

From: qisfed-bounces@nist.gov on behalf of [Grossman, Erich N. \(Fed\) via QISfed](#)
To: [QISfed](#); [Zimmerman, Neil M. \(Fed\)](#)
Subject: [QISfed] FW: Opportunity to participate in quantum networking community of interest
Date: Tuesday, August 13, 2019 10:58:44 AM
Attachments: [ATT00001.txt](#)

Dear Neil,

I would like to be included in the community of interest related to quantum networking that Carl Williams' memo mentions. My interest begins with the networking strategy proposed in the white paper that I, John Teufel, Joe Aumentado, and other submitted last fall, but is also more general.

Erich

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From: <qisfed-bounces@nist.gov> on behalf of "Williams, Carl J. Dr. (Fed) via QISfed" <QISfed@nist.gov>
Reply-To: "Williams, Carl J. Dr. (Fed)" <carl.williams@nist.gov>
Date: Tuesday, August 6, 2019 at 7:55 AM
To: QISfed <QISfed@nist.gov>
Subject: [QISfed] Opportunity to participate in quantum networking community of interest

Folks,

Note there is an ask in the 4th and 5th paragraph.

I realize it has been a long time since the September 2018 workshop and I wanted to provide an update and talk about some next steps. **Attached to this email is a presentation that I made earlier this summer to Boulder staff.** The National Quantum Initiative Act (NQI) became law on December 21, 2018 on the same day that large parts of the US Government were shut down due to the lack of a budget deal.

The NQI makes Quantum Information Science a priority for the next few years and NIST was given several responsibilities in that Act, including:

- continuing to support and expand basic and applied quantum information science and technology research and development of measurement and standards infrastructure necessary to advance commercial development of quantum applications;
- using the existing programs of the National Institute of Standards and Technology, in collaboration with other Federal departments and agencies, as appropriate, to train scientists

in quantum information science and technology to increase participation in the quantum fields;

- establishing or expanding collaborative ventures or consortia with other public or private sector entities, including industry, universities, and Federal laboratories for the purpose of advancing the field of quantum information science and engineering; and
- entering into and performing such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of the work of the National Institute of Standards and Technology and on such terms as the Director considers appropriate, in furtherance of the purposes of this Act.

We were specifically given the responsibility to set up a **consortium of stakeholders** to identify the future measurement, standards, cybersecurity, and other appropriate needs for supporting the development of a robust quantum information science and technology industry in the United States. In response, we have taken steps to establish the “Quantum Economic Development Consortium (QED-C)” as the first use of the DOC “Other Transaction” Agreement, and spent the last years helping to make it successful.

Our next steps in support of the NQI will be to expand our internal programs and our existing relationships. Based upon your input via the many thoughtful white papers you submitted, and as a result of our conversations at Winter Park, we **are taking the next steps towards defining and addressing an internal grand challenge**. Here, I need your help and participation. We are planning **to create a community of interest** around *Quantum Communication and Quantum Networks*. The idea is that *one or two small Quantum Networks* — let’s say 2-5 nodes — would allow NIST to create a testbed for testing various component technologies from sources and detectors, to quantum repeaters, to entanglement purification, to various types of quantum transduction while simultaneously helping us to understand both software and hardware protocols and standards that would be needed to effectively run such a network. This touches directly on the mission space of CTL, ITL, and PML, who share an IMS on this topic, and is related to the work of other NIST OUs as well. Moreover, a good quantum network will support the goals of future networks for optical time transfer, for potential long baseline interferometry beyond the Standard Quantum Limit, and for things like entangled atomic clocks.

Addressing the grand challenge of quantum networking requires a team approach and coordination across NIST. As such, we want *to set up a community of interest* around this goal and are hoping a set of leaders from across NIST and its operating units will come together to help *lead this community of interest*. To get started, Neil Zimmerman from the PCO will help organize. If you are interested in being part of this community of interest whether as a participant or leader, please let Neil Zimmerman know. This will probably lead to a few initial meetings followed by a monthly seminar series of internal and external speakers. The goal is to begin a conversation among ourselves of what a “Quantum Network project” would look like and what small group of leaders might lead such a team.

Carl

Carl J. Williams, Acting Director
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