

# NSF National Quantum Virtual Laboratory (NQVL)

Second NQVL Webinar: 9/8/2023



❖ **NQVL Management Team**, a subgroup of the NSF QISE WG:

- Bogdan Mihaila ..... MPS
- Pradeep Fulay ..... TIP
- Dominique Dagenais ..... ENG
- Almadena Chtchelkanova ..... CISE
- Engin Serpersu ..... BIO
- Vinod Lohani ..... EDU

**Email:** [NQVL@nsf.gov](mailto:NQVL@nsf.gov)



# NSF National Quantum Virtual Laboratory (NQVL)

# NSF National Quantum Virtual Laboratory (NQVL) Quantum Science and Technology Demonstrations (QSTD): I. Pilot Phase

23-604

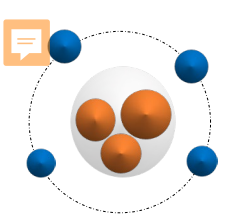
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## Important information for proposers

All proposals must be submitted in accordance with the requirements specified in this funding opportunity and in the NSF [Proposal & Award Policies & Procedures Guide \(PAPPG\)](#) that is in effect...





## ❖ Guiding Principles

- **Approach:** Systems Engineering, Co-design, Convergence.
- **Multidisciplinary:** BIO, EDU, CISE, ENG, MPS, TIP; Theory, Experiment, Engineering.
- **People:** Community-Driven, National effort.
- **All US STEM Talent:** Intentional. Lower Barriers at *all* entry points. Create a User Community.
- **Clear/Targeted/Actionable:**
  - ❖ Demonstrate Quantum Advantage for *practical* applications.
    - requires that we accelerate the development of platforms and facilitate user access.
  - ❖ Establish QISE as an enabler for scientific discovery.
- **Leverage NSF strengths in *basic science and engineering*:** Goal-Oriented effort.
  - ❖ Synergies with QLCI, TAQS, Foundries, ExpandQISE, Convergence Accelerators etc.
- **Partnerships:** U.S. agencies, National Labs, industry: *collaboration, cooperation, and coordination*.
- **Sustainability:**
  - ❖ Research will transition to the Core Programs when an integrated effort is no longer needed.
  - ❖ Distributed Quantum Information Infrastructure: support researchers, everywhere, anytime.





## ❖ QSTD: Pilot Phase: Proposal

- **What:** QSTD vision describing the specific Science and/or Technology area that is focus of the translation to be supported under the NQVL program and **who might be the potential users.**
- Why: Scientific and Technology challenges that can be addressed effectively only by a QSTD project.
- How: Plan of activities to address technical challenges.
- Who: Team with the organizational, scientific, technical, and sociocultural skills, trusted by the QISE community.
- **Readiness: Evidence that the QSTD project is feasible** in the time and with the resources afforded by NSF.
- **Community:** Plans for engaging the QISE community in the QSTD planning and execution and for fostering workforce development and promoting broadening participation.
- Partnerships: Dependencies. Synergies. Leverage other NQI-relevant investments by NSF or other U.S. Federal agencies. Public-private partnerships.
- Management and Coordination: Roles and responsibilities of all senior personnel. Deliverables. Timeline. Milestones.
- Outcomes.
- Metrics of Success.



## ❖ QSTD: Pilot Phase: Proposal (cont.)

- The QSTD Pilot proposal must include the *draft conceptual design* of the QSTD project, contingency, and the planning for the total anticipated number of system integration and development cycles in the QSTD project, including possible operations, as appropriate.
  - A QSTD Pilot proposal must include a **full statement of the science and technology goals**, and **sufficient technical detail to appropriately review the proposal**.
  - The NQVL program will review the scientific merit on a competitive basis that includes the potential cost to the program of conducting the QSTD development that would be enabled by the instrumentation.
  - The affordability of system *fabrication/integration* should be supported by parametric top-down budget estimates to provide a cost range.
- ❖ NSF strongly suggests that the Pilot teams secure the services of a professional Project Manager.





## ❖ QSTD: Pilot Phase: Additional Review Criteria

- The NSF proposal review process will review the scientific merit on a competitive basis that includes:
  - ✓ technical readiness of the proposed QSTD project;
  - ✓ potential cost of the proposed QSTD project; *and*
  - ✓ expected QSTD impacts vis-à-vis the goals of the NQVL Program.



## ❖ QSTD: Pilot Phase: Community-Building

- Each QSTD team will convene a QISE community town hall meeting seeking community input, foster an open scientific dialogue, collect baseline data to aid in the development of a diverse workforce development plan, and ensure the broad participation of the entire QISE community.
- The outcome of this activity, in addition to addressing the specific requirements, will be a QISE Strategic Plan for addressing the topic of the QSTD Pilot.
- The QISE Strategic Plans are living documents that will be updated as needed.
- It is expected that the plans to accomplish the proposed scope of work, the methods involved, and the Pilot team may evolve over the course of the various phases.





