Quantum Benchmarking Initiative (QBI)

Joe Altepeter, Ph.D. Program Manager, Microsystems Technology Office

Proposers Day

September 3, 2024







Please use the program email address to submit questions for the government team

• <u>QBI@DARPA.mil</u>

For questions submitted today before 12:30 PM, we will attempt to answer them this afternoon, time permitting

• See Proposers Day agenda for more details

Questions submitted after 12:30 PM today will have answers posted periodically to the FAQ list on the DARPA Opportunities website

• <u>https://www.darpa.mil/work-with-us/opportunities</u>





Are you going to build an **industrially useful** quantum computer by 2033?

If so, we'd like to hear from you.





- a. Provide funding
- b. Provide unbiased Verification and Validation (V&V)
- c. Communicate results to U.S. Government stakeholders





Economic Opportunity

- It has been **credibly hypothesized** but not proven that quantum computers ٠ would have a transformational impact on many industries.
- **Examples:** Machine learning, quantum chemistry, materials discovery, ٠ molecular simulation, many-body physics, classification, nonlinear dynamics, supply chain optimization, drug discovery, battery catalysis, genomic analysis, fluid dynamics, protein structure prediction, solving systems of linear and nonlinear equations.

Security Threat

NIST analysis of the threat:

"If large-scale quantum computers are ever built, they will be able to break many of the public-key cryptosystems currently in use. This would **seriously** *compromise* the confidentiality and integrity of digital communications on the Internet and elsewhere."

NIST on the timeline for cryptographically relevant quantum computers: ٠ "Some engineers even predict that within the next twenty or so years sufficiently large quantum computers will be built to break essentially all public key schemes currently in use."











Battery Catalysis (\$141B Market)

Machine Learning (\$97B Market)



Nitrogen Fixation (\$85B Market)



Encryption (\$146B Market)

Sources: Shutterstock



Source: Shutterstock

If the hype is real, utility-scale quantum computers have the potential for significant economic disruption

[Quotes from: https://csrc.nist.gov/projects/post-guantum-cryptography]





QBI expands upon work done in two DARPA programs – they were designed to answer these questions:







More than 200 applications were documented by DARPA's Quantum Benchmarking Program in 2022



Using available resources, DARPA has prioritized ~15 applications for examination



DARPA is examining quantum utility for a few key problem classes, but many more remain





Applications that could benefit from a quantum coprocessor:

- Simulating correlated materials
- Developing corrosion resistant materials
- Developing new rocket fuels and explosive materials
- Dynamical simulations (for new solar cells, better understanding of biological processes, and magnetic materials)
- New methods to compile algorithms to faulttolerant quantum architectures



Grey solid circles represent pessimistic resource estimates. Colored circles are optimistic resource estimates based on known improvements. All points supported by detailed published pre-prints.

Preliminary evidence suggests that large-scale quantum computers could be industrially useful





The primary goal of QBI is to determine if any approach to quantum computing can achieve utility-scale operation by the year 2033

 Although DARPA considers this unlikely, if the QBI Test and Evaluation (T&E) team successfully verifies and validates that an approach can achieve utility-scale operation by the year 2033, DARPA intends to aggressively communicate these results to U.S. Government Agencies interested in using or acquiring such a machine

QBI expands upon the existing DARPA US2QC program

- While current US2QC performers are not precluded from proposing new approaches to Stage A of this solicitation, QBI is intended to address new developments in the quantum computing field
- Active US2QC performers are subject to the terms of their agreements awarded under DARPA-PS-22-04, which parallels QBI
- Organizations that have completed US2QC Phase 0 but are not currently US2QC performers may submit an Abstract per this solicitation



QBI aims to discover if any company is on the path to creating an industrially useful quantum computer by 2033







This solicitation is seeking proposals from any organization that believes they are on the path to build a utility-scale quantum computer in the near term



Stages of QBI



QBI Stage A: Plausibility 6-months Up to \$1M*



QBI Stage C: Validation and Co-Design Duration tailored to performer Up to \$300M*

Stage A

*see PS for details and conditions

• Will focus on the performer's utility-scale quantum computer (USQC) concept

Stage B

• Will focus on examining the performer's baseline research and development (R&D) plan

Stage C

• Will determine if a USQC can be constructed as designed and operated as intended

QBI will focus on verifying and validating the path to utility-scale quantum computers, and will not focus on tracking incremental improvements to the state of the art





