OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

Logical Qubits (LogiQ) Program Proposers' Day

David Moehring, PM
Office of Safe and Secure Operations

19 May 2015

INTELLIGENCE ADVANCED RESEARCH PROJECTS ACTIVITY (IARPA)

Proposers' Day Agenda

Tuesday, May 19, 2015		
8:00 AM – 8:30 AM	**Registration**	
8:30 AM – 8:35 AM	Welcome and opening remarks	David L. Moehring Program Manager
8:35 AM – 9:00 AM	IARPA Overview	Peter Highnam Director, IARPA
9:00 AM – 10:00 AM	LogiQ Program Overview	David L. Moehring Program Manager
10:00 AM – 10:30 AM	**Break**	
10:30 AM – 11:00 AM	Doing Business with IARPA	Tarek Abboushi IARPA Acquisitions
11:00 AM – 12:00 PM	LogiQ Program Feedback and Q&A	David L. Moehring Program Manager
12:00 PM – 1:30 PM	**Lunch and Poster Session**	
1:30 PM – 5:00 PM	Offerors' Capabilities Briefings and Posters	Attendees (No Government)

Proposers' Day Agenda

Tuesday, May 19, 2015		
1:30 PM – 2:30 PM	Potential Proposers 5-Minute Presentations	Attendees (No Government)
2:30 PM – 3:00 PM	**Break and Networking**	Attendees (No Government)
3:00 PM – 4:00 PM	Potential Proposers 5-Minute Presentations	Attendees (No Government)
4:00 PM – 5:00 PM	Poster Session and Networking	Attendees (No Government)

Proposers' Day Goals

- Familiarize participants with IARPA and with the LogiQ program concept.
- Solicit feedback and questions.
- Foster networking and discussion of synergistic opportunities and capabilities among potential program participants (A.K.A. "teaming").
- Please ask questions and make suggestions: this is your chance to influence the design of the program.
  - We appreciate and seek constructive feedback on any / all aspects of the program design and program metrics.
  - Record your questions and comments on the note cards provided and submit them to IARPA staff during the break.
  - After today, questions will be answered in writing on the program website.
- Once a BAA is released, questions can only be submitted to the email address provided in the BAA.

Disclaimer

- These presentations are provided solely for information and planning purposes.
- The Proposers' Day does not constitute a formal solicitation for proposals or abstracts.
- Nothing said at Proposers' Day changes the requirements set forth in a BAA.
  - A BAA supersedes anything presented or said by IARPA at the Proposers' Day.

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

IARPA Overview

Dr. Peter Highnam

Office of the Director of National Intelligence

IARPA Mission and Method

IARPA's mission is to invest in high-risk/high-payoff research that has the potential to provide the U.S. with an overwhelming intelligence advantage over our future adversaries

- **Bring the best minds to bear on our problems**
  - Full and open competition to the greatest possible extent
  - World-class, rotational, Program Managers
- **Define and execute research programs that:**
  - Have goals that are clear, measureable, ambitious and credible
  - Employ independent and rigorous Test & Evaluation
  - Involve IC partners from inception to finish
  - Run from three to five years

Office of Incisive Analysis

"Maximizing Insight from the Information We Collect, in a Timely Fashion"

Large Data Volumes and Varieties	Social-Cultural and Linguistic Factors	Improving Analytic Processes
Providing powerful new sources of information from massive, noisy data that currently overwhelm analysts.	Analyzing language and speech to produce insights into groups and organizations.	Dramatic enhancements to the analytic process at the individual and group level.

Office of Smart Collection

"Dramatically Improve the Value of Collected Data"

Novel Access	Asset Validation and Identity Intelligence	Tracking and Locating
Provide technologies for reaching hard targets in denied areas	Detect the trustworthiness of others Advance biometrics in real-world conditions	Accurately locate HF emitters and low-power, moving emitters with a factor of ten improvement in geolocation accuracy

Office of Safe and Secure Operations

"Counter Emerging Adversary Potential to Deny our Ability to Operate Effectively in a Globally-Interdependent and Networked Environment"

Computational Power	Trustworthy Components	Safe and Secure Systems
Revolutionary advances in science and engineering to solve problems intractable with today's computers	Getting the benefits of leading-edge hardware and software without compromising security	Safeguarding mission integrity in a hostile world

Office for Anticipating Surprise

"Detecting and Forecasting Significant Events"

S & T Intelligence	Indications & Warnings	Strategic Forecasting
Detecting and forecasting the emergence of new technical capabilities.	Early warning of social and economic crises, disease outbreaks, insider threats, and cyber attacks.	Probabilistic forecasts of major geopolitical trends and rare events.

How to engage with IARPA

- **Website: www.IARPA.gov**
  - Reach out to us, especially the IARPA PMs. Contact information on the website.
  - Schedule a visit if you are in the DC area or invite us to visit you.

