



DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

[Docket No. 210105-0001]

RIN 0660-XC049

5G Challenge Notice of Inquiry

AGENCY: National Telecommunications and Information Administration, U.S. Department of Commerce.

ACTION: Notice of Inquiry.

SUMMARY: Through this Notice of Inquiry, the National Telecommunications and Information Administration, under sponsorship of and in collaboration with the Department of Defense 5G Initiative, is seeking comments and recommendations from all interested stakeholders to explore the creation of a 5G Challenge that would accelerate the development of the open 5G stack ecosystem in support of Department of Defense missions.

DATES: Comments are due on or before 5 p.m. Eastern Time on **[insert date 30 days from the date of publication in the *Federal Register*]**.

ADDRESSES: Written comments may be submitted by email to 5GChallengeNOI@ntia.gov. Comments submitted by email should be machine-readable and should not be copy-protected. Written comments also may be submitted by mail to the National Telecommunications and Information Administration, U.S. Department of Commerce, 325 Broadway, Attn: Rebecca Dorch, Boulder, CO 80305. For more detailed instructions about submitting comments, see the “Instructions for Commenters” section in the “Supplementary Information.”

FOR FURTHER INFORMATION CONTACT: Rebecca Dorch, National Telecommunications and Information Administration, U.S. Department of Commerce, 325 Broadway, Boulder, CO 80305; telephone (720) 215-6145; email rdorch@ntia.gov. Please direct media inquiries to NTIA’s Office of Public Affairs: (202) 482-

7002, or at press@ntia.gov.

SUPPLEMENTARY INFORMATION:

Recognizing the vital importance of fifth-generation (5G) wireless communications to U.S. economic and security interests, the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce has made it a top priority to engage in 5G across a broad spectrum of topics. Commensurably, the Department of Defense (DoD) in 2019 established its 5G Initiative as a key modernization priority with the goal to advance U.S. and partner capabilities to fully leverage 5G technologies for military networking needs. A key innovation in 5G that is becoming more pervasive in the larger 5G ecosystem is the trend toward “open 5G” architectures that emphasize open interfaces in the network stack. NTIA, under sponsorship of and in collaboration with the DoD 5G Initiative, is seeking comments and recommendations from all interested stakeholders to explore the creation of a 5G Challenge that would accelerate the development of the open 5G stack ecosystem in support of DoD missions.

Background: NTIA is the Executive Branch agency responsible for advising the President on telecommunications and information policy.¹ NTIA was established in 1978 in response to the growing national consensus that “telecommunications and information are vital to the public welfare, national security, and competitiveness of the United States,” and that, “rapid technological advances being made in the telecommunications and information fields make it imperative that the United States maintain effective national and international policies and programs capable of taking advantage of continued advancements.”² In the more than 40 years since its inception, NTIA has made growth and innovation in communications technologies – most recently 5G and beyond wireless communications – a cornerstone of its mission. The Administration’s 2020 5G Strategy reaffirmed that “the United States Government will work

¹ 47 U.S.C. 902(b)(2)(D).

² 47 U.S.C. 901(b)(1)-(6).

with the private sector, academia, and international government partners to adopt policies, standards, guidelines, and procurement strategies that reinforce 5G vendor diversity to foster market competition.”³

NTIA’s Institute for Telecommunication Sciences: The Institute for Telecommunication Sciences (ITS) is NTIA’s spectrum and communications laboratory. It plays a central role in informing the formulation of the U.S. Government’s information and communications technology policies and additionally works on behalf of other U.S. Government departments and agencies in need of telecommunications engineering expertise. ITS works across a diverse telecommunications ecosystem with a primary focus on 5G communications.

Technical motivation for Challenge: Many innovations are being explored in the greater 5G economy. One movement that appears to be gaining traction across the ecosystem is the use of open-source implementations for various components of a 5G system. Among those components is the 5G protocol stack. The open 5G stack community is diverse, with a wide variety of organizations in academia, government, and private industry. Additionally, different open 5G stack organizations are focused on different portions of the stack, with no clear division among the multiple implementations currently available. And the various implementations are often created with the intention to be used with code sourced from a single organization, where interoperability among the community’s implementations is not guaranteed.

Request for Comments:

Through this Notice, NTIA is soliciting comments and recommendations from stakeholders on how a Challenge to accelerate the development of the open 5G stack ecosystem in order to support DoD missions could be constructed. These comments will help NTIA and the U.S. Government identify and mitigate the challenges in creating and executing a competition.

³ Executive Office of the President, National Strategy to Secure 5G of the United States of America (Mar. 2020), <https://www.whitehouse.gov/wp-content/uploads/2020/03/National-Strategy-5G-Final.pdf>.

They will also help NTIA leverage its engineering expertise to construct a Challenge that maximizes the benefit to both the open 5G stack market and the DoD on an accelerated schedule.

For the purposes of this Notice, NTIA has organized these questions into three broad categories: (1) Challenge structure and goals; (2) incentives and scope; and (3) timeframe and infrastructure support. NTIA seeks public input on any and/or all of these three categories.

Instructions for Commenters: NTIA invites comments on the full range of questions presented by this Notice, including issues that are not specifically raised. Commenters are encouraged to address any or all of the following questions. Comments that contain references to specific studies and/or research should include copies of the referenced materials with the submitted comments. Comments submitted by email should be machine-readable and should not be copy-protected. Commenters should include the name of the person or organization filing the comment, which will facilitate agency follow up for clarifications as necessary, as well as a page number on each page of their submissions. All comments received are a part of the public record and will generally be posted on the NTIA website, <http://www.ntia.gov>, without change. All personal identifying information (for example, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

I. Challenge Structure & Goals

A. How could a Challenge be structured such that it would take advantage of DOD's role as an early U.S. Government adopter of 5G technology to mature the open 5G stack ecosystem faster, encourage more participation in open 5G stack development including encouraging new participants, and identify any roadblocks to broader participation?

B. How could a Challenge be structured to focus on the greatest impediments to the maturation of end-to-end open 5G stack development?

C. What should be the goals of a Challenge focusing on maturation of the open 5G stack ecosystem? How could such a Challenge be structured to allow for the greatest levels of

innovation? What metrics should be used in the assessment of proposals to ensure the best proposals are selected?

D. How will the open 5G stack market benefit from such a Challenge? How could a Challenge be structured to provide dual benefit to both the Government and the open 5G stack market?

II. Incentives and Scope

A. What are the incentives in open 5G stack ecosystem development that would maximize cooperation and collaboration, promote interoperability amongst varied open 5G stack components developed by different participants, and mature desired featured sets faster with greater stability?

B. Could a Challenge be designed that addresses the issues raised in previous questions and also includes test and evaluation of the security of the components?

C. Could a Challenge be designed that would require participants to leverage software bill of materials design principles in the development of components for an open 5G stack?

D. Many open 5G stack organizations have developed partial implementations for different aspects of an open 5G stack. What portions of the open 5G stack has your organization successfully developed with working code? What portions of the open 5G stack does your organization believe can be developed quickly (6 months or less)? What development support would best enable test and evaluation of the different elements of an open 5G stack?

E. What 5G enabling features should be highlighted in the Challenge, such as software defined networking, network slicing, network function virtualization, radio access network intelligent controller, radio access network virtualization?

III. Timeframe & Infrastructure

A. What software and hardware infrastructure will be needed to successfully execute this Challenge?

B. What is a reasonable timeframe to structure such a Challenge? Should there be different phases for such a Challenge? If so, what are appropriate timelines for each suggested phase?

Dated: January 5, 2021.

Kathy D. Smith,

Chief Counsel, National Telecommunications and Information Administration.

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