- A six (6)-month period of performance will focus on the USQC concept
- In the first three (3) months, a performer will develop a system concept report to be delivered to the Government Test and Evaluation (T&E) team and reviewed at a concept design review in month four (4)
- This report will detail the performer's approach to building a utility-scale quantum computer (see Attachment G for an example report outline)
- During the last three (3) months of this stage, the T&E team will evaluate and provide feedback on the draft concept report culminating in a presentation of the Government Team's understanding of the performer's baseline system architecture and the performer's delivery of a revised report
- Performers in Stage A may accelerate the delivery of their milestones, giving DARPA the opportunity to evaluate their concept and begin discussions about advancement to Stage B earlier than the six-month timeline







- A twelve (12)-month period of performance will focus on examining:
 - The performer's **baseline research and development (R&D) plan** to build the USQC
 - The risks associated with that plan and the planned risk mitigation steps
 - The prototypes that the T&E team can validate during Stage C in order to give confidence that the risks to build a USQC have been sufficiently reduced that construction and final design could begin immediately
- Stage B will enable DARPA to:
 - Evaluate the R&D plan for the USQC concept
 - Expand the utility-scale system evaluation
 - Gain visibility into ongoing progress on critical components development
 - Define and prepare for initial Stage C experimental evaluations







- This stage will consist of a variable period of performance tailored to a specific performer's R&D plan but is assumed for cost estimates to be nominally 36 months
- This Stage will determine if a USQC can be constructed as designed and operated as intended
- More specifically, the four primary goals of Stage C will enable DARPA to:
 - Evaluate the utility-scale system design finalization
 - Perform component testing and direct hardware evaluation
 - Assess the system-level performance capabilities of major prototypes
 - Engage in application and algorithm co-design (if appropriate)

Companies that successfully complete Stage C will be those that DARPA deems are ready to immediately begin the final design and construction of a USQC whose value exceeds its cost













Roots (3)

USQC Physical Decomposition

- What is a high-level description of a Utility Scale Quantum Computer?
- What are all the components and sub-systems and how do they fit together?
- What happens at the interfaces of those components and sub-systems?

USQC Functional Decomposition

- How does the proposed USQC actually work?
- How is it intended to be used?
- What are its intended modes of operation and user interfaces?

Performer Processes

- What processes, plans, and products does this team have in place?
- How have they leveraged those (or different) processes, plans, products, in the past to come to their current USQC concept?
- How will the team's processes, plans, products change or be leveraged in the future to burn down all the risks and actually be ready to start USQC construction?

Branches (16) Leaves (50)



Example Branch Components and Subsystems

Example Leaf

System description of the USQC including a graphic depiction of the components and subsystems

System Evaluation \rightarrow Provide a broad evaluation of the completeness and quality of concepts



System evaluation – generic example







Critical steps for a QBI performer





Required – Proposers cannot be selected for funding unless they submit an abstract

Format – Eight (8) pages; see the Program Solicitation for detail

Source Selection Information – D	istribution with Agreements Officer's authorization only	۵
[PRIM	E ORGANIZATION LOGO]	QBI
Quantum	DARPA-PS-24-26 Benchmarking Initiative (OBI)	
	Abstract	
Abstract Title		
Proposer Organization		
Date		
Technical Point of Contact (POC)	Name: Mailing Address: Telephone: Email:	
Administrative POC	Name: Mailing Address: Telephone:	
Other Team Members (subcontractors and consultants), if known/applicable	Tranical POC Name: Organization: Technical POC Name: Organization: e	
Estimated Period of Performance	· ·	
Identify any other solicitation(s) to which this concept has been proposed		
[Prime Organization] affirms that neith scientific, engineering, and technical a (A&AS), or similar support services to subcontract.	ner it nor any proposed subcontractor currently pre ssistance (SETA), Advisory and Assistance Services any DARPA office(s) through an active contract or	ovide



Invitation Only – Only proposers who submit an abstract and are then invited to submit an Oral Proposal Package may do so

Format – Two (2) presentations on a single day plus supplementary documents

• Full details will be sent with an invitation to give an Oral Proposal

Live Questions – The Government evaluation team will ask questions in real time **Proposal is for Stage A** – Next Stage to be negotiated after the start of Stage A



