

Federal Communications Commission Technological Advisory Council Meeting

March 19, 2024



FCC Technological Advisory Council Agenda – March 19, 2024

10:00am – 10:30am	Opening Remarks
10:30am – 11:15am	Federal Advisory Committee Act Overview
11:15am – 11:45pm	Advanced Spectrum Sharing WG Presentation
11:45pm – 12:15pm	AI/ML WG Presentation
12:15pm – 1:45pm	6G WG Presentation
12:45pm – 1:00pm	Closing Remarks
1:00pm	Adjourned



FEDERAL ADVISORY COMMITTEE ACT RULES AND PRACTICES

- Paula Silberthau, Attorney Advisor, OGC



GENERAL INFORMATION

- The Federal Advisory Committee Act (FACA), 5 U.S.C. Ch. 10, governs the operations of most federal advisory committees (unless the committee is exempted by statute).
- Several guiding principles under FACA include:
 - Openness in government;
 - Diversity and balance in membership; and
 - Public accountability.



TIMELY PUBLIC NOTICE OF MEETINGS

- The FACA requires that timely notice (generally 15 calendar days' notice) of each Committee meeting be published in the *Federal Register*.
- In addition, Committee meeting notices may also appear in Federal Communications Commission ("FCC") releases, Internet postings and other media.
- Meetings may include teleconferences, video conferencing and Internet-based conferences.



PUBLIC ATTENDANCE

- The FACA requires that all parent Committee meetings be open to the public and permits submission of written statements to the Committee, subject to reasonable regulations.
- Members of the public may also speak to or address the Committee if FCC or Committee guidelines so permit.



PUBLIC ATTENDANCE (cont.)

- Under certain limited circumstances (*e.g.*, where information to be discussed involves trade secrets, classified government materials, or national security matters related to foreign policy), the meetings or portions of the meetings may be closed with approval of the agency head and after prior notice in the *Federal Register*.
- The Committee cannot simply announce spontaneously at a meeting that parts of the meeting will be closed or that it will adjourn to another room to discuss a matter.



DOCUMENT AVAILABILITY

- Under FACA, the Commission is required to keep minutes of meetings, including a record of the persons present at the Committee meetings and documents received, issued or approved by the Committee.
- These documents and all other Committee minutes, transcripts, reports, studies, etc., must be available for public inspection and copying (although they may be withheld under applicable FOIA exemptions). Information may also be posted on the Committee's website.



CONTINUING ETHICS OBLIGATIONS

.Advisory Committee members have a continuing obligation to disclose any interest in, or connection to, persons or entities that are regulated by or have interests in matters that may come before the Committee that may present a conflict of interest or the appearance of a conflict of interest.

. Members must report any changes in representation or in employment during their tenure as members of the Advisory Committee. Please contact OGC ethics to discuss any conflict or appearance concerns and what action, if any (e.g. recusal), may be appropriate.



ROLE OF THE COMMITTEE CHAIR AND VICE CHAIR

Duties include:

- Serving as focal point for Committee members;
- Providing input to the agency about establishing informal working groups;
- Conducting all Committee meetings and suggesting meeting agendas.



DESIGNATED FEDERAL OFFICER

Duties include:

- Calling meetings and approving agendas;
- Attending meetings;
- Chairing and closing meetings as necessary;
- Maintaining all Committee records (*note that the DFO should be copied on all emails pertaining to the business of the Committee or its working groups);
- Ensuring taking of minutes at Committee meetings.



FACA RECORD KEEPING

- Federal Advisory Committee records are to be maintained in accordance with General Records Schedule 6.2, Federal Advisory Committee Records.
- The disposition schedule (GRS 6.2) is media-neutral, meaning it applies to all records, regardless of format (paper, audiovisual, electronic, etc.).



FACA RECORD KEEPING (cont.)

- Committee members are responsible for ensuring that the DFO has complete and accurate records that document the Committee's activities and those of all working groups, including all deliberations and decisions.
- Committee members should copy the DFO on all emails and other communications pertaining to the business of the Committee or its working groups and also copy the FACA-specific mailbox that will be provided to you by your DFO.