- **Opportunities to Engage**:
  - **Research Programs**
    - Multi-year research funding opportunities on specific topics
    - Proposers' Days are a great opportunity to learn what is coming, and to influence the program
  - **"Seedlings"**
    - Allow you to contact us with your research ideas at any time
    - Funding is typically 9-12 months; IARPA funds to see whether a research program is warranted
    - IARPA periodically updates the topics of interest
  - **Requests for Information (RFIs) and Workshops**
    - Often lead to new research programs, opportunities for you to provide input while IARPA is planning new programs

Concluding Thoughts

- **Our problems are complex and truly multidisciplinary**
- **Technical excellence & technical truth**
  - Scientific Method
  - Peer/independent review
  - Full and open competition
- **We are always looking for outstanding PMs**
- **How to find out more about IARPA**:

  www.IARPA.gov
- **Contact Information**

  Phone: 301-851-7500

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

LogiQ Program Overview

David Moehring, PM
Office of Safe and Secure Operations

19 May 2015

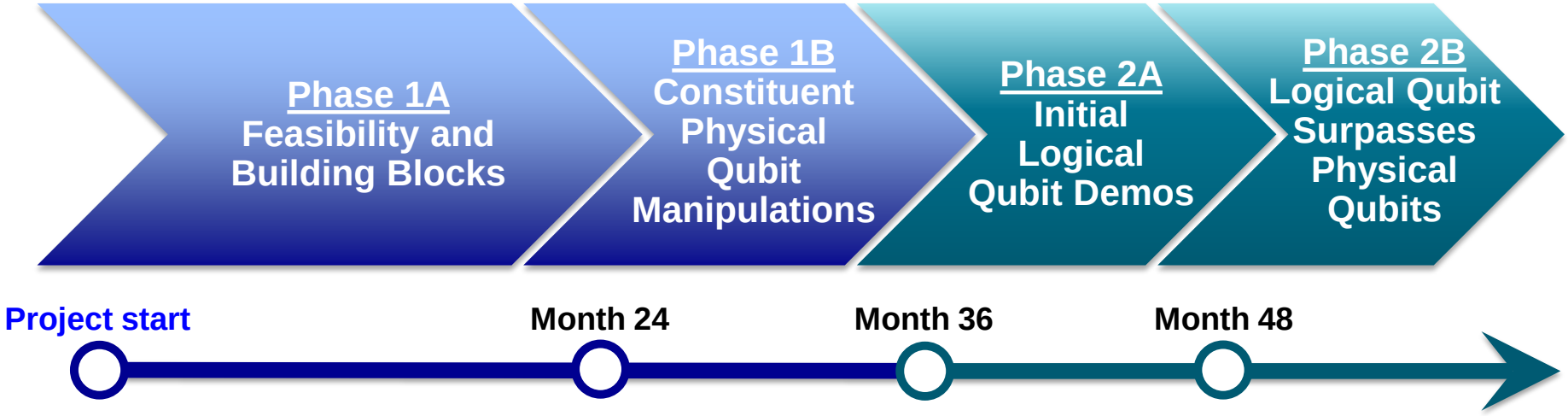
INTELLIGENCE ADVANCED RESEARCH PROJECTS ACTIVITY (IARPA)

Presentation Outline

- Bottom Line
- Motivation for the Program
- Discussion of State-of-the-Art
- Why LogiQ Now
- LogiQ Approach and Goals
- Technical Milestones
- Program Metrics
- Test and Evaluation of Performer Results
- Reporting Requirements
- Requirements for the Qubit Technologies of Choice
- Management Plan and Eligibility Information
- LogiQ Proposal Evaluation Criteria

LogiQ Bottom Line

LogiQ seeks to demonstrate a single logical qubit with longer coherence times and lower gate infidelities than its constituent physical qubits.

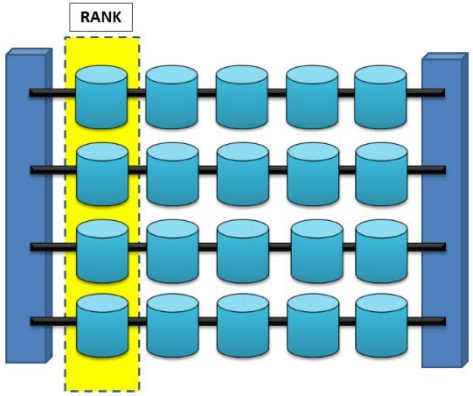


LogiQ will require a multi-disciplinary approach to harness subject-matter-expertise of theorists and experimentalists, physicists, computer scientists, and engineers.

Motivation

- Environment-induced dissipation inevitably destroys quantum coherence.
- Quantum gates cannot be implemented with perfect accuracy.
- Not correctable by known error correcting schemes from classical information theory.
- *Unless decoherence and gate errors can be combated, quantum computers will fail.*
- Cleverly encoding physical qubits into a logical qubit can protect against errors.
  - Multi-qubit operations are significantly improving, and error correction building blocks have been established.
  - Establish requirements and research directions for future quantum computing efforts.
  - ***Increasingly depends on a merger between physicists and engineers.***

Parity Protection



Different disciplines have different perspectives.

Motivation

"A complex system that works is invariably found to have evolved from a simple system that worked. A complex system designed from scratch never works and cannot be patched up to make it work."