Critical steps for a QBI performer









The QBI program will build from the US2QC program, significantly expanding on the world-class Test & Evaluation team created for that program

- ➔ If you are interested in partnering with DARPA to Test and Evaluate quantum computing technology, you can respond to the RFI
 - DARPA-SN-24-101
 - Released August 27, 2024
 - Responses due September 27, 2024

DARPA-SN-24-101

Request for Information (RFI) Special Notice DARPA-SN-24-101

Quantum Benchmarking Initiative Test and Evaluation Support RFI Defense Advanced Research Projects Agency (DARPA) Microsystems Technology Office (MTO)

Posting Date: August 27, 2024 Responses Due: September 27, 2024, by 11:59 p.m. Eastern Time (ET) Technical Point of Contact: Joseph Altepeter, DARPA/MTO Email: @Bi@darpa.mil

DESCRIPTION:

This Request for Information (RFI) from the Defense Advanced Research Projects Agency's (DARPA) Microsystems Technology Office (MTO) seeks information on infrastructure, equipment, and expertise available to provide test and evaluation (T&E) support for DARPA's Quantum Benchmarking Initiative (QBI), described in the QBI Program Solicitation (PS). DARPA anticipates releasing the PS prior to September 2024. If released, the PS will be made available at https://sam.gov/.

DARPA is interested in any stakeholder (industry, academia, federally funded research and development centers, university-affiliated research centers, government, or other) that has infrastructure, equipment, lab space, workforce, and expertise available to support the verification and validation (V&V) of DARPA QBI performers' efforts to accomplish the four main goals of the Quantum Benchmarking Initiative:

- 1. Developing and describing a utility-scale quantum computer concept that has a plausible path to realization in the near term,
- 2. Developing and describing a robust research and development plan that reduces key risks that a utility-scale quantum computer can be constructed,
- 3. Identifying and validating quantum computer applications and algorithms that provide demonstrated utility, and
- Working with the U.S. Government to verify and validate that the utility-scale quantum computer can be constructed as designed and operated as intended.

The goal of this RFI is to identify cutting-edge facilities and high-skill teams across the nation that can support the independent V&V of innovative technical solutions for building and using fault-tolerant quantum computers. These V&V activities span the breadth of the quantum computing stack, including use-case definition, systems

1





The Department of Energy is a critical DARPA partner in the QBI program

A recently-announced Memorandum of Understanding (MOU) between the Agencies enables robust collaboration on quantum computing Test & Evaluation









The State of Illinois is a key partner in the QBI Program

- Illinois is independently building a \$500M Illinois Quantum and Microelectronics Park (IQMP), dedicated to scaling industrial quantum computing
- As part of this campus, DARPA and Illinois are co-investing in the "Quantum Proving Ground", an effort dedicated to enabling world-class Test and Evaluation for the Quantum Benchmarking Initiative
- IL is investing up to \$140M in matching funds for the Quantum Proving Ground, which will directly contribute to the success of QBI

Why would a performer choose to work with the IQMP?

- State of Illinois will invest in equipment, infrastructure, physical and cyber security, and it may offset costs for prototype quantum computing hardware
- Participating performers gain access to the IQMP community, including state of IL university & national lab researchers, companies, suppliers, IL talent pipeline

These resources are available to QBI, but teams are **<u>not required</u>** to move to Illinois or to take advantage of these facilities and services.

QBI will do T&E wherever it makes the most sense.







... I am going to build a utility-scale quantum computer by 2033

 \rightarrow Apply to Stage A via the QBI Program Solicitation

... I'm interested in participating in the Government T&E Team?

ightarrow Respond to the T&E Special Notice

... I think I can build a utility-scale quantum computer, but only with DARPA's support

→ Your effort is probably not mature enough for this program, but you are welcome to apply

... I am interested in supporting a company trying to build a utility-scale quantum computer

ightarrow You should contact those companies directly about supporting their proposal

... I am interested in related academic research, but am not planning on building a utility-scale quantum computer

ightarrow It is unlikely your work is appropriate for this solicitation







Attachment A – QBI Abstract Summary Slide Template

Template for PowerPoint slide that summarizes your utility-scale concept and approach