INFORMAL WORKING GROUPS OR SUBCOMMITTEES

- Informal working groups *can*:
 - Gather information (but not through formal surveys);
 - Develop work plans;
 - Draft reports;
 - Discuss preliminary findings;
 - Meet in closed sessions without public notice;
 - Make recommendations to the parent FAC.



INFORMAL WORKING GROUPS *cannot*:

- Function as the *de facto* parent advisory committee;
- Make recommendations to the Committee that are “rubber stamped” without further action or consideration by the full Committee;
- Make decisions that are binding on the Committee;
- Speak on behalf of the full Committee without prior approval;
- Make direct recommendations to the FCC. Recommendations may be made to the Commission only after formal vote by the full committee;



INFORMAL WORKING GROUPS *cannot (cont'd):*

- Conduct surveys that would be subject to the Paperwork Reduction Act (PRA). If a working group believes that a survey might be beneficial, it should so advise the DFO so that the Commission can evaluate whether to conduct the survey after obtaining PRA authorization.
- Alternatively, the working group might coordinate with the DFO to seek more general information through a public notice, if the DFO considers that appropriate.



INFORMAL WORKING GROUPS (*meetings*):

- Meetings conducted by informal working groups are not subject to the public participation and public notice requirements of the FACA so long as the above requirements are met. Therefore, sessions of working groups do not have to be open to the public.
- Typically, the number of Committee members serving on a working group should be less than a quorum of the full Committee. Otherwise, the meetings of working groups are likely to be considered meetings of the full Committee (requiring public notice).



INFORMAL WORKING GROUPS (*meetings*):

- Working groups will meet at the call of the DFO and working group chair using an agenda approved by the DFO or FCC liaisons. The discussions among members at closed working group meetings should be treated as confidential. Although any member of the parent committee may attend and observe any meeting, a parent committee member should *not* participate in any working group meeting unless serving as a member of that group.



INFORMAL WORKING GROUPS *(cont'd)*:

- To gather information, a working group may invite third parties to make presentations at the group's closed meetings. However, once the third party has completed its presentation and answered questions, the individual should leave the meeting and not remain for the Working Group's internal deliberations.



APPLICATION OF EX PARTE RULES

- The Commission's *ex parte* rules apply to presentations made to a Committee or its working groups and to presentations between Committee or working group members and FCC staff or Commissioners, unless otherwise treated as exempt pursuant to a Public Notice issued by a bureau or the Commission.



APPLICATION OF EX PARTE RULES (cont.)

- Typically the applicable bureau will issue such an exemption notice for presentations made to a Committee, including to its subcommittees and working groups (and at any roundtable discussions sponsored by the Committee), as well as presentations between Committee members (including members of any subcommittees or working groups) and FCC staff or Commissioners incidental to and in connection with such Committee meetings or roundtable discussions.



APPLICATION OF EX PARTE RULES (cont.)

- This exemption would cover presentations from Committee members to FCC staff and Commissioners in other settings only to the extent that the Committee members are presenting the views of the Committee or its working groups, as opposed to an individual member's own views or that of a member's organization.



OTHER PRACTICAL ISSUES: INDIVIDUAL VIEWS VS. ADVISORY COMMITTEE VIEWS

- From time to time, members of a working group or full Committee may want to communicate their views to third parties about matters that may be pending before the advisory committee but not resolved yet by Committee vote.
- If that is the case, the individual member should make clear in any presentation that the views expressed on pending topics are only *individual views*, not those of the full Committee.



OTHER PRACTICAL ISSUES: INDIVIDUAL VIEWS VS. ADVISORY COMMITTEE VIEWS (cont.)

- Identification of an individual's association with the Committee or working group, if done without further qualifications, could create the erroneous impression that the views expressed are those of the full Committee when that is not the case.



OTHER PRACTICAL ISSUES: INDIVIDUAL VIEWS VS. ADVISORY COMMITTEE VIEWS (cont.)