– John Gall, American author of *How Systems Really Work and How They Fail*

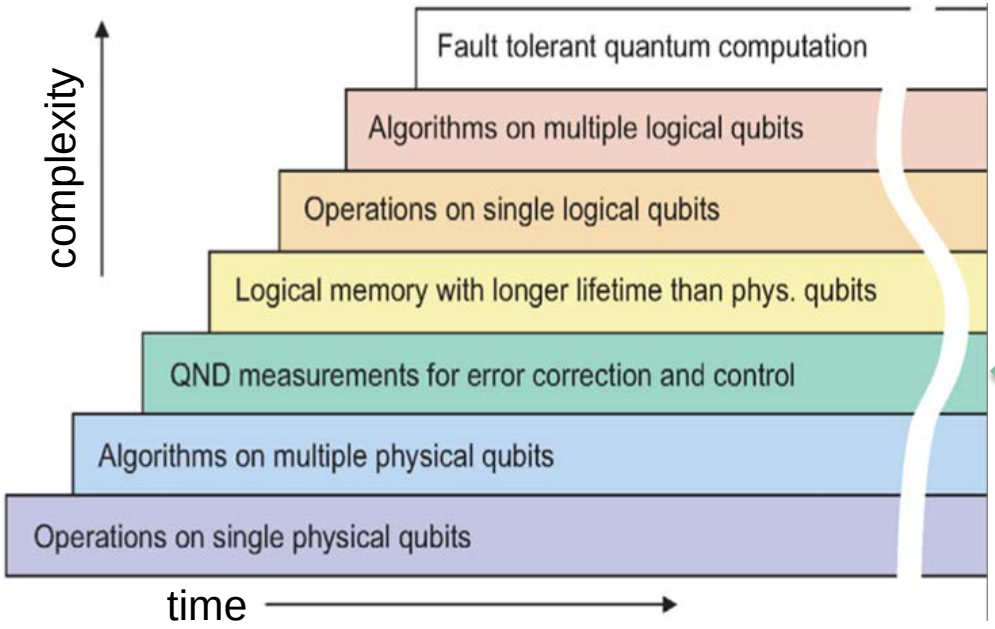
"The emphasis […] is on the experimental development of error-corrected logical qubits. Without this critical building block, plans for further scale-up would be premature; they would not have a firm foundation."

– 2004 ARDA Quantum Computation Roadmap

"Science is the replacement of big errors with lesser errors."

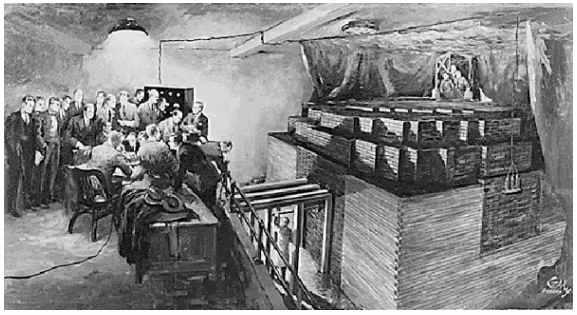
– Carl-Gustaf Rossby, Swedish-American meteorologist

Motivation



Science **339**, 1169

Demonstration of logical qubit operations could be the CP-1 moment of quantum computing.



Dec 2, 1942: CP-1 Goes Critical

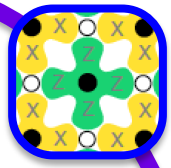
Fermi: The reaction is self-sustaining. The curve is exponential.

Arthur Compton: The Italian navigator has landed in the New World.
James Conant: How were the natives?
Arthur Compton: Very friendly.

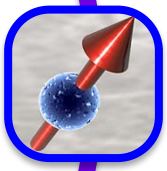
What Are We After?

LogiQ seeks to demonstrate a single logical qubit with longer coherence times and lower gate infidelities than its constituent physical qubits.

Main Program Thrusts



Error Correction:
Encoding/decoding and active feedback in logical qubit space.



Physical Qubit Performance:
Improve physical qubit fidelity to logical qubit requirements.

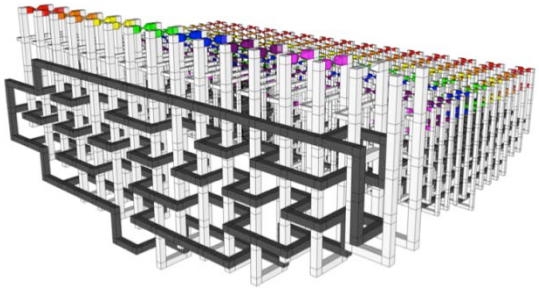
Extensibility:
Complete theoretical model of 2 coupled logical qubits using extensible architecture.

How Is It Done Today?

ERROR CORRECTION

Only proof-of-principle error correction, feedback and/or dynamical control.

- Limitations are present in all current qubit technologies, including:
  - Imperfect encoding/decoding fidelity;
  - Inability to correct two-qubit gate errors, leakage, or simultaneous errors;
  - Capability only for error-corrected “no-op” as opposed to “logical-op”;
  - Reliance on post-selection;
  - Lack of suitable infrastructure for robust demonstration of the technology.



