Government and Industry Collaboration
Subcommittee Report
Commerce Spectrum Management Advisory Committee

May 12, 2015

Responses - Executive Summary

Responses - Complete

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Executive Summary

Question 1 What type of spectrum issues do you recommend NTIA prioritize for enhanced collaboration, to include those requiring sensitive/classified information exchange?

Recommendations: There are a number of areas that NTIA should prioritize for enhanced collaboration related to spectrum issues. The subcommittee makes the following recommendations:

- Develop Clutter and Terrain Impact Models – Further develop and confirm clutter and terrain impact models through a collaborative effort, including existing organizations such as NTIA's Boulder labs.

- Enhance Data Protections – Lead an interagency effort to develop a method for securely inputting and protecting information to an SAS database.

- Develop and Define Procedures to Model Interference Impacts on a System-Specific Basis – Develop procedures to study and understand the impact of interference on a system-specific basis.

- Enable Security Clearances – Develop a process for government agencies to sponsor industry entities for clearances to facilitate access to sensitive information.

- Identify Additional Spectrum Bands – Prioritize identifying additional bands for enhanced collaboration through the framework process.

Question 2 How can we most effectively leverage existing or emerging entities to include CSMAC, PPSG, NASCTN, and CAC to streamline efforts and minimize the burden on participating organizations?

Recommendations: The subcommittee makes the following recommendations:

- NTIA should minimize the burden on organizations by providing an overarching view of the national priorities and what each organization is doing and should coordinate among the organizations to ensure that there are not duplicate efforts that increase burden without materially advancing the issue.

- NTIA should include FCC-related groups as part of its outreach, including the FCC TAC.

- NTIA should continue to consider an appropriate structure to facilitate an exchange of detailed information between private sector and federal agencies, particularly with respect to systems and issue that include classified information.

Question 3 How would you modify the draft framework to most efficiently and effectively achieve the desired collaboration?

Recommendations: The subcommittee makes the following recommendations:

- <u>NTIA Draft Framework Is Well Conceived And Should Be Used To Guide Collaboration Efforts.</u> The framework document provided by NTIA should serve as the methodology for enhanced government and industry collaboration.

- <u>Size of Small Working Groups Should Be Optimized.</u> Efforts should be made to ensure that small working groups proposed by the framework are representative of all stakeholders but focused on being "small."

- <u>Non-Disclosure Agreements Are Insufficient For Full Collaboration Efforts.</u> NTIA should prioritize a process for sponsoring industry experts for clearances appropriate to allow sharing of classified information and should include that as part of the framework.

- <u>Stakeholder Input Is Critical For Technical Studies.</u> NTIA should ensure there is a process for sufficient input on technical studies from both industry and Government agencies so that the analysis reflects as closely as possible real conditions.

- <u>A Process For Prioritizing Spectrum Issues Is Required.</u> NTIA, FCC, DOD and industry should set up some process for determining priorities on spectrum issues to be managed as part of the framework process.

- <u>FCC Participation In The Collaboration Process.</u> The framework should include the FCC as a partner organization in developing information and setting priorities and FCC TAC as an organization that can provide valuable advice and guidance on priorities and options.

Responses - Complete

Question 1

Question 1 What type of spectrum issues do you recommend NTIA prioritize for enhanced collaboration, to include those requiring sensitive/classified information exchange?

Response. The subcommittee work evolved from discussions from another subcommittee that was focused on transitional sharing as well as the working group process that was convened under the auspices of the CSMAC to provide technical analyses of sharing in the 1695-1710 MHz and 1755-1850 MHz spectrum bands. These two prior efforts made clear that it would be beneficial to find a way to make discussions between government and industry stakeholders on spectrum issues occur on a regular, routine basis. Such multi-stakeholder discussions were successful in helping to develop collaborative approaches for the 1695-1710 MHz, 1755-1780 MHz and 3550-3650 MHz spectrum bands. Each of these spectrum bands have since had FCC proceedings completed..

In reviewing the question posed by NTIA to the subcommittee, it became apparent that there are a number of areas that NTIA could prioritize for enhanced collaboration related to spectrum issues. Some of these areas are already underway in other subcommittees, and some are informed by the past processes involving the 1695-1710 MHz and 1755-1780 MHz spectrum sharing discussions.

