

ICAO APAC RADIO NAVIGATION SYMPOSIUM

GNSS RFI: Collectively Bridging Gaps and Shaping the Path Forward

7th – 9th April 2025 New Delhi, India



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ONSS RFI: Collectively Bridging
7th – 9th April 2022



GNSS RFI Collectively Bridging Gaps

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GNSS RFI. Collection
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GNSS RFI: Collectively Bridging

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Collins RASA mechanism, what if the timing) but the spoofing signal still

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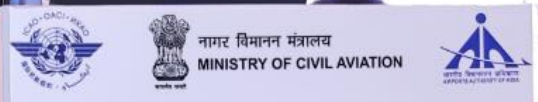
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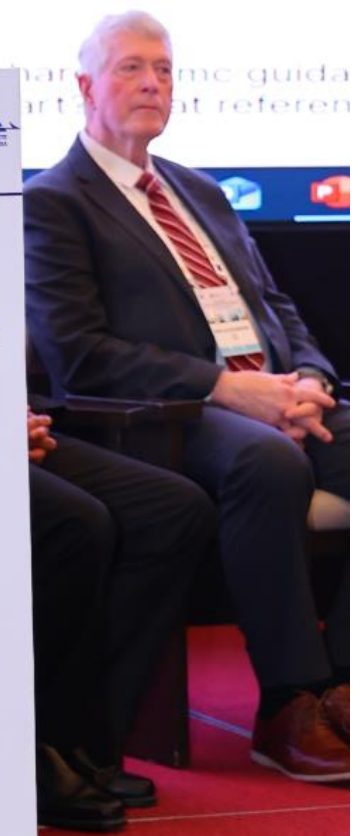
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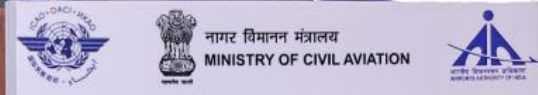
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ICAO APAC Radio Navigation Symposium

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Q&A

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Collins RASA mechanism, what if the clock is not affected (counterfeit transmission provides same accurate timing) but the spoofing signal still affect P & N?

Popular 61

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There a move toward creating a global RFI incident database that airline industries, ANSP and regulators can access and contribute to?

Latest question

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database that airline industries, ANSP and regulator's

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Latest question

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alarm comes, once aircraft came under adsb spoofing. If any data has
Latest question

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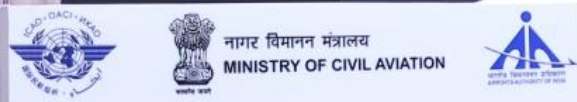
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Head of the
Space Strategic &
Sustainability
Issues Division
(SSSI), ITU

With over 25 years of experience in satellite communication and regulatory affairs, the speaker has been a key figure in the development of space-related policies and standards. He has led various international initiatives and is currently working on the development of a global regulatory framework for space-based services. The speaker will discuss the challenges and opportunities in the space industry and the role of the ITU in addressing these issues.



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Ciccorossi



Head of the
Space Strategic &
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With over 25 years of experience in satellite communications and regulations at international level, Mr. Ciccorossi is the Head of the Space Strategy and Sustainability Division at the ITU Radiocommunications Bureau. Mr. Ciccorossi advises ITU Member States, Sectors Members and ITU intersectoral groups on technical regulatory matters of space services, including those related to space sustainability activities in the context of ITU and the Radiocommunication Bureau. Mr. Ciccorossi advises ITU Member States, Sectors Members and ITU intersectoral groups on technical regulatory matters of space services, including those related to space sustainability activities in the context of ITU and the Radiocommunication Bureau. He holds the degree of engineer in electronics from the National University of Technology (UTN) in Buenos Aires, an Executive Certificate in Management and Leadership from the Massachusetts Institute of Technology in the US, and has studied satellite communications and spacecraft design at the University of Surrey in the UK.



