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Dr. Patrick Gallagher
Director, National Institute of Standards and Technology
Co-Chair, National Science and Technology Council's Sub-Committee on Technology

Subject: *Standardization feedback for Sub-Committee on Standards*

Dear Dr. Gallagher,

I am pleased to provide comments regarding Docket No. 0909100442-0563-02 ("Effectiveness of Federal Agency Participation in Standardization in Select Technology Sectors for National Science and Technology Council's Sub-Committee on Standardization").

I appreciate your interest in and support for this activity. I understand that one significant aspect of the inquiry regards the Sub-Committee's intent to "develop case studies that Federal agencies can consider in their future engagement in standards development and conformity assessment, particularly for multi-disciplinary technologies, or for technologies involving engagement from multiple Federal agencies."

I include below some comments relevant to your inquiry, including a proposed case study for your consideration. This is not a comprehensive response to the entire scope of the inquiry.

(1) I am a writing as a citizen with significant background in the area of inquiry. In particular, as an employee of NIST from 1989-2006, I began an initiative in 1998 to develop standardization activities for broadband wireless access. The effort led to the initiation of the IEEE 802.16 Working Group on Broadband Wireless Access (the "802.16 WG" <http://wirelessman.org>) in 1999. I was elected the initial Chair of that Working Group. I held that position for seven years as a federal employee. Upon leaving NIST for the private sector in 2006, I remained 802.16 WG Chair, have been re-elected, and remain in that position to date. My current employment is with the WiMAX Forum, an industry-led, not-for-profit organization formed to certify and promote the compatibility and interoperability of broadband wireless products based upon IEEE Std 802.16.

(2) I would like to point out a relevant paper on *Government/Industry Interactions in the Global Standards System* [1]. As a NIST employee, I co-authored this paper in 2003, along with the esteemed Robert E. Hebner, who had served as Acting Director of the National Institute of Standards and Technology. The paper, which is an outgrowth of an earlier paper presented and published in 2001 [2], was presented in a 2003 conference in

Washington, DC and addresses a number of high-level topics relevant to the current inquiry, including:

- Benefits of standards
- Key factors forcing changes in standards development
- Industrial response to global changes
- U.S. and European responses to Technical Barriers to Trade Agreement
- 1995 National Technology Transfer Advancement Act (NTTAA)
- 1998 Office of Management and Budget (OMB) Circular A-119
- The U.S. National Standards Strategy
- U.S. Governmental Role in standards development

(3) I can personally attest to the fact that, during my tenure at NIST, the compatibility of my standardization activities with my governmental position were sometimes subject to debate within my agency. Reference [1] argues that "Circular A-119 provides encouragement for NIST staff members to participate directly in the development of voluntary consensus standards if such standardization will improve the economy and quality of life."

(4) Reference [1] details "An Example of Proactive NIST Action in Standards Development" related to IEEE Std 802.16. It specifically items six ways in which the activity fulfills NIST's mission.

(5) I would also like to bring to your attention Reference [3], a NIST-authored paper on *Process, Promise, Problems: Developing WiMAX as an International Standard*. This paper analyzes the development, costs, and benefits for the various stakeholders of IEEE Std 802.16, which it regards as "a joint effort between a traditional standards development organization and industry stakeholders, with facilitation and leadership by the U.S. National Institute of Standards and Technology (NIST)." It indicates that the activity is noteworthy:

> *The IEEE 802.16 standards development process is notable for several reasons. First, the early proponents of the technology made a decision to pursue the model followed by data communications standards developers and established a working group within the IEEE family with broad global participation to help ensure a international support for the developed set of standards. The IEEE Working Group then quickly pushed for adoption as formal international standard. Secondly, the standards effort was initially championed and then lead by a NIST staff member which is not necessarily the norm for NIST or the U.S. Government.*

