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# INTERNATIONAL CIVIL AVIATION ORGANIZATION

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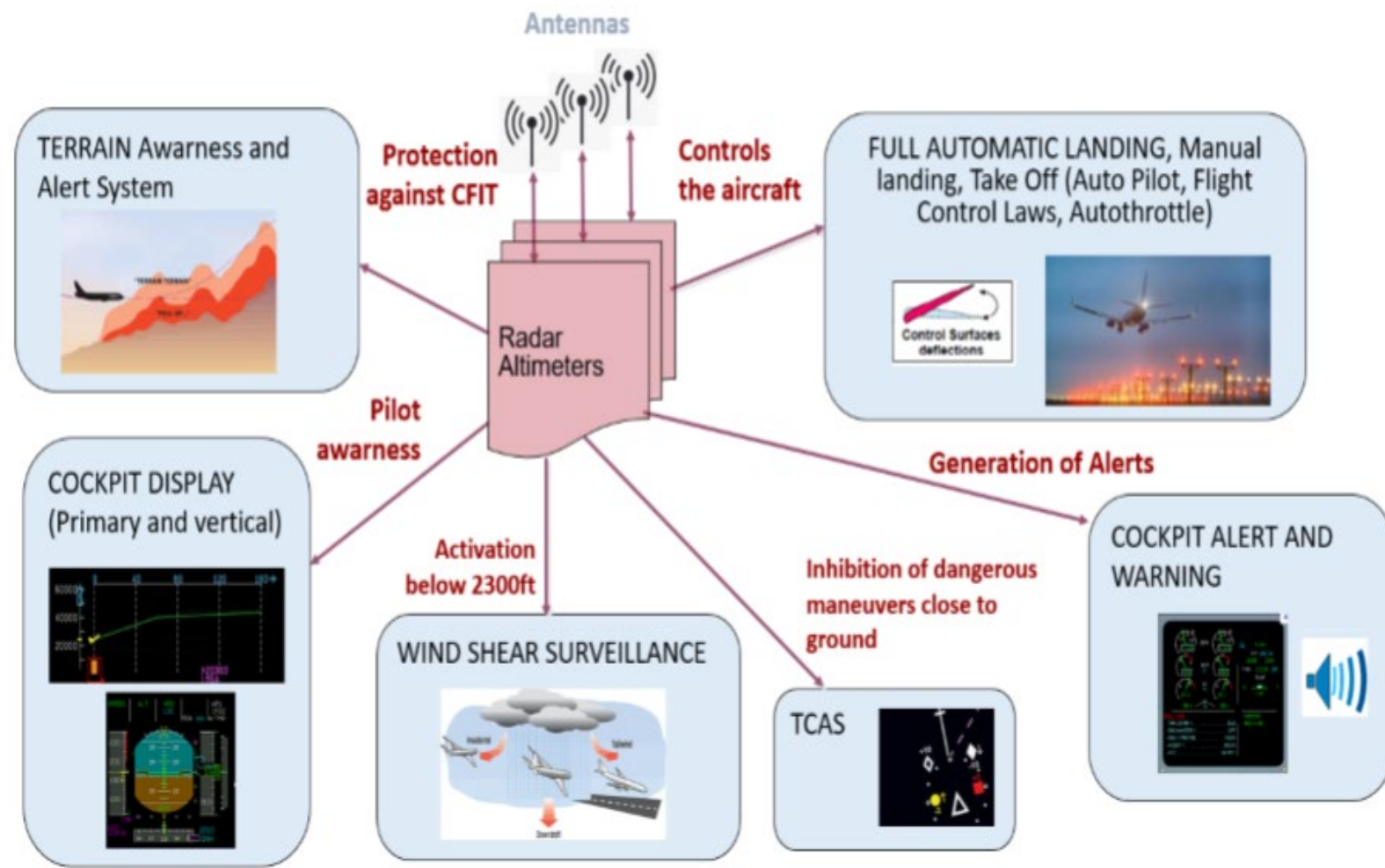


# On-line Workshop for the NAM/CAR/SAM Regions on Aviation Risk Mitigation Measures due to the Implementation of 5G Frequencies

By Mayda Ávila, Regional Officer, Communications, Navigation and  
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# Critical Roles of Aircraft Radio Altimeters



- The implementation of the 5G can be a serious aviation safety risk if States do not implement mitigation measures, with the potential for catastrophic consequences:
  - the cellular broadband/5G services in radio frequency bands near the bands used by radio altimeters;
  - “If not properly mitigated, harmful interference to the function of the radio altimeter during any phase of flight may pose a serious safety risk to passengers, crew and people on the ground.” (ICAO);
  - an undetected failure of the radio altimeter can lead to catastrophic results for people on board the aircraft and on the ground; and false alarms have the potential to undermine trust in the avionics systems.





