

UNITED STATES OF AMERICA
 FEDERAL COMMUNICATIONS COMMISSION
 TECHNOLOGICAL ADVISORY COUNCIL MEETING
 THURSDAY, DECEMBER 8, 2022

The advisory committee met via video teleconference (MS Teams), at 10:00 AM Eastern time, Dean Brenner, Chair, presiding.

COMMITTEE MEMBERS PRESENT:

First Name	Last Name	Company Representing
Shahid	Ahmed	NTT LTD
Ranveer	Chandra	Microsoft
Bill	Check	NCTA
Lynn	Claudy	NAB
Brian	Daly	AT&T
Jeff	Foerster	Intel Corporation
Peter	Gammel	GlobalFoundries
Dick	Green	Liberty Global, Inc
Lisa	Guess	Ericsson North America
Dale	Hatfield	TCP, Univ of Colorado at Boulder
Mark	Hess	Comcast Corporation
Manish	Jindal	Charter Communications
Karri	Kuoppamaki	T-Mobile
Steve	Lanning	Viasat, Inc
Kaniz	Mahdi	VMWare
Dan	Mansergh	Apple
Lynn	Merrill	NTCA
Amit	Mukhopadhyah	Nokia
Madeleine	Noland	ATSC
Jesse	Russell	IncNetwork
Henning	Schulzrinne	SGE
Marvin	Sirbu	SGE
Ted	Solomon	NRTC
Charlie	Zhang	Samsung

SUMMARY OF FCC TECHNOLOGICAL ADVISORY COUNCIL MEETING – THURSDAY, JUNE 9, 2022

John	Peha	
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COMMISSION STAFF PRESENT:

First Name	Last Name	Title
Ronald	Repasi	Chief, Office of Engineering and Technology
Michael	Ha	Designated Federal Officer
Martin	Doczkat	Deputy Designated Federal Officer

SUMMARY:

The advisory committee meeting began at 10:00AM Eastern time, with welcome remarks from the Technological Advisory Council (TAC) Chair, Dean Brenner, who emphasized the importance of the TAC’s focus on 6G and emerging technologies in terms of U.S. leadership role in technological advancement, and set the landscape for the recommendations provided by the TAC’s four working groups: 6G, Emerging Technologies, Artificial Intelligence/Machine Learning (AI/ML), and Advanced Spectrum Sharing.

The TAC Chair’s remarks were followed by welcome remarks from OET Chief Ronald Repasi, expressing his appreciation of the work involved leading up to the final recommendations for the year, and the support within and across working groups to get there.

The OET Chief’s remarks were followed by welcoming remarks from the DFO Michael Ha and Deputy DFO Martin Doczkat, noting achievements of the working groups in providing their actionable recommendations for the year.

The Emerging Technologies Working Group largely refrained from recommending that the FCC take action in specific areas, rather it provided insights to watch as the technology areas identified in its charter continue to emerge. However, the WG did recommend that: ultra-wideband technology should be monitored closely while the FCC handles recent waiver requests; Sidelink could be deployed in the 4.9 GHz band (4940-4990 MHz) to support public safety; the FCC should examine whether the dramatic increase in optical links for inter satellite links in large LEO clusters require additional regulation; and it should explore whether free space optics can be encouraged as a means of rapid network restoration. The WG suggested focus areas for the future include non-terrestrial networks (NTN) for 5G/6G, internet restoration, and location services, augmented/virtual reality, reflective intelligent surfaces, advanced location services and new radar applications, e.g., use of 140 GHz for consumer applications.

The Artificial Intelligence/Machine Learning Working Group recommends that the FCC: create an “AI/ML and Data Analytics” Task Force; consider access to critical data sets that broadly support the exploration of AI/ML solutions; explore how use of AI tools could advance the technical and policy aspects of spectrum sharing; prepare the groundwork for automation of Dynamic Spectrum Sharing systems; prepare for the evolution in Network requirements driven by the advances in technology and usage patterns; study how network softwarization can be managed; and participate in emerging bodies

(standards and open-source) responsible for the software, physical infrastructure, and practices, that support today's networks. Regarding Safe Uses of AI: address concerns and risks related to the use of Artificial Intelligence, Machine Learning, and other Data Driven Algorithms; develop policies and practices that recognize changes to next generation of network architectures; and develop robust processes and practices within the FCC and across the Telecommunications ecosystem.