Required with Abstract submission

Abstract Title rganization Name(s); Technical POC Name(s)	DARPA-PS-24-26 Quantum Benchmarking Initiative Program Solicitation (PS) Abstract Summary Slide	G QB
Utility-Scale Quantum Computing Concept	Technology Challenges and Risks	
Provide graphic of proposed concept	Describe specific technical challenges, primary risks, and mitigation strategies	
Proposed Approach	Research and Development Roadmap	
Summarize utility-scale concept, and verification and validation strategy	Illustrate R&D roadmap from now until 2033	
Source Selection Information – Distribution	with Agreements Officer's authorization only	





Attachment B – QBI Abstract Template

Document template for your Abstract, including content guidelines

Required with Abstract submission

[PRIM Quantum I	E ORGANIZATION LOGO] DARPA-PS-24-26 Benchmarking Initiative (OBI)
Quantum I	DARPA-PS-24-26 Benchmarking Initiative (ORI)
Quantum I	Benchmarking Initiative (OBI)
	Abstract
Abstract Title	
Proposer Organization	
Date	
	Name:
Technical Point of Contact (POC)	Mailing Address:
	Email:
	Name:
	Mailing Address:
Administrative POC	Telephone:
	Email:
	Technical POC Name:
Other Team Members	Organization:
(subcontractors and consultants), if	
known/applicable	Technical POC Name:
Estimated Total Cost	Organization:
Estimated Pariod of Parformance	2
Identify any other solicitation(s) to	
which this concept has been	
proposed	
Estimated Total Cost Estimated Period of Performance Identify any other solicitation(s) to which this concept has been proposed Prime Organization] affirms that neith cientific, engineering, and technical as A&AS). or simular support services to a	\$ er it nor any proposed subcontractor currently provid sistance (SETA), Advisory and Assistance Services my DARPA office(s) through an active contract or





Attachment C – QBI Model Other Transaction for Prototype

Model document for the terms and conditions that DARPA intends to include in any QBI award

ARPA has provided the model OT as an op odel OT is representative of the general ter ards, <u>however final terms and condition</u> ovided here.	portunity for proposer to suggest edits for consideration. The ms and conditions that DARPA intends to include in any QBI is will be specific to each award and will vary from the model
oposers may suggest edits to the model O with track changes as part of their propo- almated. Any changes suggested should be iverables proposed. It is required that Pro- ts of a non-administrative nature. Suggest	f for consideration by DARPA and provide a copy of the model sal package. <u>Proposed changes to the model OT will not be</u> e commensurate with the technical approach, milestones, and posers include comments providing rationale for any suggested ed edits may be rejected at DARPA's discretion.
Other T	ransaction for Prototypes
	BETWEEN
(INSERI	PERFORMER AND ADDRESS)
	AND
THE DEFENSE ADV 675 N ARL	ANCED RESEARCH PROJECTS AGENCY ORTH RANDOLPH STREET JNGTON, VA 22203-2114
	CONCERNING
Quantur (INSERT RESI	n Benchmarking Initiative (QBI) EARCH AND DEVELOPMENT TITLE)
Agreement No.: HR0011-XX-9-XXXX Purchase Requisition No.: XXXXXXXXX Total Amount of the Agreement: \$,XXX Funds Obligated: \$,XXXXXXXXXXX Authority: 10 U.S.C. \$ 4022 Effective Date: XXXXXXXXX	COUNCY KUCCULUCCCY Y
Line of Appropriation:	
AA	S
This Agreement is entered into between the represented by The Defense Advanced R NAME) pursuant to and under United States (Section 2014) and the section of	he United States of America, hereinafter called the Government, esearch Projects Agency (DARPA), and (INSERT COMPANY tes Federal law.
FOR (INSERT COMPANY NAME)	FOR THE GOVERNMENT DEFENSE ADVANCED RESEARCH PROJECTS AGENCY





Attachment D – QBI Stage A Schedule of Milestones and Payments

Spreadsheet containing strongly recommended Milestones and Payments for Stage A efforts

	А	В	С	D	Е	F	G	Н
1	QBI	QBI Stage A Schedule of Milestones and Payments						
2	Milestone #	Milestone	Exit Citeria /Deliverable	Due Date	Payment	Funded	CLIN SUBCLIN	ACRN
3	A.1.a	Stage A Kickoff Meeting	Milestone	Month 1	\$ 150,000			
4	A.1.b	Concept Design Review	Milestone	Month 4	\$ 500,000			
5	A.1.c	Final Concept Design Report	Milestone	Month 6	\$ 350,000			
6	Total Stage A				\$ 1,000,000	S -		
7	*Tasks and target	s are keyed to Attachment 1 - Task	Description Docur	nent				
8	Highlighted se	ction NOT to be filled out by	proposers					
9								
10	Milestone payn	nent in Column E is a recomme	nded amount, wl	hich can be	e modified as l	ong as the	total does n	ot excee
11	1							
12								
10	1							





