit modalities, characteristics, decoherence time, single/two-qubit logic gate fidelity, speed, environmental noise requirements, etc.), QPU controllers (e.g., connection methods, etc.).
- **Auxiliary System Suggestions:** Such as cryogenic, vacuum, suspension, and vibration isolation systems, etc..
- **Other Item Suggestions:** Hardware and software architecture, equipment specifications, system analysis and description, implementation schedule, implementation methodology, HPC-QC integration description, alternative plans during implementation, transportation plan, installation requirements, performance measurement, acceptance methods, education and training, O&M plan, and **technical cooperation plan with local manufacturers**, etc..
- **Suggestions for presenting application track records.**
- **Suggestions for evaluation methods:** Evaluation methods, evaluation criteria, evaluation procedures, etc..

- **A system quotation** (Can be provided independently).

4. Response Format

NCHC expresses its gratitude to the responding units for providing specific, effective, reasonable, and feasible opinions, and encourages any proactive and advanced suggestions regarding the project goals. However, please respond according to the suggested proposal template and the following rules:

- Must include a cover page indicating the project name and the responding unit.
- Responding unit, contact window, and contact information (including name, address, phone number, fax, and email).
- A one-page summary of substantive, specific, and focused feedback regarding the project goals.
- A detailed feedback document addressing the requirements of this project, up to a maximum of 50 pages. The internal font size should be 12, and the layout should be A4 size.
- Please provide electronic files in WORD and PDF formats.

5. Space and MEP Specifications for this Project

- The host for this project will be located in the computer room area on the 2nd Floor (2F) of the NCHC's Cloud Computing Center.
- **Public space and computer room space conditions on the computer room floor:**
 - Floor load capacity: 1,450 kg/m² (total of bearing and hanging).
 - Type 600 aluminum alloy raised floor system, net height of raised floor 100cm, load capacity of 600 kg/m².
 - Height from raised floor to light steel frame ceiling (indoor height) is approximately 300cm.
 - Computer room door height: 240cm.
 - Freight elevator load capacity: 3,000 kg.
- **Power:**
 - The total capacity of the dedicated power system for computer equipment is approximately 4,400kW (two sets of high-voltage transformers, each with a capacity

of 2500kW 22.8kV to 380/220V 3P4W+G system).

- Computer room area: Initial planning provides a 4-route 1250A dedicated busway for the computer room (using 2N architecture).
 - UPS area: Installation of two 500kW Uninterruptible Power Supplies (using 2N architecture, actual maximum capability is 400kW, battery endurance is 10 minutes at full load). Initial planning includes 2 smart Power Distribution Unit (PDU) cabinets (A and B power).
 - Smart PDU cabinet: Each cabinet provides one 400A main switch, 380/220V AC (3-Phase, 4-Wire+Ground). Each pole of the branch circuit uses a 30A NFB. Three single-pole P spaces can be converted into a 3-Phase NFB. The maximum total number of branches that can be installed is 168P. The smart PDU cabinets are connected to the UPS with an output of up to 500kW.
- **Air Conditioning:**
 - The building is equipped with two 500RT water-cooled chillers, providing chilled water above 12°C (return water temperature difference 5°C).
 - Cooling towers: 700RT x 2 units running in parallel.
 - A 150A flange connection will be reserved in the 3F computer room area.
 - This project should make every effort to apply green energy design to reduce various power consumptions, including AC/DC conversion, UPS loss, and chiller power consumption.
 - All equipment in this project must use dual-circuit power supplies.
 - *(Figure: Schematic floor plan of the 2F Tainan IDC Cloud Networking Computer Room)*

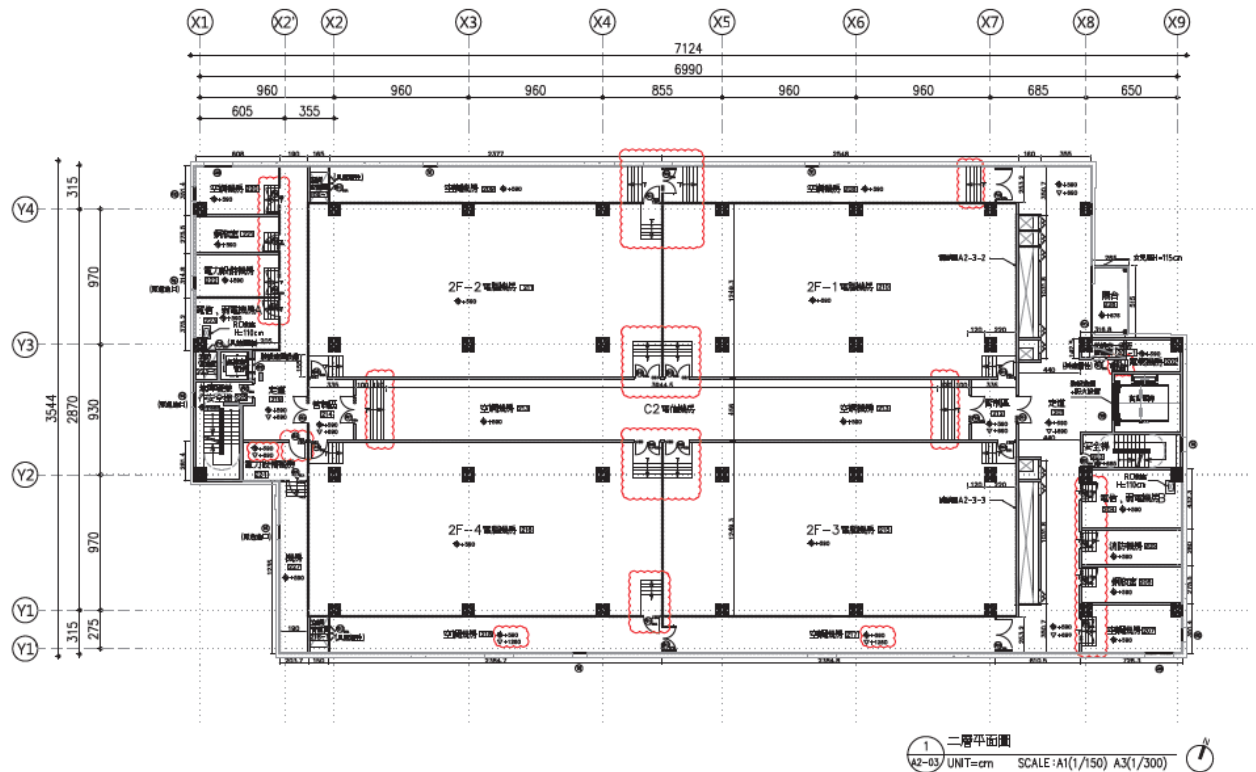


Fig. Floor Layout for 2F of NCHC's Cloud Computing Center

6. Contact Window

- Full name of the host organization: National Center for High-performance Computing, National Applied Research Laboratories. Address: No. 7, R&D 6th Rd., East Dist., Hsinchu City 300092.
- Contact Person: Mr. An-Cheng Yang
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7. Others

- In accordance with the provisions of Article 34, Paragraph 1 of the Procurement Act, price inquiries or market information gathering are conducted through public solicitation. The purpose of this RFI is solely to obtain reference materials provided by vendors and does not constitute an offer for procurement.
- The reference materials provided by vendors are restricted for NCHC's use only.
- NCHC is under no obligation to reply with opinions regarding the reference materials provided by vendors.

- Vendors must be responsible for ensuring the legal copyright of the reference materials provided to NCHC.
- NCHC will not pay for the content, items, or copyrights of the reference materials delivered by vendors.