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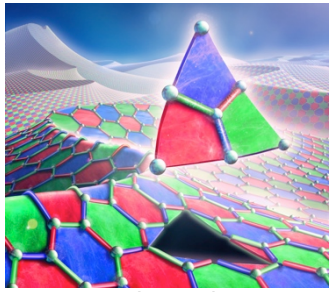

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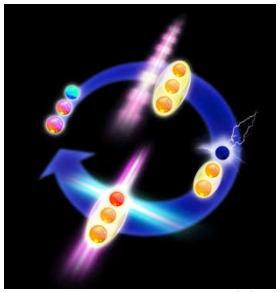
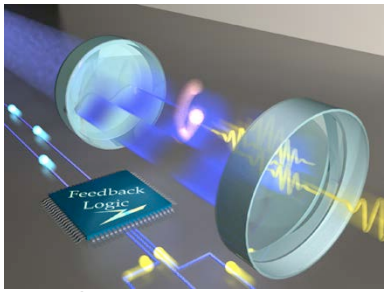




Repetitive error correction

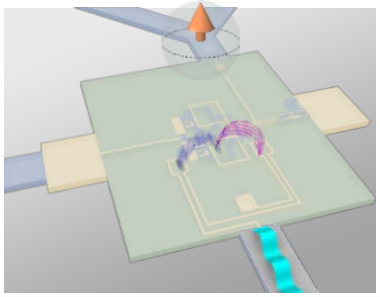
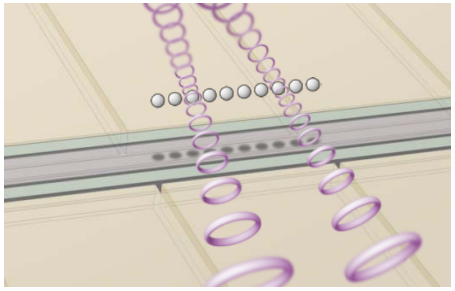
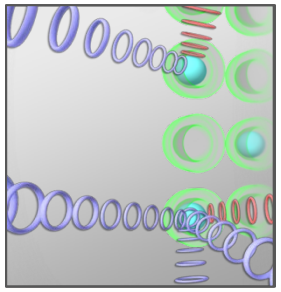
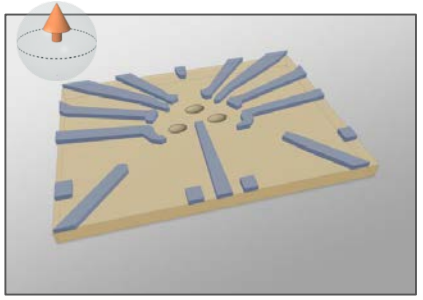
How Is It Done Today?

PHYSICAL QUBIT PERFORMANCE

Qubit operational fidelities fall below thresholds for interesting applications.

- Single qubit gate fidelities currently range between ~ 98% and 99.9999%
- Two-qubit entangling gate fidelity typically fall below 99% level.
- Measurement fidelities range from ~ 95 – 99.99%.
- Inconclusive tomographic techniques.
- As qubit numbers increase, so to have the gate infidelities.

Most demonstrations are proof-of-principle without high fidelity at system level.

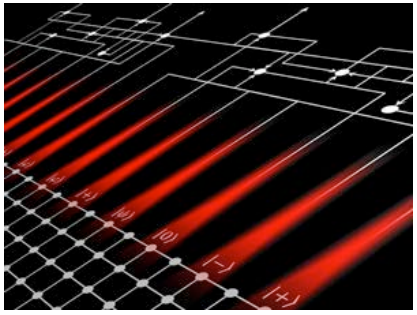





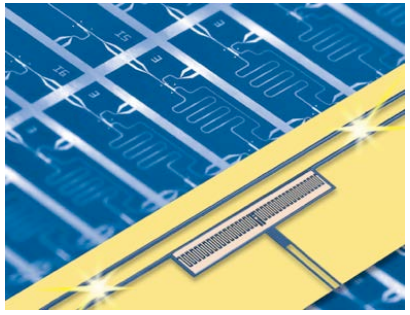
How Is It Done Today?

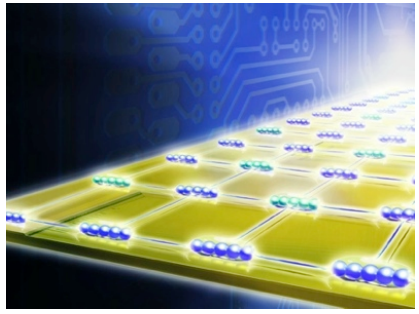
EXTENSIBILITY

Architectures are not extensible; system designs are too large for near-term utility.

- Lack of suitable hardware and software (optics, control electronics, pulses, etc.);
  - Non-standardized control electronics;
  - Heating, noise, and loss issues;
- Dependence of control schemes on qubit frequency, which can have large fluctuations;
- Insufficient individual addressing of qubits.



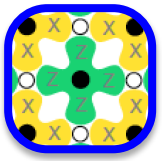




Why Now? What Changed?