- A member who addresses a pending issue and describes his association with an advisory committee or working group may want to contact the DFO in advance to ensure that there is no suggestion that the member's own policy views are a position of the full Committee - - except in those cases where the Committee has already taken a formal, public vote adopting such a position.



CHANGES IN REPRESENTATIVE MEMBER'S JOB

- Members (other than SGEs) are appointed to represent the perspective of their employers. If for any reason a member will no longer be employed by the entity the member was appointed to represent, that member should immediately so advise the DFO of the committee so that alternative arrangements can be made.



FCC TAC

Advanced Spectrum Sharing WG

Chairs: Andrew Clegg (Wireless Innovation Forum)
Monisha Ghosh (Wireless Institute, Univ. of Notre Dame)

Date: March 19th, 2024



Advanced Spectrum Sharing Meetings & Call for Participants

- Meeting schedule is Tuesdays from 3-4 PM eastern (same as previous cycle)
 - First meeting Tuesday, March 26th
- Please send an email to aclegg@google.com, mghosh3@nd.edu, and tac@fcc.gov to be added to the list of participants in the SS WG
 - Be sure to include all three email addresses on your request
 - We can only add those who have been vetted by the FCC for TAC membership



Advanced Spectrum Sharing Charter 1

- What will advanced sharing frameworks and architectures look like in the future?

Progress:

- <td>

Advanced Spectrum Sharing Charter 2

- 2(a) How will spectrum sharing models adapt and evolve to meet the growing demand for spectrum access among various services to support multiple purposes?
- 2(b) How can the interplay between terrestrial and satellite services be complemented in sharing models to promote more efficient spectrum use?

Progress:

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Advanced Spectrum Sharing Charter 3

- 3(a) To what extent can the FCC optimize its propagation models to reflect less conservative, more realistic assumptions and support more intensive sharing while still protecting against harmful interference?
- 3(b) Are there specific bands where improved propagation models offer a pathway to liberalize performance capabilities beyond what the FCC permits today?

Progress:

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Advanced Spectrum Sharing Charter 4

- 4(a) What steps can be taken to better facilitate spectrum repurposing efforts?
- 4(b) How can potential intra-band and inter-band issues be identified and addressed early in the process?
- 4(c) How can incumbent services be better informed about the nature of adjacent or nearby spectrum environments and how can users be encouraged to take steps needed to accommodate new spectrum uses in those environments?
- 4(d) What steps and processes should be used regarding adjacent band spectrum users' wide receiver bandwidths (i.e., the passband extends into adjacent bands)?

Progress:

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Advanced Spectrum Sharing Charter 5

- 5(a) What is the current state of the art in receiver technology?
- 5(b) What state of the art active antenna array and filter technologies can be utilized to mitigate potential harmful interference?
- 5(c) How can advanced antenna systems help reduce both inter-system and intra-system interference and enhance intra-system performance (e.g., beam vs. null steering)?
- 5(d) What are the cost benefit tradeoffs on utilizing the current filter technologies or advanced antenna systems?
- 5(e) Are there specific bands where improved receiver technologies offer significantly improved coexistence beyond what is permitted today?

Progress:

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Advanced Spectrum Sharing Charter 6

- 6(a) What are the candidate bands or services that can co-exist with low-power, indoor-only operation such as factory automation?
- 6(b) What are the sharing mechanisms to consider?

Progress:

- <tbd>



Advanced Spectrum Sharing Charter 7

- What are the sharing mechanisms to consider among various services above 95 GHz, including passive services?

Progress:

- <td>

Advanced Spectrum Sharing Charter 8

- What role should sensors play in informing spectrum use and in supplementing spectrum sharing databases?

Progress:

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Advanced Spectrum Sharing Charter 9

- What are the trade-offs between efficient spectrum use and environmental considerations, including sustainability and energy efficiency?

