

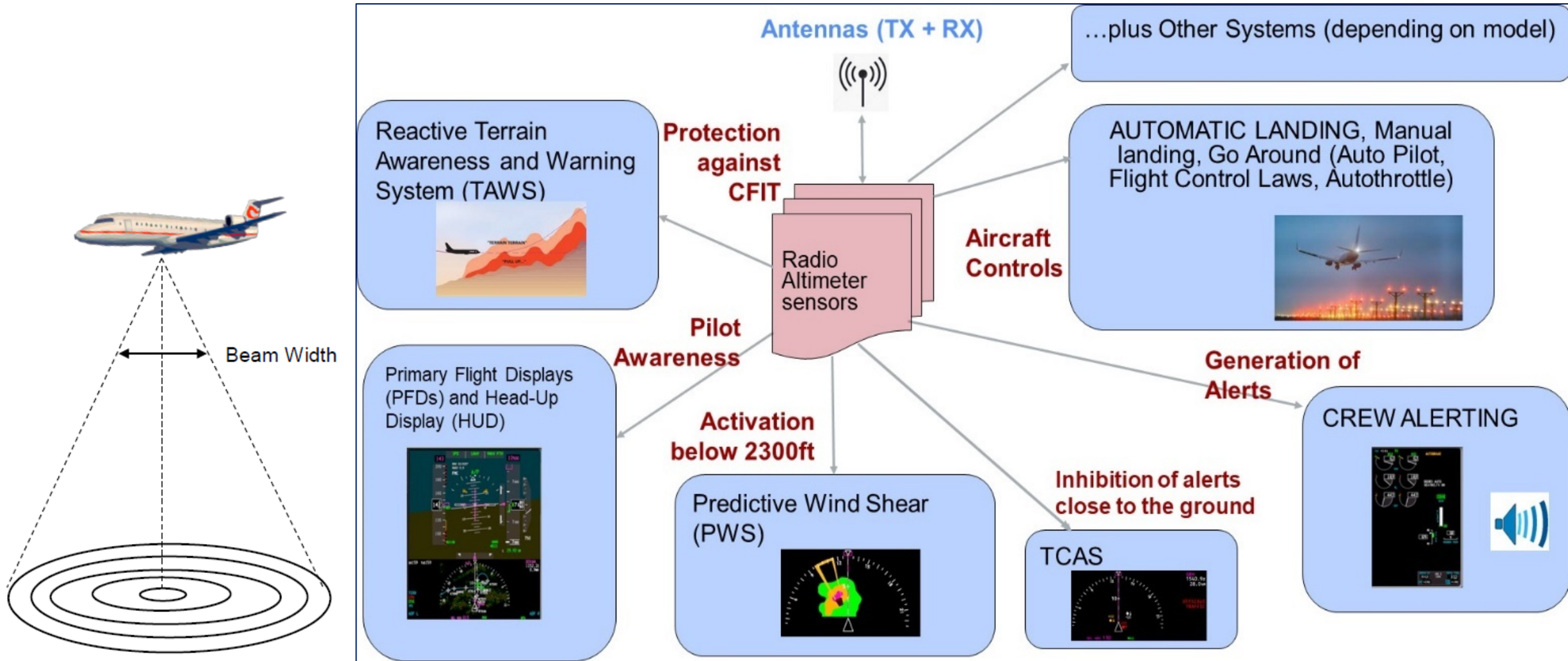


**MIDANPIRG Communication, Navigation and Surveillance Sub-Group**  
**Eleventh Meeting (CNS SG/11)**  
*(Muscat, Oman, 16-19 May 2022)*

**Summary on the progress made by RADALT Action Group (AG)**

**Presented by CITC – Saudi Arabia & Rapporteur of AG**

# Radar Altimeters Measure Height *Above Ground Level* (AGL) and Feed into a Number of Safety Critical Systems



# Radio Altimeters Band & Concerns raised



- The band 4 200-4 400 MHz (4.2-4.4 GHz) is currently allocated to the aeronautical radionavigation service (ARNS) and is reserved for radio altimeters installed onboard aircraft and for the associated transponders on the ground by Radio Regulations footnote No. 5.438.
- Any compatibility analysis between radio altimeters and other systems must utilize protection criteria for the maximum acceptable degradation for a radio altimeter. There are three primary electromagnetic interference coupling mechanisms between radio altimeters and interfering signals from other transmitters: receiver overload, desensitization, and false altitude generation. Also, both out-of-band and in-band interference can affect a radio altimeter performance.
- ICAO has received studies from several States and organizations regarding the interference potential to radio altimeters. These studies generally conclude that some radio altimeters will be impacted if high power of new cellular broadband technologies (such as 5G) are deployed in the frequency bands close to the radio altimeter's frequencies of operation (4.2-4.4 GHz). Several States have already implemented temporary technical, regulatory and operational mitigations on new 5G systems in order to protect radio altimeters while more permanent solutions are being devised.