- Programs like MQCO helped lay the foundation for multi-qubit operations, and identified and demonstrated many of the error correction building blocks.
- There has been a steady progression in the number of qubits that can be manipulated and entangled.
  - Proof-of-principle demonstrations of error detection, error correction, and control operations have been achieved.
  - Multi-qubit gate fidelities are improving in all technologies.
  - Qubit couplings to reduce crosstalk and increase measurement capabilities are being investigated.
- Theorists are optimizing error-correcting codes and improving thresholds.
- Engineers are starting to contribute custom, advanced quantum-computing hardware.
  - Advanced integration concepts are emerging to reduce disparate process interaction.

LogiQ Approach



ERROR CORRECTION THRUST

Demonstrate a single logical qubit with dynamic and repetitive error correction.

Proposers are expected to:

- Correct for logical gate operations and simultaneous errors;
  - Harmonize algorithmic logical gates and hardware native operations;
  - Estimate realistic thresholds and characterize spatial/temporal-correlated noise;
- Build hardware to decrease and understand impact of classical processing latency;
  - Engineer controllers for frequency, phase, amplitude, and pulse shape precision.

Out of scope:

- Scalable hardware and manufacturing tolerances for large-scale designs;
  - Still, the techniques should not be incompatible with extensibility thrust designs.
- Qubit numbers beyond what is feasible within LogiQ program timeline;
- Development of new quantum error-correction codes.

LogiQ Approach

PHYSICAL QUBIT PERFORMANCE THRUST

Increase physical-qubit gate and measurement fidelity to above threshold of the chosen quantum-error correcting code.

Proposers are expected to:

- Demonstrate multi-qubit physical gate fidelities *at least* 99.9%;
  - There is no ceiling for the desired physical qubit fidelity;
  - Tomography methods to be determined.
- Quantify and reduce crosstalk;
- Address individual qubits to implement operations for the encoded qubit;
- Reduce coupling, control, and measurement overhead.

Out of scope:

- Speed of qubit operations beyond what is required for error correction thrust.

LogiQ Approach

EXTENSIBILITY THRUST

Complete extensible design of two coupled logical qubits.

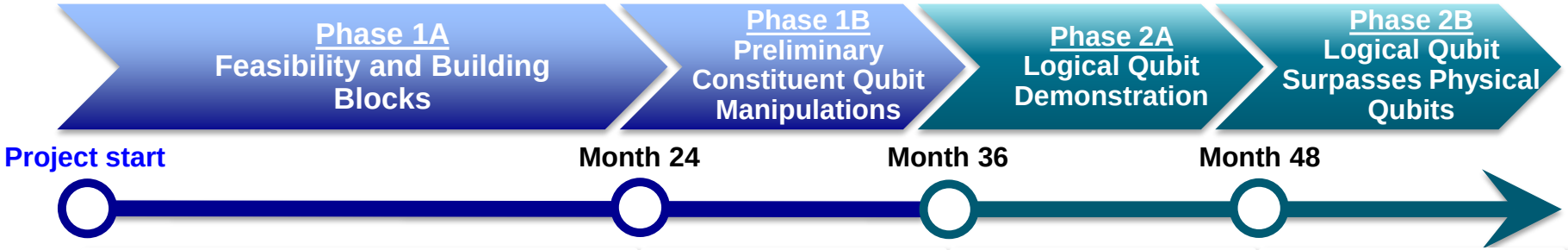
Proposers are expected to:

- Model persistent operation of two coupled, modular logical qubits;
  - Estimate performance and requirements for sustained coherent operations;
- Design low-noise, high-speed, parallelizable readout and control;
- Design technologies for the quantum-to-classical interface;
- Implement a multi-disciplinary approach to harness subject-matter-expertise of not just physicists, but also computer scientists and engineers to find new technical solutions to the most pressing challenges;

Out of scope:

- Manufacturing or control gaps, and energy conservation;
- Large-scale designs;
- *Implementation* of coupled logical qubits.

LogiQ Goals



- Show feasibility of concepts for building a logical qubit.
- Demonstrate the building blocks of the logical qubit scheme chosen.

- Achieve full control, functionality and feedback of qubit architecture.
- Characterize & benchmark qubit system.
- Integrate all quantum and classical functions.
- Parallelize quantum processing.

- Build and characterize the logical qubit.
- Compare logical qubit coherence and fidelity to constituent physical qubits.

- Implement logical operations and feedback on the logical qubit.
- Demonstrate coherence and fidelity of the logical qubit over physical qubits.

Technical Milestones

Month	Milestones
Phase 1A (Years 1 and 2): Demonstration of Feasibility and Building Blocks.	
10	• Deliver the detailed encoding procedure for the chosen qubit platform, including control and feedback protocols; • Provide a theoretical study of feasibility and expected performance (include initialization, gate operations, readout, error correction, …); • Deliver the preliminary models of feedback for error correction (method, performance study, concept).
12	Deliver initial Extensibility Thrust report.
18	• Demonstrate full control (including feedback) and functionality of multi-qubit architecture. • Detect errors and demonstrate operations for correction.
24	• All building blocks of the logical qubit scheme chosen demonstrated, including proper performance of underlying physical qubits and establishment of all controller engineering with positive diagnostic test results. • Deliver updated Extensibility Thrust report.