## ❖ QSTD: Pilot Phase: Oversight

- Nine (9) months into the project, NSF will conduct a panel review of each Pilot project.

The purpose of the review would be to assess the progress made by the team, provide feedback, and evaluate the *readiness* of the team to advance to the Design phase of the QSTD development.

As the QSTD Pilot teams are expected to collaborate, coordinate, and cooperate with each other. Synergies are strongly encouraged.

**QSTD Pilot teams may also choose to consolidate** prior to submitting a QSTD Design proposal to advance to the Design phase.



# ❖ QSTD: Pilot Phase: Proposal Submission

## PROGRAM SOLICITATION

### NSF 23-604

**Letter of Intent Due Date(s) (required)** (due by 5 p.m. submitter's local time):

October 06, 2023

April 09, 2024

**Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):

November 30, 2023

June 11, 2024

October 12 – November 16  
(five-week window)

**It is required that prospective PIs contact the NQVL Program Officer(s) as soon as possible, but not later than two weeks before submitting a proposal in response to this solicitation, to ascertain that the focus and budget of their proposal is appropriate for this solicitation.**



## ❖ QSTD: Pilot Phase: Proposal Submission (cont.)

### **Additional Information for *all* NQVL Proposals**

Although more than one organization may participate in a QSTD proposal, a single organization must accept overall management responsibility for the project. The proposal must be submitted by one organization, with funding provided to any other organization through subawards. **The use of the collaborative proposal mechanism is not permitted for QSTD proposals.** Subawards are not limited to IHE institutions but may be made to any group identified as eligible for funding by NSF as described in the [NSF Proposal and Award Policies and Procedures Guide \(PAPPG\)](#).



## ❖ QSTD: Pilot Phase: Proposal Submission (cont.)

*Letters of Support/Endorsement are not permitted.*

### *Letters of Collaboration*

Letters of collaboration are limited to stating the intent to collaborate. Endorsements or evaluations of the proposed project are not allowed. The Project Description should document the need for and nature of collaborations, such as intellectual contributions to the project, permission to access a site, an instrument, or a facility, offer of samples and materials for research, logistical support to the research and education program, or mentoring of U.S. students at a foreign site. Letters of collaboration should be included only when the involvement of the external collaborator is critical for the success of the proposed research. Letters of collaboration must follow the following format and be included in the Other Supplementary Documents section of the proposal:

"If the proposal submitted by Dr. [insert the full name of the Principal Investigator] entitled [insert the proposal title] is selected for funding by the NSF, it is our intent to collaborate and/or commit resources as detailed in the Project Description.

Specifically, our contributions to the project would include:

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[followed by a succinct list]."



## ❖ QSTD: Pilot Phase: Proposal Submission (cont.)

### *Data Management Plan*

In addition to the PAPPG requirements regarding the management and sharing of data products resulting from NQVL activities, and in alignment with the National Science and Technology Council report on "Guidance for Implementing National Security Presidential Memorandum 33 (NSPM-33)" and the National Security Memorandum 10 (NSM-10), NQVL proposals should also include in the Data Management Plan a description of how any proprietary information or intellectual property will be managed. This description may include a discussion of how data will be shared with project partners and affiliates, how access to the data will be managed, and how the sensitivity of various data sets will be assessed. Research security concerns are relevant for NQVL projects because quantum technologies have the potential to impact U.S. economic and national security interests.

- Intellectual Property information = = Data
- August 2022, OSTP Memo on “Ensuring Free, Immediate, and Equitable Access to Federally Funded Research”, see NSF Public Access Initiative, <https://new.nsf.gov/public-access>





# ❖ QSTD: Pilot Phase: Eligibility Information

## Who May Submit Proposals:

Proposals may only be submitted by the following:

- Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch
- Non-profit, non-academic organizations: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.

## Who May Serve as PI:

The PI must be a faculty member at the Lead Organization or permanent staff person from a non-profit, non-academic organization with authority to act on behalf of the organization. Co-PIs listed on the Cover Sheet may be from organizations other than the Lead Organization.

## Limit on Number of Proposals per Organization: 1

Up to **one** (1) QSTD Pilot proposal may be submitted per Lead Organization.

## Limit on Number of Proposals per PI or co-PI: 1

An individual may serve as PI or co-PI on no more than **one** (1) QSTD Pilot proposal.



NQVL Webinar recordings, 8/4/2023 & 9/8/2023, will be posted on the NQVL program web page.

The NQVL Program will contact each Lead PI, as identified in the LOI, to schedule a meeting with NSF **between October 12, and November 16, 2023.**

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# NQVL Webinar: Questions?