(6) I note that the Sub-Committee on Standards is specifically interested in comments that relate to technologies including (a) Smart Grid, (b) Health Information Technology, (c) Cyber Security, (d) Emergency Communications Interoperability, (e) Radioactivity Detectors and Radiation Monitors, and (f) other technologies involving significant Federal agency participation in standards setting. To demonstrate that IEEE 802.16 has direct relevance to these topics, I have provided a minimal set of references below:

(a) Smart Grid [4,5]

(b) Health Information Technology [6]
(c) Cyber Security [7]
(d) Emergency Communications Interoperability [8]
(e) Radioactivity Detectors and Radiation Monitors
(f) other technologies involving significant Federal agency participation in standards setting [1,2,3]

(7) Based on all the points above, I believe that IEEE 802.16 may serve as a useful case study for your consideration.

(8) In addition, I would like to call to your attention the advantages of applying government technical expertise and laboratory facilities to elucidate the suitability of proposed standards concepts and thereby encourage standardization groups to make technically valid decisions. During the 25 January *Roundtable on Federal Government Engagement in Standards*, I submitted the following questions by email:

- Should the federal government's technical research resources be used to support the standardization process by providing a neutral perspective regarding the relative merits of various proposals?

- What could encourage the likelihood that such research would be considered "fair" by the players, particularly when the standards body is transnational?

Reference [1] includes a paragraph on a similar topic:

> NIST has also contributed its unbiased technical expertise to IEEE 802 standardization projects. In support of further such contributions, NIST has also planned to develop the National Wireless Electronic Systems Testbed (N-WEST) for use in measurements that contribute to effective standardization and compliance testing. Such an undertaking will require significant investment.

Such investment did not materialize during my tenure at NIST.

(9) I thank you and the National Science and Technology Council's Sub-Committee on Technology for taking the time and effort to investigate these questions of broad significance to the U.S. role in technology innovation and competitiveness.

Regards,

Roger B. Marks, Ph.D.

References

[1] R. B. Marks and R. E. Hebner, "Government/Industry Interactions in the Global Standards System," *The Standards Edge: Dynamic Tension* (Sherrie Bolin, Editor), Sheridan Books, Ann Arbor, MI, 2004, pp. 103- 114 (presented at *Innovation and Legislation: Standardization in Conflict*, Washingon, DC, USA, 4-5 December 2003) <http://wirelessman.org/docs/#C03_16>.

[2] R. B. Marks and R. E. Hebner, "Government Activity to Increase Benefits from the Global Standards System," 2001 IEEE Conference on Standards and Innovation in Information Technology (Boulder, Colorado, USA), pp. 183- 190, 3-5 October 2001 <http://wirelessman.org/docs/#C01_13>.

[3] Erik Puskar and Ted A. Aanstoos, "Process, Promise, Problems: Developing WiMAX as an International Standard," August 2008 <http://ts.nist.gov/Standards/upload/Process-Promise-Problems-Developing-WiMAX-as-an-International-Standard.pdf>.

[4] IEEE 802.16 GRIDMAN Task Group <http://ieee802.org/16/gridman>.

[5] IEEE 802.16 Machine-to-Machine (M2M)Task Group <http://ieee802.org/16/m2m>.

[6] Antonio Cimmino, Fulvio Casali and Cinzia Mambretti, "Weird Project: E-Health Service Improvement Using WiMAX," *Electronic Healthcare: Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, Volume 0001. ISBN 978-3-642-00412-4. Springer Berlin Heidelberg, 2009, p. 38 <http://adsabs.harvard.edu/abs/2009elhe.book...38C>.

[7] Karen Scarfone, Cyrus Tibbs, Matthew Sexton, "Guide to Securing WiMAX Wireless Communications: Recommendations of the National Institute of Standards and Technology," NIST Special Publication 800-127, September 2010 <http://csrc.nist.gov/publications/nistpubs/800-127/sp800-127.pdf>.

[8] "Tech Topic 11: WiMAX Applications for Public Safety," Federal Communications Commission, Public Safety and Homeland Security Bureau <http://www.fcc.gov/pshs/techtopics/techtopics11.html>.