The MIDANPIRG/19 meeting held in Riyadh, Saudi Arabia from 14 to 17 February 2022 was appraised of ICAO State Letter (dated 25 March 2021) on the potential impact of the 5G on Radio Altimeter in the MID Region. The meeting also acknowledged the safety concerns and potential operational impacts of the 5G & Radio Altimeter interferences. Based on WP/62 presented by IATA; and WP/69 and PPT/71 presented by Saudi Arabia, the meeting agreed to:

- update the Frequency Management Working Group Terms of Reference to include tasks related to the issue of 5G & Radio Altimeter interferences.
- establish Radio Altimeter (RADALT) Action Group to develop guidance material to protect the aircraft operations from potential Radio Altimeter interference
- task the CNS SG to coordinate with the RASG-MID relevant subsidiary bodies the 5G Safeguarding measures around the aerodromes to protect RADALT from any interference.

## **MIDANPIRG DECISION 19/23: RADALT ACTION GROUP**

*That, the Radio Altimeter (RADALT) Action Group be:*

*a) established to develop guidance material to protect the aircraft operations from potential Radio Altimeter interference associated with the deployment of cellular broadband/5G ground infrastructure near the bands used by RADALT; and*

*b) composed of:*

*Ridha Dridi, (Saudi Arabia, Rapporteur);*

*Khaled Alhazmi (Saudi Arabia)*

*Fares A. Alzahrani (Saudi Arabia)*

*Abdullaziz Hussain (Saudi Arabia)*

*Mohammed Kamal (Egypt);*

*Nevin Askar (Jordan);*

*Talal Al Jasmi (UAE);*

*Jehad Faqir (IATA);*

*Hecham Bennani (ACAO);*

*Gerlof E Osinga (Boeing)*

*ICAO MID RO/CNS*

## **MIDANPIRG DECISION 19/24: 5G SAFEGUARDING MEASURES**

*That, the CNS SG coordinate with the RASG-MID relevant subsidiary bodies the 5G Safeguarding measures around the aerodromes to protect RADALT from any interference.*



# Overview on RADALT AG' activities

- Action Groups conducted five (5) meetings during the period (16/3 - 0/5/2022).
- RADALT AG agreed to disseminate briefing material on the Radio Altimeter and 5G rollout developed by the ICAO Frequency Spectrum Management Panel (MID SL AN7/5.6 & ME3 – 22/045 dated 20 March 2022), to assist States carrying out the necessary analyses of their operations and developing the necessary mitigation mechanisms to avoid a decrease in safety.
- RADALT Action Group agreed on the contents of guidance material to protect the aircraft operations from potential Radio Altimeter interference associated with the deployment of cellular broadband/5G.
- RADALT Action Group agreed to assign leader and contributors for drafting of each chapter of guidance material and task the rapporteur to contribute and consolidate all the proposals into one document.

# Contents of 5G GM

- Background
- Chapter 1 – Overview on 5 G and frequency band allocation:  
*Providing information on ITU with a summary on the band of concern and its allocation at global and regional levels*
- Chapter 2 - Potential impacts of 5G on Radio Altimeters.  
*Providing information on radio altimeters types, characteristics, technical concerns, potential operational hazards.*

- Chapter 3 - Safeguarding measures adopted at regional and global levels for current and future use of IMT networks.

*Providing information on Safeguarding measures that were adopted by certain States, with a summary on the activities conducted by Specialized organization (RTCA, EUROCAE, IATA. This chapter will include a summary of measures taken by MID States (e.g. Oman, Saudi Arabia, and UAE)*

- Chapter 4 - Methodologies for defining safeguarding measures for aerodromes & heliports.