Technical Milestones

Month	Milestones
Phase 1B (Year 3): Preliminary Manipulations of Constituent Qubits.	
30	• Demonstrate QND stabilizer readout and verify its required efficacy. • Decrease classical processing latency compared to start of program.
36	• Perform the quantum gate set with ***parallel*** quantum processing. o Simultaneous physical qubit gates and qubit measurements. • Fully characterize the multi-qubit system. • Deliver updated Extensibility Thrust report.

A complete list of milestones will be provided in the BAA.

Technical Milestones

Month	Milestones
Phase 2A (Year 4): Logical Qubit Demonstration.	
42	• Reuse qubits and/or reset ancillas and perform two rounds of feedback. • Assemble the logical qubit architecture with integrated control hardware.
48	• Compare T_1, T_2, and fidelity of readout and single-qubit gates of the logical qubit to the average values of its constituent physical qubits. o Include arbitrary logical state preparation, multiple rounds of error correction, logical state decoding, and readout. • Update characterization of error threshold including correlated noise/errors. • Deliver updated Extensibility Thrust report.
Phase 2B (Year 5): Logical Qubit Performance Surpasses Physical Qubits.	
60	• Implement logical operations and feedback on the logical qubit. • Demonstrate improved T_1, T_2 and fidelity of operations of the logical qubit over constituent physical qubits. Logical gates should have ≥ 99.9% fidelity. • Demonstrate entanglement purification or equivalent. • Deliver final Extensibility Thrust report.

LogiQ Metrics

Objective	Figure of merit	Phase 1A (Years 1 & 2)	Phase 1B (Year 3)	Phase 2A (Year 4)	Phase 2B (Year 5)
Demonstration and characterization of logical qubit (LQ) building blocks	---	---	***Parallel quantum processing (simultaneous operations)***	***Parallel quantum processing (simultaneous operations)***	---
Perform universal quantum gate set in multi-physical-qubit system.	Fidelity for each required operation	> 95% (Month 12) > 97% (Month 24)	> 99% in LQ-sized physical qubit system (Month 36)	> 99.5% in physical qubits comprising LQ (Month 48)	> 99.9% in physical qubits comprising LQ (Month 60)
Increase speed of multi-qubit gate operations.	Gate time	Benchmark gate times (Month 12) 2x lower gate times (Month 24)	Gate times preserved in LQ-sized system	Gate times preserved or improved in LQ sized system	Gate times preserved or improved in LQ sized system
Reduce cross talk in multi-qubit system.	Crosstalk	0.07% (Month 12) 0.05% (Month 24)	---	0.03% (Month 48)	< 0.01% (Month 60)
Increase average coherence in multi-qubit system.	T_1, T_2	Physical qubit Ts > than modeled logical encoding operation	Single qubit T_1, T_2 preserved in LQ-size system (Month 36)	>5x increase from Phase 1A	Preserve or increase Phase 2A values

LogiQ Metrics

Objective	Figure of merit	Phase 1A (Years 1 & 2)	Phase 1B (Year 3)	Phase 2A (Year 4)	Phase 2B (Year 5)
Feedback for error correction	---	---	---	**Logical qubit architecture**	---
Decrease classical processing latency.	Latency	—	≥ 2x reduction (Month 30)	≥ 3x reduction (Month 48)	≥ 5x reduction (Month 60)
Logical qubit gates	---	---	---	---	---
Characterize logical qubit T_1, T_2 (includes arbitrary logical state encoding and decoding, several rounds of error correction, readout).	T_1, T_2	—	—	T_1, T_2 = average of constituent physical qubits (Month 48)	T_1, T_2 > 1x average T_1, T_2 of constituent physical qubits (Month 60)
Correct errors *simultaneously* and perform sequential error-corrected logical operations on LQ.	Fidelity of error-corrected operations	—	—	>99% (Month 48)	> 99.9% (Month 60)

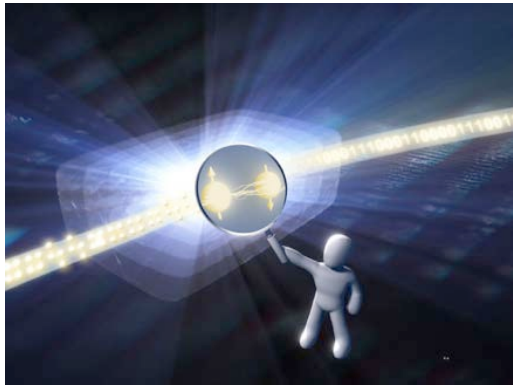
These are the minimal requirements; performers will propose additional metrics that best suit their proposed work and chosen logical qubit instantiation.

LogiQ Test and Evaluation

VERIFICATION AND VALIDATION
Performed by government representatives

LogiQ Will Focus On:

- Validation of claims through consistency with expectations from performer-provided designs and protocols.
- Performer site visits and independent verification of results.
- Extract lessons to increase our understanding for future quantum information investment.