Attachment E – QBI Stage A Task Description Document (TDD)

Template for TDD document outlining the project tasks to be performed along with schedule milestones and delivery dates required for successful completion







Attachment F – QBI Certifications for Agreement

Representations and certifications required to execute Other Transactions agreements

	OTHER TRANSACTION CERTIFICATI	ONS
Program Solicitation No.: DAR	PA-PS-24-26	
Offeror:		
Proposal Identification:		
 The undersigned certifies principals: 	, to the best of his or her knowledge and belief,	that this institution, organization, and it
(a) Pursuant to Executive for debarment, declared ineligible	Order 12549 and implementing rule, are not pre or voluntarily excluded from covered transaction	esently debarred, suspended, proposed ons by any Federal department or agenc
(b) Pursuant to Public La workplace. The place of perform	w 100-690 and implementing final rule, effectiv ance is:	e 24 July 1990, will provide a drug-free
[Street Address]	[City, County, State]	[Zip code]
The following certification	on applies only to actions exceeding \$100.000.00):
 The following certification Section 1352, Title 31, U.S.C. (Prinfluence certain Federal contract 	on applies only to actions exceeding \$100,000.00 ublic Law 101-121, Section 319) entitled, "Limi ing and financial transactions."): tation on use of appropriated funds to
 The following certificatic Section 1352, Title 31, U.S.C. (P influence certain Federal contract (1) No Federal a any person for influencing or att Officer or employee of Congress Federal contract, the making of a agreement, and the extension, cor cooperative agreement, or other t 	on applies only to actions exceeding \$100,000 00 ublic Law 101-121, Section 319) entitled, "Limi ing and financial transactions." ppropriated funds have been paid or will be paid mpting to influence an officer or employee of a or an employee of a Member of Congress in co ny Federal Grant, the making of any Federal loar titunation, renewal, amendment, or modification ransaction.): tation on use of appropriated funds to I by or on behalf of the undersigned, to a gency, a Member of Congress, an anection with the awarding of any a, the entering into of any cooperative of any Federal contract, grant, Ioan,
 The following certification Section 1352, Title 31, U.S.C. (P influence certain Federal contract (1) No Federal a any person for influencing or atter Officer or employee of Congress, Federal contract, the making of a agreement, and the extension, cor cooperative agreement, or other t (2) If any funds influencing or attempting to influ- employee of Congress, or an emp cooperative agreement, or other t Form to Report Lobbying," in acc 	on applies only to actions exceeding \$100,000.00 ublic Law 101-121, Section 319) entitled, "Limi ing and financial transactions." ppropriated funds have been paid or will be paid mpting to influence an officer or employee of ar , or an employee of a Member of Congress in con y Federal Grant, the making of any Federal loa tituuation, renewal, amendment, or modification ransaction. other than Federal appropriated funds have been ence an officer or employee of any agency, a Ma loyee of a Member of Congress in connection w ransaction, the undersigned shall complete and s cordance with its instructions.): tation on use of appropriated funds to l by or on behalf of the undersigned, to a gency, a Member of Congress, an anection with the awarding of any a, the entering into of any cooperative of any Federal contract, grant, loan, paid or will be paid to any person for ember of Congress, an officer or ith the Federal contract, grant, loan, ubmit Standard Form LLL, "Disclosure
 The following certification Section 1352, Title 31, U.S.C. (P influence certain Federal contract No Federal a any person for influencing or atte	on applies only to actions exceeding \$100,000 00 ublic Law 101-121, Section 319) entitled, "Limi ing and financial transactions." ppropriated funds have been paid or will be paid mpting to influence an officer or employee of ar or an employee of a Member of Congress in co ny Federal Grant, the making of any Federal loa tituuation, renewal, amendment, or modification ransaction. other than Federal appropriated funds have been ence an officer or employee of any agency, a M loyee of a Member of Congress in connection w ransaction. med shall require that the language of this certifit literis (including subcontracts, subgrants, and co s) and that all subrecipients shall certify and disc): tation on use of appropriated funds to l by or on behalf of the undersigned, to a gency, a Member of Congress, an maccion with the awarding of any n, the entering into of any cooperative of any Federal contract, grant, loan, paid or will be paid to any person for ember of Congress, an officer or ith the Federal contract, grant, loan, ubmit Standard Form LLL, "Disclosure cation be included in the award intracts under grants, loans, cooperativo lose accordingly.