Progress:

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Advanced Spectrum Sharing Charter 10

- 10(a) What methods can support the Commission in identifying spectrum bands that have the most potential and flexibility for sharing and repurposing?
- 10(b) What are the candidate bands and which bands should be prioritized?
- 10(c) How should those bands be combined or separated for federal and/or non-federal uses?
- 10(d) What are the optimal coordination processes between stakeholders to better support implementation and consideration of these methods?

Progress:

- <tbd>

What Has Transpired Since Our Last Session wrt Spectrum Sharing?

- [National Spectrum Strategy](#) and [Implementation Plan](#)
- [WRC-23 concludes](#), [WRC-27 planning begins](#)
- 6 GHz sharing ([VLP](#) & [AFC](#))
- FCC [Public Notice](#) on access to unassigned spectrum inventory
- Rules for Supplemental Coverage from Space ([draft](#))
- AI/ML continues exponential adoption and technical refinements

Thank You



FCC TAC

Artificial Intelligence, Machine Learning, and Computing Working Group - AIWG

AIWG WG Chairs: Lisa Guess, Ericsson North America/Cradlepoint
Adam Drobot, Stealth Software Technologies, Inc.

Date: March 19th, 2024



AI/ML Working Group Meetings & Call for Participants

- Meeting schedule is Wednesdays from 3-4 PM eastern (same as previous cycle)
 - First meeting Wednesday, April 3rd.
- Please send an email to lisa.guess@cradlepoint.com, adam.drobot@gmail.com and tac@fcc.gov to be added to the list of participants in the AI/ML WG
 - Be sure to include both email addresses on your request
 - We can only add those who have been vetted by the FCC for TAC membership

AI/ML Working Group Charter - 1

- Explore the use of AI/ML methods to improve the utilization and administration of spectrum (licensed, unlicensed, and shared) based on the fundamental characteristics of propagation, interference, signal processing, and protocols. How could the scalability aspect of AI/ML algorithms support such methods by use of techniques such as parallelization, dimensionality reduction, sampling, and approximation?
- Evaluate the use of AI/ML methods and techniques applied to assuring the safety, security, and performance of network equipment, network control, and network operations in a network environment that increasingly relies on automation, is seeing a rapid growth of new network connections, and is increasingly digitized and software-ized.

AI/ML Working Group Charter - 2

- Explore and evaluate AI-enabled networks in optimizing long convergence time, memory complexity, and complex behavior of machine learning algorithms under uncertainty as well as how the highly dynamic channel, traffic, and mobility conditions of the network contribute to the challenges of AI networks.
- How can AI/ML be leveraged to help better understand real-time spectrum usage, either at the front end (e.g., improved sensing) or the back end (e.g., improved analytics)?
- Are there opportunities for the Commission to use AI/ML to improve its analysis of data presently collected and housed in databases like ULS?

AI/ML Working Group Charter - 3

- What are the implications and complications of using AI/ML in optimizing wireless and wired networks performance by analyzing network traffic patterns, network failures, proactive corrective actions, network routing, and predicting network congestion?
- How can AI/ML techniques be used to support the integration and interoperability of wired and wireless networks, such as heterogeneous access networks, multi-domain networks, and adaptive network slicing?

AI/ML Working Group Charter - 4

- How can AI/ML techniques be used to design and implement novel network architectures and protocols for wired and wireless networks, such as software-defined networking (SDN), network function virtualization (NFV), and information-centric networking (ICN)?
- How can AI/ML techniques be used to address the challenges of data quality, availability, privacy, and security in wired and wireless networks, such as data cleansing, data fusion, data anonymization, and data protection?
- What approaches should be taken, if any, on testing and certification of AI/ML softwarization of network components, capabilities, and equipment?