In particular, the subcommittee makes the following recommendations:

1. Further develop and confirm clutter and terrain impact models through a collaborative effort, including existing organizations such as NTIA's Boulder labs.

As part of the process looking at sharing between government and industry systems in the AWS-3 band, significant work was done, particularly by NTIA's Boulder Labs, to determine how to include the effects of clutter and terrain when modeling interference, particularly from terrestrial systems to airborne systems. Unfortunately, due to time and resource constraints, these efforts were not completed. The subcommittee believes that model of clutter and terrain effects will allow all interested stakeholders the ability to more accurately model real-world spectrum sharing opportunities going forward.

NTIA should build on this effort by working with interested stakeholders to further refine interference modeling and confirm the results and effects on propagation models from clutter and terrain. This effort should take advantage of prior work and build on, rather than repeat, that work.

2. Lead an interagency effort to develop a method for securely inputting and protecting information to an SAS database.

Use of a reliable, accurate and secure database is a critical component in a number of sharing architectures. In many cases it will be necessary for users (both primary and secondary) to provide information to the database regarding current uses to ensure that they can be adequately protected and obfuscated. This information can be highly sensitive from both a government and industry perspective and, in the case of government, may even be classified. It is important that a method be developed by which information can be incorporated into a sharing database while still being protected from unauthorized use or access, or the database can adequately obfuscate the sensitive information. Significant work was done on this issue by the Spectrum Management via Database Subcommittee and NTIA should act on these recommendations and eliminate barriers to information sharing.

3. Develop procedures to study and understand the impact of interference on a system-specific basis.

A challenge to efficient sharing is in understanding the impact that interference will have on a system and the level of interference that can be tolerated without an adverse impact on meeting the system objective or achieving the overall mission. While a generic rise in noise temperature is often put forward as the criteria for protection, it is often unclear what impact this has on system operation or whether it results in harmful interference. To maximize the potential for spectrum sharing, it is desirable for experts to have a fuller understanding of the impact of interference criteria on specific systems. This may require testing of actual equipment or making available detailed technical and operational specifications. The subcommittee recommends NTIA engaging stakeholders, including the FCC, federal agencies and industry in a collaborative effort to study the metrics for determining whether there is system-specific harmful interference to ensure that protection requirements are appropriate and not overly conservative.

4. Develop a process for government agencies to sponsor industry entities for clearances to facilitate access to sensitive information.

Information sharing is critical to developing effective and efficient sharing regimes. However, where sharing involves government systems, it is often difficult to share information because of the sensitive nature of the government operations. This issue has been widely recognized and in analyzing issues for the 1755-1780 MHz spectrum band, a partial solution was arrived at by created a group of "trusted agents." These trusted agents are industry experts covered by a non-disclosure agreement with the Department of Defense that allowed greater sharing of information than permitted in a fully public process. While this process yielded better results than would have been otherwise achievable, it still failed to allow sharing detailed information necessary to analyze sharing as fully as desired because of a lack of access by industry experts to highly sensitive information.

The need to have a process for industry experts to get a security clearance has been discussed for years as sharing spectrum with government systems is considered. Getting a security clearance requires a government agency to sponsor an industry representative. In the past, obstacles have included: (1) identifying what companies and their representatives should be included in consideration for a security clearance, and (2) the fact that, given the length of time necessary to get a security clearance, decisions regarding the sharing or relocation potential of government systems will likely be made prior to granting the clearance if the clearance process doesn't start

well in advance of the specific study.   Accordingly, there are a number of issues that should be addressed:

1) What are the obstacles to granting clearances to industry experts?

2) What criteria should be used to identify appropriate industry experts?

In addition, the subcommittee had initial discussions with representatives of the National Spectrum Consortium ("NSC") that may help lead to a potential resolution of this issue. The subcommittee has not had sufficient time to fully vet the information from the NSC at this time, but has prepared a summary of the information from these discussions and recommends that additional investigation of using the NSC as part of the clearance process be considered for future efforts.

5. Prioritize identifying additional bands for enhanced collaboration through the framework process.

In addition to ongoing efforts with respect to the 3.5 and 5 GHz bands, NTIA should work in collaboration with the FCC and industry on additional spectrum bands for enhanced collaboration (both commercial and Federal spectrum bands).