Attachment G – QBI Concept Design Report Outline

Example outline of a Concept Design Final Report, including DARPA's recommended content

Information for proposer use in submitting an Abstract

QBI Concept Design Report Outline

1. Executive Summary

This Section should attempt at a minimum to summarize the key takeaways of the performer approach for a technical audience whose expertise can be assumed to rival that of an expert in an alternative approach to building a utility-scale quantum computer.

2. Performer Processes

This Section and associated subsections should attempt at a minimum to answer the following question(s): $\label{eq:section}$

- What processes, plans, and products does your team have in place to design and build the USQC?
- How have you leveraged those (or different) processes, plans, products, in the past to come to their current USQC concept?
- How will your team's processes, plans, products change or be leveraged in the future to burn down all the risks and <u>actually be</u> ready to start USOC construction, for example, as the size of your effort grows to meet future technical goals?

2.1 Prototypes and System Generations

This Section should attempt at a minimum to answer the following question(s):

- What are the different systems / tests / prototypes your team plans to build on the path to the USQC?
- Why did your team select those increments?

2.2 Design Processes

This Section should attempt at a minimum to answer the following question(s):

What design processes does your team have in place to arrive at a final USQC design?

2.3 Critical Technologies and Other Risks

This Section should attempt at a minimum to answer the following question(s):

 What are the critical outstanding programmatic and technical challenges that need to be solved? In other words, what are the biggest risks that need to be addressed to realize a USQC?

2.4 Research and Development Plan

This Section should attempt at a minimum to answer the following question(s):

What is your team's R&D plan to address all outstanding risks?





QBI

Attachment H – QBI Stage A Completion Criteria

A summary of the Government team's approach to evaluating performer concepts in Stage A

Information for proposer use in submitting an Abstract

QBI Concept Design Evaluation

This document is provided for informational purposes only. The information presented here is related to the Government team's approach to evaluating performer concepts in Stage A. This document is not part of the QBI application <u>process</u> nor the evaluation of Abstracts or Oral Proposal Packages submitted against the QBI Program Solicitation.

1. Introduction

This document provides a brief outline of the process for evaluating performers' utility-scale quantum computing concepts in QBI Stage A. Accomplishing DARPA's program goals will require verifying and validating ongoing research and development efforts at private quantum computing companies. The QBI program uses a staged approach to verification and validation of underexplored quantum computing approaches, with certain activities gated on successful completion of earlier milestones. The QBI Stage A evaluation approach comprises three parallel analysis thrusts:

- Deep, Targeted Analysis. Led by Government teams with deep physics and engineering technical expertise, this thrust examines specific, highly technical elements required to enable robust quantum computing. For example, this team should be able to explain the core quantum physics of the proposed approach – "from lasers to logical qubits."
- Broad Systems Evaluation. Led by Government teams with systems engineering
 expertise, this thrust is structured to assess a performer's entire design concept and
 approach. Building a utility-scale quantum computer will require more than simply
 understanding the applicable quantum physics; creating a machine at this scale will
 require considering all aspects of the computer as a large system. For example, simply
 scaling up existing quantum processors may result in a requirement for an infeasible
 amount of power or cooling.
- Utility Evaluation. Led by Government subject matter experts in applications and
 algorithms, this thrust focuses on each performer's intended (or potential) application(s)
 for their utility-scale quantum computer to determine potential utility to the U.S.
 Government or potential for strategic surprise. For example, this team is considering
 how the proposed quantum hardware maps to an important algorithm and how that
 algorithm maps to potential applications. Note that DARPA is executing a parallel
 program called Quantum Benchmarking, which aims to provide foundational knowledge
 from a larger pool of test and evaluation (T&E) and industry experts about current and
 promising algorithms and applications that may be applicable to future utility-scale
 quantum computers.

The sections below describe the criteria used in the broad systems evaluation. Please note that this process and these criteria are subject to change.



Most importantly...



Read the Program Solicitation

(even the fine print)



www.darpa.mil