Thank You



FCC TAC 6G WG

Chairs: Brian Daly (AT&T)
Manu Gosain (Northeastern University)

Date: March 19th, 2024



Highlights: 6G Since Our Last Advisements & Recommendations (1)

- Recommendation [ITU-R M.2160](#) on the “IMT-2030 Framework” (November 2023)
- Next phase (2024-2027) will be the definition of relevant requirements and evaluation criteria for potential radio interface technologies (RIT) for IMT-2030
- [WRC-23 concludes, WRC-27 planning begins](#)
- 3GPP [Commits](#) to Develop 6G Specifications
 - Target TSG#103 (March’2024) for the detailed 6G timeline decisions
 - 3GPP Stage 1 workshop on IMT 2030 use cases May 8-10, 2024
 - First TSG-wide 6G workshop is expected to be in March 2025
 - Studies for 6G in 3GPP are expected to start from Release 20
 - IMT-2030 submission and normative work for 6G in 3GPP are expected to start from Release 21
- ATIS Next G Alliance released several reports including the future of 6G basic radio technologies, [6G Radio Technology Part I: Basic Radio Technologies](#)
- ATIS and EU Smart Networks and Services Joint Undertaking Publish “Beyond 5G & 6G Roadmap” for EU-US Collaboration
- India’s Prime Minister Modi and President Biden signed an MoU between Bharat 6G Alliance and Next G Alliance and established two Joint Task Forces focused on Open RAN collaboration and research and development in 5G/6G technologies

Highlights: 6G Since Our Last Advisements & Recommendations (2)

- United States, Australia, Canada, the Czech Republic, Finland, France, Japan, the Republic of Korea, Sweden, and the United Kingdom issued a Joint Statement Endorsing Principles for 6G: Secure, Open, and Resilient by Design
- 5G Americas released several whitepapers including [3GPP Technology Trends](#)
- Two O-RAN ALLIANCE nGRG 6G Workshops held:
 - “Embracing AI towards 6G RAN”
 - “Architecture Evolution, Digital Twin, and Convergence of Communications and Computing in 6G Era”
- NGMN Releases [6G Position Statement: An Operator View](#)
- Conferences: 2023 IEEE Future Networks World Forum, 2023 Brooklyn 6G Summit
- [“China Mobile claims it launched world’s first ‘6G’ test satellite”](#)



6G WG Charter (1)

- Provide information on the development and deployment of 6G technology, make recommendations and provide insights on new developments and expectations from technological and regulatory perspectives that FCC should pay attention to.
- How do openness and customization capabilities in 6G benefit supporting flexibility and agile services and its coexistence with 5G?
- What are the infrastructure needs for 6G, and how can the FCC proactively address them?
- How is 6G progressing or expected to progress at standards and international fora? What are the key points of emerging consensus or disagreement?
- What are competing 6G visions and expectations on key technological points between operators to compare and contrast?

6G WG Charter (2)

- What is the status of small satellite development, what frequency bands are under consideration for non-terrestrial network (NTN) use, and what services are envisioned?
- What are the opportunities for using mmW/terahertz bands for 6G systems?
- How is 6G technology envisioned to enhance or be utilized in various verticals, including autonomous driving, augmented and virtual reality, edge computing, emergency alerting, and smart cities?
- What advancements in localization and positioning will 6G need for network optimization of beam steering antennas and metasurfaces?

6G WG Charter (3)

- What are the potential privacy and security risks that 6G networks will need to address regarding massive data collection and processing, as well as the ethical and social impacts of emerging applications such as brain-computer interfaces and holographic communications?
- How does 6G ensure the security and privacy of users' data and identity in various scenarios, such as distributed ledger technologies, physical layer security, distributed AI/ML, visible light communication (VLC), THz bands, and quantum communication?
- How will 5G/6G networks support massive volume of mobile and IoT and XR devices with low-latency and seamless connectivity for near- and non-real time, trending toward real-time applications?

6G WG Meetings & Call for Participants

- Meeting schedule is Thursday's from 4-5 PM Eastern (same as previous cycle)
 - First meeting Thursday, April 4th
 - Initial meeting cadence will be every other week
- Please send an email to brian.k.daly@att.com, agosain@coe.northeastern.edu , and tac@fcc.gov to be added to the list of participants in the 6G WG, added to the meeting invites, and subscription to the working group email list
 - Be sure to include all three email addresses on your request
 - We can only add those who have been vetted by the FCC for TAC membership

Thank You