Question 2

Question 2 How can we most effectively leverage existing or emerging entities to include CSMAC, PPSG, NASCTN, and CAC to streamline efforts and minimize the burden on participating organizations?

Response. The subcommittee believes that leveraging existing or emerging entities to develop a going forward approach for government and industry collaboration is the right approach. Existing entities can be used to set priorities based on expert advice, both from industry and government. The draft framework (attached as Appendix A) provides an outline as to how these entities can collect information and make information available that can guide priorities. The subcommittee recommends that NTIA also include FCC-related groups as part of its outreach, such as the FCC TAC.

The breadth of existing groups provides an array of organizations with various charters that are capable of providing meaningful information that can inform the process and the subcommittee recommends that NTIA take full advantage of these organizations prior to creating new processes or organizations. The subcommittee notes that the roles and responsibilities of entities (such as PPSG) are not diminishing but better coordination would augment or facilitate their roles in representing respective stakeholder groups.

The subcommittee recommends that NTIA minimize the burden on organizations by providing an overarching view of the national priorities and what each organization is doing and should coordinate among the organizations to ensure that there are not duplicate efforts that increase burden without materially advancing the issue.

Concern remains, however, that there is no appropriate structure to facilitate an exchange of detailed information between private sector and federal agencies, particularly with respect to systems and issue that include classified information.

Question 3

Question 3 How would you modify the draft framework to most efficiently and effectively achieve the desired collaboration?

Response. The subcommittee was presented with a draft framework from NTIA on how a multi-stakeholder collaboration process may work. This draft framework is attached as Appendix A.

The Section e. (of the Components discussion) of the draft plan appears to create a framework for industry/government collaboration. However, it leaves open how to implement an approach for sharing information. This is a critical part of the process that is necessary for developing accurate and informed information.

The subcommittee recommends that the framework ensure that the small working groups are representative but focused on being "small." In the past efforts, working groups grew to almost two hundred participants, making detailed discussions and resolutions difficult to achieve.

NDAs are insufficient for sharing classified information that may be necessary to perform accurate analysis. As noted in response to question 1, the subcommittee recommends NTIA should prioritize a process for sponsoring industry experts for clearances appropriate to allow sharing of classified information and should include that as part of the framework.

As part of the framework, the subcommittee recommends that NTIA should ensure there is a process for sufficient input on technical studies from both industry and Government agencies so that the analysis reflects as closely as possible real conditions. This will help ensure that preliminary conclusions are accurate and can reduce the time to a decision by avoiding costly and time consuming reanalysis. In addition, the subcommittee recommends that NTIA, FCC, DOD and industry set up some process for determining priorities on spectrum issues to be managed as part of the framework process. One of the criticisms of the initial process was that Federal agencies, especially DOD, did not feel that they were part of the vetting process of issues nor necessarily included in final implementation of any outputs developed as part of the small working group process.

The framework should include the FCC as a partner organization in developing information and setting priorities and FCC TAC as an organization that can provide valuable advice and guidance on priorities and options.

The subcommittee believes that there could be better clarity provided on what "direct government/industry negotiation" means, in part to recognize the importance of the existing regulatory process with regard to how bands are selected for possible study for broadband, and how equities are addressed. Parameters with regard to direct negotiations are important given the limited resources that agencies typically will have for "direct negotiation" on top of participation in the regular interagency process.

APPENDIX A

Government/Industry Spectrum Collaboration Plan
September 14, 2014

Goal: To expand and more effectively enable government/ industry collaboration through an aggressive, multi-layered effort to support focused policy development and the identification of spectrum solutions to the rising demand for consumer and government radio uses.[1]

Objectives:

- Establish and lead a well-defined multi-layered structure to enhance cooperation, coordination and collaboration between government and industry/academia.
- Leverage government/industry collaboration as a key element to meeting spectrum needs of government users and consumers.
- Optimize the benefits of public and private (by invitation) approaches and different levels of engagement to increase transparency and maximize results.