Reporting Requirements

- Monthly technical report – highlight progress from past month and plans for next month.
- Monthly financial report – form will be provided.
- Program kick-off meeting – first month of program.
- Annual performer site visit – beginning of each program year.
- Annual Technical Exchange Meeting – middle of each program year.
- Annual Program Review – near end of each program year.
- Test Plans and Reports – submitted at the end of each year.

Qubit Technology Choice

- Qubit Technology Requirements:
  - The choice of qubit to use for the logical-qubit system is open, but the chosen technology should have already been used to demonstrate multi-qubit control.
  - The chosen approach must have long term promise as a quantum computing technology – no well-known scaling barriers.
- Note:
  - The proposed team should have demonstrated experience with qubit operations so that they can progress quickly toward the program goals.
  - It is understood that different qubit types have attained different levels of achievement. Some technologies have demonstrated coherent interactions between many qubits while others have more recently demonstrated multi-qubit gates.
  - Hybrid approaches using multiple technologies are acceptable, but only if the advantage is clearly articulated.
  - The LogiQ program is designed to advance circuit-based (to include cluster state) quantum computation.

Qubit Technology Choice

- Out of Scope:
  - Early research (theoretical or experimental) that has not yet demonstrated quality control over multi-qubit systems.
  - Classically distributed quantum computing (also known as Type-II quantum processing systems).
  - Adiabatic quantum computing.
  - Proposals that are incomplete with respect to the program goals.

Management Plan and Teaming

- Depth and diversity will be essential to accomplish the many challenges in designing, fabricating, and testing a logical-qubit device.
  - Experimental throughput: consider all that you will need to do and test.
    - This may require multiple apparatuses. Make sure you have enough people, both experiment and theory, and equipment to do the job.
    - Sufficient resources to follow critical path while still exploring risk mitigation.
  - Completeness – teams should not lack any capability necessary for success, e.g. should not rely upon results or enabling technology from the community at large.
    - Theorists and experimentalists, physicists, computer scientists, and engineers
  - Tightly knit teams:
    - Clear, strong management; single point of contact.
    - No loose confederations; No teaming for teaming's sake.
    - Each team member should contribute significantly to the program goals.
  - Team members not required to participate all 5 years – consider phase transitions.
  - Proposers may support multiple teams.

Eligibility Information

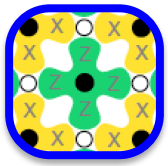
- Collaborative efforts are strongly encouraged.
  - Content, communications, networking and team formation is the responsibility of proposers.
- Foreign organizations and/or individuals are welcome to participate.
  - Must comply with Non-Disclosure Agreements, Security Regulations, Export Control Laws, etc., as appropriate.
- Other Government Agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and any organizations that have a special relationship with the Government, including access to privileged and/or proprietary information, or access to Government equipment or real property, are not eligible to submit proposals under this BAA or participate as team members under proposals submitted by eligible entities.
- Please notify the LogiQ Program Manager ASAP if you wish to utilize any resources from these organizations.
  - If IARPA determines that the resources are unique and do not exist in the private sector, IARPA will attempt to work directly with that organization to arrange for that capability to be made available to all program participants who might benefit.

Evaluation Criteria

- Evaluation criteria in descending order of importance are:
  - Overall scientific and technical merit,
  - Effectiveness of proposed work plan,
  - Relevance to IARPA mission and LogiQ program goals,
  - Relevant experience and expertise of the members of the team,
  - Cost realism.
- All responsive proposals will be evaluated by a board of qualified government reviewers.

Summary

- LogiQ seeks to demonstrate–and manipulate–a logical qubit with active error correction capable of outperforming its constituent physical qubits.
- LogiQ proposals must address all three primary performers thrusts:



Error Correction Thrust:
Encoding and feedback in logical qubit space to demonstrate a moderately-sized logical qubit with dynamic and repetitive error correction.

Physical Qubit Performance Thrust
Increase physical-qubit gate and measurement fidelity to logical qubit requirements *and beyond*.

Extensibility Thrust
Complete design (not implementation) of coupled logical qubits using extensible architecture.

- ***Milestones and metrics are an indispensable part of IARPA programs.***

Point of Contact

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Office of the Director of National Intelligence

Intelligence Advanced Research Projects Activity

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(include IARPA-BAA-15-10 in the Subject Line)

Website: www.iarpa.gov

Questions? Please fill out cards.

OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE

Doing Business with IARPA

Mr. Tarek Abboushi

Doing Business with IARPA - Recurring Questions

- Questions and Answers (http://www.iarpa.gov/index.php/faqs)
- Eligibility Info
- Intellectual Property
- Pre-Publication Review
- Preparing the Proposal (Broad Agency Announcement (BAA) Section 4)
  - Electronic Proposal Delivery (https://iarpa-ideas.gov)
- Organizational Conflicts of Interest (http://www.iarpa.gov/index.php/working-with-iarpa/iarpas-approach-to-oci)
- Streamlining the Award Process
  - Accounting system
  - Key Personnel
- IARPA Funds Applied Research
- RECOMMENDATION: Please read the entire BAA

Responding to Q&As

- Please read entire BAA before submitting questions
- Pay attention to Section 4 (Application & Submission Info)
- Read Frequently Asked Questions on the IARPA @

  http://www.iarpa.gov/index.php/faqs
- Send your questions as soon as possible
  - LogiQ BAA: **dni-iarpa-baa-15-10@iarpa.gov**
  - Write questions as clearly as possible
  - Do NOT include proprietary information

Eligible Applicants

- Collaborative efforts/teaming strongly encouraged
  - Content, communications, networking, and team formation are the responsibility of Proposers
- Foreign organizations and/or individuals may participate
  - Must comply with Non-Disclosure Agreements, Security Regulations, Export Control Laws, etc., as appropriate, as identified in the BAA

Ineligible Organizations

Other Government Agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and any organizations that have a special relationship with the Government, including access to privileged and/or proprietary information, or access to Government equipment or real property, are not eligible to submit proposals under this BAA or participate as team members under proposals submitted by eligible entities.

Intellectual Property (IP)

- Unless otherwise requested, Government rights for data first produced under IARPA contracts will be UNLIMITED
- At a minimum, IARPA requires Government Purpose Rights (GPR) for data developed with mixed funding
- Exceptions to GPR
  - State in the proposal any restrictions on deliverables relating to existing materials (data, software, tools, etc.)
- If selected for negotiations, you must provide the terms relating to any restricted data or software, to the Contracting Officer

Pre-Publication Review

- Funded Applied Research efforts, IARPA encourages:
  - Publication for Peer Review of **UNCLASSIFIED** research

- Prior to public release of any work submitted for publication, the Performer will:
  - Provide copies to the IARPA PM and Contracting Officer Representative (COR/COTR)
  - Ensure shared understanding of applied research implications between IARPA and Performers

Preparing the Proposal

- Note restrictions in BAA Section 4 on proposal submissions
  - Interested Offerors must register electronically IAW instructions on: **https://iarpa-ideas.gov**
  - Interested Offerors are strongly encouraged to register in IDEAS at least 1 week prior to proposal "Due Date"
  - Offerors must ensure the version submitted to IDEAS is the "Final Version"
  - Classified proposals – Contact IARPA Chief of Security
- BAA format is established to answer most questions
- Check FBO for amendments & Q&A
- BAA Section 5 – Read Evaluation Criteria carefully
  - e.g. "The technical approach is credible and includes a clear assessment of primary risks and a means to address them"

Preparing the Proposal (BAA Sect 4)

- Read IARPA's Organizational Conflict of Interest (OCI) policy: **http://www.iarpa.gov/index.php/working-with-iarpa/iarpas-approach-to-oci**
- See also eligibility restrictions on use of Federally Funded Research and Development Centers, University Affiliated Research Centers, and other similar organizations that have a special relationship with the Government
  - Focus on possible OCIs of your institution as well as the personnel on your team
  - See Section 4: It specifies the non-Government (e.g., SETA, FFRDC, UARC, etc.) support we will be using. If you have a potential or *perceived* conflict, request a waiver as soon as possible

Organizational Conflict of Interest (OCI)

- If a prospective offeror, or any of its proposed subcontractor teammates, believes that a potential conflict of interest exists or may exist (whether organizational or otherwise), the offeror should promptly raise the issue with IARPA and submit a waiver request by e-mail to the mailbox address for this BAA at **dni-iarpa-baa-15-10@iarpa.gov**.
- A potential conflict of interest includes but is not limited to any instance where an offeror, or any of its proposed subcontractor teammates, is providing either scientific, engineering and technical assistance (SETA) or technical consultation to IARPA. In all cases, the offeror shall identify the contract under which the SETA or consultant support is being provided.
- Without a waiver from the IARPA Director, neither an offeror, nor its proposed subcontractor teammates, can simultaneously provide SETA support or technical consultation to IARPA and compete or perform as a Performer under this solicitation.

Streamlining the Award Process

- Cost Proposal – we only need what we ask for in BAA
- Approved accounting system needed for Cost Reimbursable contracts
  - Must be able to accumulate costs on job-order basis
  - DCAA (or cognizant auditor) must approve system
  - See **http://www.dcaa.mil** , "Audit Process Overview - Information for Contractors" under the "Guidance" tab
- Statements of Work (format) may need to be revised
- Key Personnel
  - Expectations of time, note the Evaluation Criteria requiring relevant experience and expertise
- Following selection, Contracting Officer may request your review of subcontractor proposals

IARPA Funding

- IARPA funds Applied Research for the Intelligence Community (IC)
  - IARPA cannot waive the requirements of Export Administrative Regulation (EAR) or International Traffic in Arms Regulation (ITAR)
  - Not subject to DoD funding restrictions for R&D related to overhead rates

- IARPA is not DOD

Disclaimer

- This is Applied Research for the Intelligence Community
- Content of the Final BAA will be specific to this program
  - The Final BAA is being developed
  - Following issuance, look for Amendments and Q&As
  - There will likely be changes
- The information conveyed in this brief and discussion is for planning purposes and is subject to change prior to the release of the Final BAA.

Point of Contact

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