*Providing recommendations on Safeguarding measures that can be adopted by MID States and the processes that can be used to set protection areas around airports and heliports.*



- Appendices

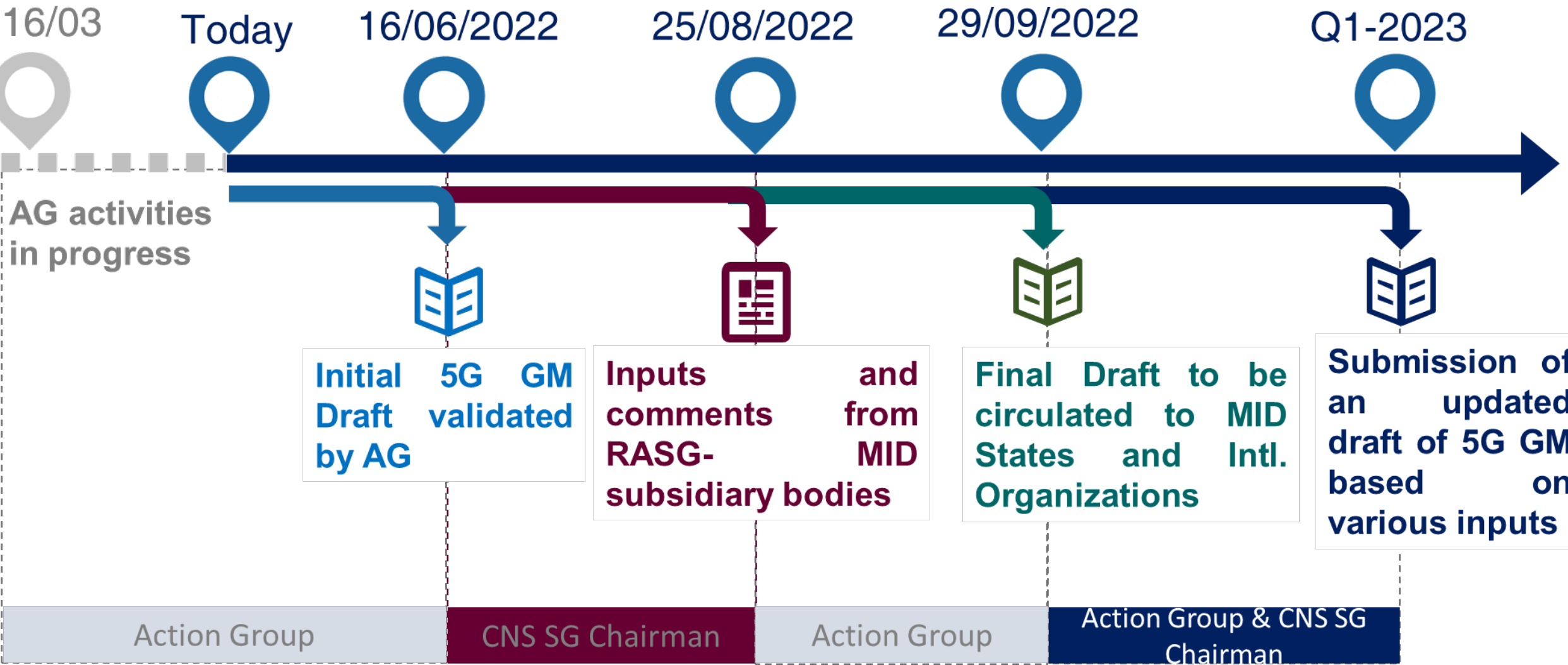
*Providing additional information on the French methodology that is used to identify protection areas around airports serving IFR operations*

*Providing details on ITU regions and allocations of 5G bands with their distribution on the current and future applications.*

*Providing information on the formula used for the calculation of free space and path loss for the SiS related to 5G Ground Stations.*

*Additional appendices may be identified during the finalization of 5G GM.*

# Proposal for timeframe to finalize 5G GM



## ACTION BY THE MEETING:

The meeting invited to:

- a) take note of the information provided and the progress made by AG in the development of 5G GM.
- b) discuss the proposed timeframe to finalize the contents of the initial draft of 5G GM;
- c) task CNS SG chairman and ICAO Secretariat to:
  - 1) circulate the final draft of 5G GM to all CNS SG members for review and update considering the defined timeframe;
  - 2) coordinate with the RASG-MID relevant subsidiary bodies to review the proposed 5G Safeguarding measures around the aerodromes to protect RADALT from any interference;
  - 3) provide AG with the inputs and views of RASG-MID relevant subsidiary bodies.
  - 4) circulate the final draft to States for consideration in the deployment of 5G networks
- d) Invite AG to update the 5G GM considering the last development at global and regional and present an amended copy during the upcoming meeting of CNS SG.