Components:

a. **NTIA Spectrum Summits ["Workshops", "conferences" or other term]**
   - Public forum held annually or other schedule based on need
   - Single day events with keynote, panels and public comment periods
   - Coordinate/co-sponsor/co-locate/"partner" with industry and federal stakeholder association(s)(e.g., CTIA, TIA, Winforum, AFCEA, IEEE, Old Crows)
   - Present information on spectrum deliberations
   - Present thoughts on possible directions and solicit feedback
   - Present technology innovation demonstrations by industry and government
   - Shape priorities for government/industry collaboration
   - Opportunity for technical learning
   - Congressional outreach
   - Media outreach

b. **Participation in workshops, conferences or other events sponsored outside of NTIA**
   - Coordinate NTIA and federal agency participation and strategic communication

c. **Government/Industry discussion forum on licensed and unlicensed access to spectrum with invited industry and government participants[Possibly two separate groups]**
   - Quarterly meetings focused on priority spectrum topics (Possibly alternating meeting between cell industry and unlicensed industry interests)

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[1] *See* Memorandum for the Heads of Executive Departments and Agencies, *Expanding America's Leadership in Wireless Innovation* (re. June 14, 2013) at Section 2, *published at* 78 Fed. Reg. 37431 (June 20, 2013), *available at* http://www.whitehouse.gov/the-press-office/2013/06/14/presidential-memorandum-expanding-americas-leadership-wireless-innovatio (*2013 Presidential Memorandum*).

   i. Discuss informally future spectrum access needs and contributing factors, in various spectral bands of interest on a rolling basis, besides various other issues of interest between the industry and government stakeholders

- Obtain information or viewpoints from individual attendees and facilitate dialog; not intended to solicit advice, opinions or recommendations from the collective group (FACA implications)
- Led jointly by industry and government co-chairs to set the course, manage the activity, form and manage subgroups around specific topics/challenges (may leverage existing industry associations and related committees)
  - i. Formalized agenda for all meetings
- Industry, academia, and government participants (e.g., PPSG representatives)
  - i. Individual participation from industry and academia will rotate on a regular basis dependent on topic(s) of each meeting
  - ii. Private sector participants chosen from major industry and academic entities (mix of carriers, OEMs, device manufacturers, application developers, etc.); or leveraged via existing memberships to participating industry associations.
- Steering Group (NTIA coordinator, FCC and co-chairs (one cell industry and one unlicensed industry) to meet at least once every six months to review feedback, progress and priorities
- Limit number of industry and government participants to best facilitate dialog
- Publicize resulting information to the maximum extent possible (via website, NOIs, etc.)

d. **CSMAC**

- Seek CSMAC advice on these or other possible approaches through review of the plan and new (collaboration) Subcommittee
- Finalize CSMAC lessons-learned to identify future cases to use/improve CSMAC working groups
- Initiate CSMAC working groups where appropriate as a key component to this collaboration plan

e. **Direct Government/Industry Negotiation**

- Identify issues that would require and benefit from direct discussion
- Identify government/industry participants
- Led by the federal agency that has the dominant equities in the issue(s); agency recommendations reported back to NTIA
- Formulate an approach for sharing information (e.g. NDAs)
- Facilitate negotiations
- Identify Center for Advanced Communication support requirements

f. **Potential other mechanisms**

- Explore use of a Partnership Intermediary Agreement (PIA) to further enhance spectrum collaboration
  - i. An agreement between the Department and the agency of a state or local government or a nonprofit entity to allow the Partnership Intermediary to:

1) identify new technologies in the private sector that can be utilized by the Department; and 2) facilitate joint projects between the government and private companies, as well as between agencies and academic institutions, to accelerate delivery of technological capabilities to the nation.

- Monitor DoD Spectrum Sharing Consortium (Other Transaction Authority) for future benefit
    i. Allows open dialogue with consortium members on any spectrum topic of interest

Next Steps:

a. Solicit PPSG SWG feedback – August
b. Inform FCC and solicit collaboration support – August
c. Create CSMAC Collaboration Subcommittee; solicit feedback on draft plan (September to October)
d. Formulate the NTIA team for initiating, planning and operationalizing activity – November
e. Coordinate plan with Hill staff – November to December
f. Reach out to industry – November to December
g. Seek industry and government co-chairs and participants for initial government/industry discussion fora – December to January
h. Announce collaboration plan (co-announce first summit [workshop, conference]) – announce in December for March/April/May summit (coordinate around ISART and other major events)

Other benefits:
- Supports Presidential memorandum on government-industry collaboration
- Supports CSMAC recommendations on informal technical discussion needs
- Supports CSMAC recommendations on structured program management of the partnership
- One of the key deliverables needed for the larger spectrum strategy plan work under progress