October 15, 2021

Courtney Stopp
United States Patent and Trademark Office
Office of Policy and International Affairs
600 Dulany St.
Alexandria, VA 22314
(571) 272-9300

Re: Patent Eligibility Jurisprudence Study (Docket No. PTO-P-2021-0032)

Dear Ms. Stopp,

The Quantum Economic Development Consortium (QED-C) is pleased to submit the following comments in response to the USPTO's request for public comment on the current state of patent eligibility jurisprudence and its effect on investment and innovation dated July 9, 2021. *See* 86 FR 37316, *amended* 86 FR 36257.

In particular, QED-C seeks to provide insight into the perspectives of the quantum technology industry, which should be of particular relevance to the request for insight into "investment and innovation in critical technologies like quantum computing," as specifically highlighted by Senators Tillis, Hirono, Cotton, and Coons in their March 5, 2021 letter to the USPTO (emphasis added).

In addition, QED-C wishes to open a line of dialog with the USPTO about innovation and intellectual property as it will affect the quantum technology industry, and wishes to offer its assistance to aid the USPTO in its mission of protecting and encouraging innovation in these vital, but complicated, technologies.

I. Overview of QED-C

QED-C is an industry-driven consortium of stakeholders with the mission to enable and grow the quantum industry and associated supply chain. QED-C was called for by the National Quantum Initiative Act of 2018 and is supported by the National Institute of Standards and Technology (NIST) in the Department of Commerce and by 170+ organizations, including more than 115 U.S. corporations, as well as universities, national laboratories and others. For the current list of members, go to https://quantumconsortium.org/members/.

QED-C undertakes activities to identify use cases for quantum technologies—in areas of sensing, communications and networking and computation—and to define and address gaps in enabling technologies, standards and metrics, and workforce. It has organized workshops on key aspects of the supply chain for quantum systems, including cryogenics, lasers, control RF and microwave electronics, and intermediate representation. The workshops produce roadmaps to guide public and private investments in critical path R&D. QED-C may obtain funding from sponsors (government or corporate) to invest in needed research.

The consortium also serves as a "one stop shop" for government agencies for information that represents the broad industry perspective or to connect government with specific expertise or segments of the quantum ecosystem. QED-C also facilitates collaboration among members and with government to accelerate quantum information science and technology development, commercialization and public benefit.

II. Response to Request for Comment on Patent Eligibility Jurisprudence

QED-C agrees with Senators Tillis, Hirono, Cotton, and Coons that quantum computing (and interrelated technologies such as quantum sensing, quantum communications, and quantum networking) are quickly growing and will play a vital role in the economy and digital landscape of the future. Accordingly, fostering innovation and growth in this industry is of critical importance.

However, after surveying its membership, it has become clear to QED-C that there are few, if any, areas of agreement in the quantum industry about the current state of patent eligibility jurisprudence in the United States. Thus, **the main point that this letter seeks to make is that it will be impossible to reduce this industry to a single viewpoint**.

This is due in part to the diversity of participants in the quantum industry and the early-stage nature of the technology. As reflected in QED-C's membership, participants in this industry range from large, multinational corporations to small, focused startups to universities and government entities; the technologies being developed span hardware and software; and the industrial possibilities enabled by quantum technologies are diverse and rapidly evolving, for example in drug discovery, financial portfolio management and chemical materials design.

But the importance of this question is undisputed. Patents may both aid and hinder innovation, and intellectual property policy (and government policy writ large) will undoubtedly shape this industry. Even though this is a nascent industry, patents are being filed and granted in quantum technologies at rapidly increasing rates—the current pace of issued patents related to quantum industries is more than double that of 2018. *See* Trends in Quantum Computing patents, (https://quantumconsortium.org/blog/trends-in-quantum-computing-patents/) (May 24, 2021). QED-C expects that this trend will continue.

Because of the diversity of viewpoints, QED-C members will be responding separately as individuals or small groups with common goals relating to patent eligibility.

QED-C believes that understanding these responses will be important to assess the many ways that current patent eligibility jurisprudence affects "investment and innovation in critical technologies like quantum computing," as the USPTO seeks.

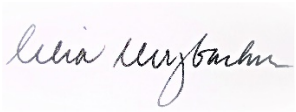
III. Offer of Assistance to USPTO

While QED-C members may not have consensus on the current patent eligibility jurisprudence, there is strong agreement on the importance of ensuring that the patent examining corps has the technical training that is needed to examine patent applications on quantum technology, given its complexity. QED-C welcomes the opportunity to meet with representatives from the USPTO to discuss how we can serve as a technical resource to support this training.

In particular, as it relates to patent policy and examination, an increasingly educated and forward-looking USPTO and corps of examiners would greatly benefit the quantum industry and promote its continued growth. QED-C welcomes the opportunity to organize workshops or presentations explaining the state of the industry in any aspect of quantum technology that the USPTO wishes to learn more about.

If you have any questions, please contact Celia Merzbacher, Executive Director of QED-C (celia.merzbacher@sri.com). We invite a dialog about this crucially important technology and emerging industry.

Respectfully submitted,



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