The Advanced Spectrum Sharing Working Group recommends the FCC and NTIA should work together to perform a detailed quantitative assessment to develop detailed methods to allow dynamic sharing opportunities considering geography, proximity to incumbents, protection of peer users, and whether a device is using a spectrum coordination system. The WG recommends the FCC establish more flexible processes for centralized spectrum management systems as they incorporate system enhancements and consider other options to ESC such as IIC. The WG recommends the FCC undertake a study of modernizing the Commission's licensing databases, and setting expectations when it comes to shared spectrum. The WG recommends the FCC consider how system virtualization impacts future shared spectrum frameworks. Further, the WG recommends the FCC facilitate coexistence at band edges. The WG recommends the FCC continue the development of propagation and interference models using real-world signal strength data to predict performance and interference, including how data could further the development of models. The WG recommends the FCC focus increased attention on determining metrics and promoting economic incentives for entities to voluntarily share spectrum, and continue to facilitate or emulate Coasian bargaining.

The 6G Working Group recommends the FCC focus on multi-vendor integration and interoperability in disaggregated O-RAN networks and securing the Open Fronthaul interface real time system from targeted attacks. The WG advises that for mmWave and Sub-THz systems, joint comms and sensing, large transmission bandwidth, indoor and personal area network deployments provide opportunities, while high mid-band value for deployment scenarios and very high path loss present challenges. Therefore, the WG recommends the FCC should focus on high directionality systems. The WG recommends the FCC should explore opportunities for 500MHz of mid-band spectrum in 7-24 GHz for 6G, considering existing sharing mechanisms, and consider 100-1000GHz spectrum bands for highly demanding use cases, e.g., immersive comms, cobots. The WG recommends the FCC consider the complexity of coordinating the heterogeneity of access between Space, Aerial, Terrestrial Integrated Networks. The WG recommends the FCC consider an application centric view of 6G with Multi-sensory and Immersive Communication use cases and emerging Key Value Metrics (KVI) beyond traditional metrics for 5G, including a focus on energy efficiency, sustainability, inclusion and deployment economics. The WG recommends the TAC should continue to understand the technology and application gap to capture what 6G promises to offer, and the FCC should continue monitoring ITU-R performance requirements analysis and WRC 23 proceedings and report out key contributions as part of 2023 TAC agenda. The WG advises that consolidation and convergence of 6G roadmaps and technology areas from various consortia and alliances will be key to keep abreast of Industry consensus as 3GPP advances beyond 5G. The WG proposed future work to consider: 5G Advanced Evolution Towards 6G, 6G Research & Standards Progress, Spectrum related - WRC '23, Compute and Communication convergence at the network Edge, Hybrid network approach with NTN (LEO, MEO, GEO) and Wi-Fi, Backhaul, mid-haul, repeaters, Wi-Fi Offload, and Update on Use Cases & Applications – How is 6G technology envisioned to enhance or be utilized in autonomous driving, edge computing, emergency alerting, and smart city technology deployments?

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The advisory committee meeting adjourned at 3:00PM Eastern time.

Video Link: <https://www.fcc.gov/news-events/events/2022/12/technological-advisory-council-meeting-december-8-2022>

Meeting Presentation Slides: https://www.fcc.gov/sites/default/files/fcc_tac_meeting_slides_12-08-2022-final.pdf

Recommendations to the Federal Communications Commission Based on Lessons Learned from CBRS: https://www.fcc.gov/sites/default/files/recommendations_to_the_federal_communications_commission_based_on_lessons_learned_from_cbcs.pdf

AGENDA:

10am – 10:30am	Introduction and Opening Remarks <ul style="list-style-type: none">• Welcome Message (TAC Chair)• Opening Remarks by OET Chief• DFO/Deputy DFO Remarks• Member Introduction/Roll Call
10:30am – 11:15am	Emerging Technologies WG Presentation
11:15am – 12:00pm	AI/ML WG Presentation
12:00pm – 1pm	Lunch Break
1pm – 1:45pm	Advanced Spectrum Sharing WG Presentation
1:45pm – 2:30pm	6G WG Presentation
2:30pm – 2:45pm	Closing Remarks
2:45pm	Adjourned

I, Dean Brenner, the Chair of Technological Advisory Council, state that the above minutes are true and accurate, to the best of my knowledge and belief. Additional details of the meeting also may be found in the recorded webcast and meeting presentation slides.

SIGNED, COMMITTEE CHAIR

Dean Brenner

Date