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## 5G interference into radio altimeters is a global problem:

1. interference to radio altimeters is a public safety issue;
2. interference can cause numerous aircraft safety hazards;
3. restriction of deployment and provision of mitigations along flight paths and airports will help significantly;
4. national aviation and telecommunications regulators need to work together;
5. States' support is critical to maintaining public safety.



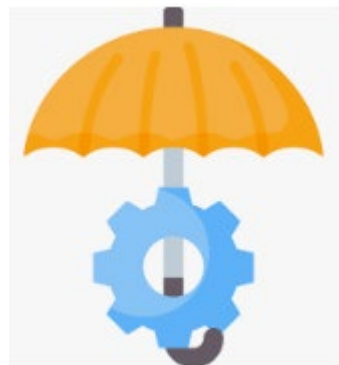
- If not mitigated, the following negative impacts could be faced:
  - limitation/suspension of precision approach and landing capabilities – This limitation/suspension will reduce airlines access to airports in low visibility conditions;
  - limitation/suspension of night operations, particularly for airports with challenging terrain – The radio altimeter is critical for the terrain awareness and warning system, which is mandatory for all air transport aircraft;
  - issuance of State regulations mandating retrofits and re-certification of aircraft radio altimeter and other related functions.



**Mitigation  
measures  
implemented in  
the CAR/SAM  
regions due to the  
installation of 5G  
technology  
equipment**

ICAO indicated again that all States must have coordinated internally with the different organizations (airports, spectrum regulators, telecommunications companies, among others) with the following objectives:

1. performing an analysis of operations at different airports due to the implementation of 5G technology;
2. working jointly with its national organizations that manage the assignment of frequencies;
3. working jointly with the local telecommunications companies responsible for the implementation of 5G technology and in the same way with the air operators;
4. implementing the necessary palliative measures as soon as possible.



**Mitigation  
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States establish frequency separation between terrestrial mobile services on frequencies allocated in the State for 5G and radio altimeters to ensure that there will be no interference between the operations of the two services.



# A41 Outcome related to ICAO policy on radio frequency spectrum matter

## The Technical Commission

- Requested ICAO and its Member States to continue taking necessary measures and efforts to ensure that radio altimeters and other aeronautical systems are free from harmful interference, including implementation of mitigation measures, sharing of best practices, as well as development of relevant provisions and guidance.
- Recognizing the criticality of radio frequency spectrum, encouraged States and regions to actively participate in spectrum defence activities and to endorse the ICAO position for the ITU WRC-23. (State letter E 3/5-21/37).

**A41 adopted Resolution 30/2: Support of the ICAO policy on radio frequency spectrum matters**, which enhances Assembly Resolution A38-6 adding the following statement in the new resolution.

*2. Urges Member States to consider, as a priority, public and aviation safety when deciding how to enable new or additional services, and to consult with aviation safety regulators, subject matter experts and airspace users, to provide all necessary considerations and to establish regulatory measures to ensure that incumbent aviation systems and services are free from harmful interference.*

# Recommendations

1. Carry out risk analysis at the different airports, especially at international airports.
2. Carry out an approach with the airlines to learn about their fleet and how the implementation of 5G technology could affect their operations.
3. Carry out a rapprochement with the national providers of 5G technology and coordinate the implementation with them, preventing any possible conflict with aviation operations.
4. Implement all the corresponding mitigation measures.
5. Any other corresponding activity

## Recommendations

States implement national monitoring mechanisms to ensure:

1. a correct analysis of the impact of the implementation of 5G technology at airports;
2. implementation of mitigating measures, according to the analysis carried out; and
3. establishment of a mechanism for continuous monitoring of the implemented actions.



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Thank You!