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Head of the
Space Strategic &
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GNSS RFI situation
awareness and
cooperation- ROK

GNSS interference and
response of ATC & Pilots-
Pakistan



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DGCA/59 Conference

Cebu, Philippines, 14 to 18 October 2024

Agenda Item 4: Air Navigation



GNSS Spoofing in Oceanic Airspace- Japan

GNSS RFI situation awareness and cooperation- ROK

GNSS interference and response of ATC & Pilots-



Thailand's Strategy To Address Global Navigation Satellite System Radio Frequency Interference (GNSS RFI)



Global Navigation Satellite System Radio Frequency Interference (GNSS RFI)- IATA



Rationalization Of Navigation Infrastructure- IATA



GNSS Spoofing in Oceanic Airspace- Japan



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GNSS Spoofing in Oceanic Airspace- Japan







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- PICS:
- ❑ Space Sector and The Current Situation of harmful interference to RNSS
 - ❑ Procedure to follow in case of harmful interference
 - ❑ Key Binding Regulatory Provisions to protect RNSS
 - ❑ ITU latest provisions



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ATSEP's Role in
Detecting, Diagnosing, and Mitigating GNSS RFI for a
Human-Centric ATM System

Dr. Chilaka Mahesh

IFATSEA



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IFATSEA









Right Guidance and Control Issues:



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7. Inconsistent or misleading aircraft position, altitude, and speed data on navigation displays or EFBs.

Flight Guidance and Control Issues:



→ Inconsistent flight guidance, divergence, uncommanded deviations from ATIS.

airspace infringement, instrument e.



Loss of GNSS based waypoint navigation, RNAV, and RNP capabilities, including RNP AR approaches.

Inconsistent or misleading aircraft position, altitude, and speed data on navigation displays or FFBs.

Surveillance and



- ▶ Loss of
- ▶ Loss of
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- ▶ Loss of

Guidance and Control Issues:

- ▶ Inconsistent flight guidance, causing route deviation, uncommanded deviations, from ATC

- ▶ Loss of flight guidance, causing route deviation, from ATC

Operational and



- ▶ Loss of
- ▶ Loss of
- ▶ Loss of
- ▶ Loss of



- Loss of GNSS-based waypoint navigation, RNAV, and RNP capabilities, including RNP-AR approaches.
- Inconsistent or misleading aircraft position, altitude, and speed data on navigation displays or EFBs.

Guidance and Control Issues:

- Incomplete flight guidance, causing reduced situational awareness, uncommanded deviations from ATC clearances.
- Inconsistent or misleading aircraft position, altitude, and speed data on navigation displays or EFBs.

Surveillance and Safety System Disruptions



- Loss or corruption of ADS-B functionality, reducing traffic and terrain awareness.
- Malfunctioning TAWS, leading to spurious "UP" alerts and uncoordinated climbs.
- Loss of ACAS (Airborne Collision Avoidance System), increasing collision risks.

Operational and Safety Risks:



- Increased workload for ATC and flight crews.
- Reduced airspace efficiency, capacity, and operational delays.
- Elevated safety risks due to system degradation and misleading alerts.



VR approach
consistent or misleading data
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navigation data, or 13 b.



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NP-AR approaches,
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Inconsistent or misleading information
position, altitude, and speed data on
navigation displays or charts

Guidance and Control Issues:

- Inconsistent or misleading information
position, altitude, and speed data on
navigation displays or charts



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any GNSS RFI monitoring/detection tool?

tentional or spoofing of GNSS signals?

templates 39°C Haze



developed any GNSS RFI monitoring/detection tool?

adding intentional or spoofing of GNSS signals?



GNSS RFI monitoring/de **Highlight question** tool?

n real time by your independent system.





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Mr. Ho Wee Sin



Dy. Director (ATM)
Dy. Director
(Standards &
Capability
Development),
CAAS, Singapore

Mr. Ho Wee Sin is a telecommunication engineer in the Civil Aviation Authority of Singapore since 2004. He has deep knowledge in surveillance technology, including ADS-B. He has been active in various ADS-B forum since 2007 and one of the key personnel to operationalize ADS-B in Singapore. He is currently a member of the ICAO Surveillance Panel and one of the co chairs for the ICAO Asia Pacific Surveillance ICG.



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Mr. Ho Wee Sin



Dy. Director (ATM)
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