



# International Consortium for Telemetry Spectrum



## Addressing Telemetry Spectrum Encroachment

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ETTC 2023 Toulouse , France



# Agenda



- Introduction
- An International issue
- 2007 A“Banner Year“ for AMT
- Current Threats and Challenges
- Telemetry Spectrum Protection and the ICTS
- Conclusion
- Q&A

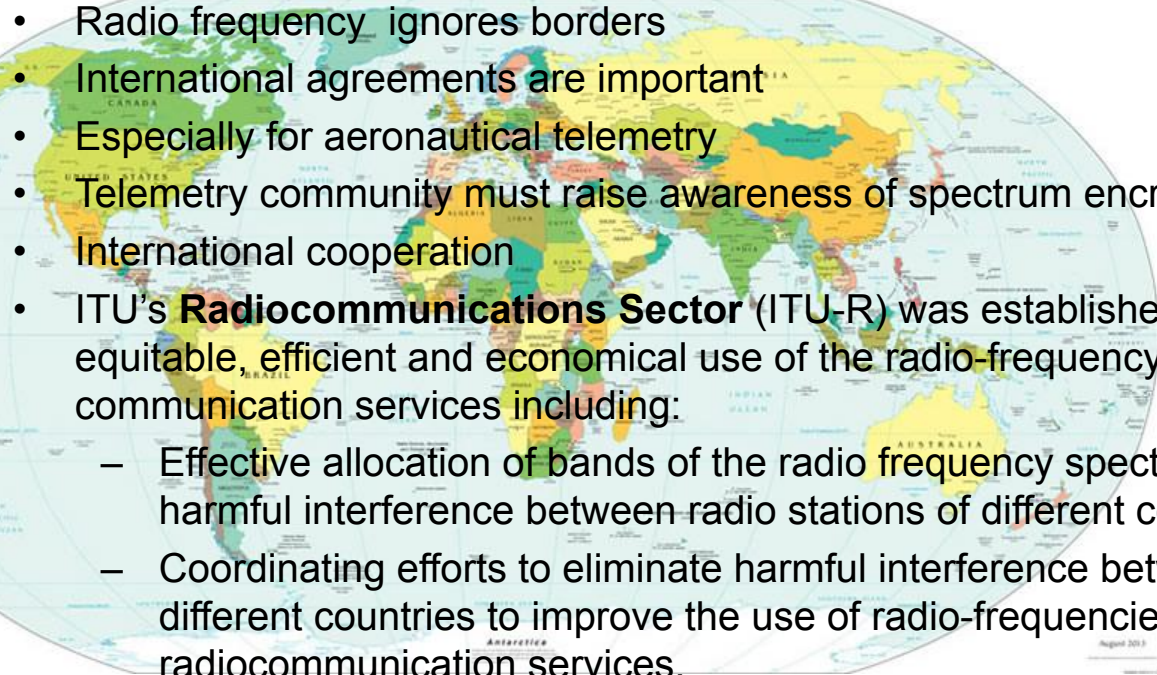


# Introduction



- Aeronautical Mobile Telemetry (AMT) forms the lifeline for many scientific and test activities around the world.
- Users like, commercial aircraft testing, scientific research, military/weapon testing, atmospheric research, and many other industries are reliant on AMT and the spectrum it requires
- AMT is very dependent on the availability of adequate RF spectrum
- Especially in the bands below 6 GHz
- This part of spectrum is a rapidly being consumed by commercial wireless communications (cell phones, broadband Wi-Fi, ...)
- => affecting it's availability for scientific and test activities all over the world

Political Map of the World, August 2013

- 
- Radio frequency ignores borders
  - International agreements are important
  - Especially for aeronautical telemetry
  - Telemetry community must raise awareness of spectrum encroachment
  - International cooperation
  - ITU's **Radiocommunications Sector** (ITU-R) was established to ensure rational, equitable, efficient and economical use of the radio-frequency spectrum by all radio communication services including:
    - Effective allocation of bands of the radio frequency spectrum in order to avoid harmful interference between radio stations of different countries
    - Coordinating efforts to eliminate harmful interference between radio stations of different countries to improve the use of radio-frequencies for radiocommunication services.

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- Region 1 : Africa, Europe, Russia
  - Region 2 : North and South America
  - Region 3 : Asia, Pacific , Australia
  - Allocations are described according to the various Regions in the Radio Regulations



# World Radio Communication Conference



- Every 3 or 4 years
- Review and revise international radio Regulations
- Revisions based on an agenda : ITU-R Council
- Defined at previous conference : 4 to 6 years in advance
- Final agenda : 2 years before the WRC
- Majority of Member States



# World Radio Communication Conference



- Terms of ITU Constitution , WRC can :
  - Revise the Radio Regulations and any associated frequency assignment and allotment plans
  - Address any radio communication matters of worldwide character
  - Instruct the Radio Regulations Board , the Radiocommunication Bureau, review their activities
  - Determine questions for study by the Radiocommunication Assembly and its Study Groups in preparation for future Radiocommunication Conferences



# World Radio Communication Conference



- Based on contributions from member administrations, Radiocommunication Study Groups and their associated Working Parties, the Conference Preparatory Meeting (CPM) prepare a consolidated report to be used in support of the work of the conferences.
- Per the ITU definition, telemetry (Aeronautical Mobile Telemetry or AMT) : a particular use of the mobile service for the transmission from an aircraft station of results of measurements made onboard the aircraft.
- At the WRC, AMT is represented by Study Group 5 (Terrestrial Services), Working Party 5B (Maritime Mobile Service including the Global Maritime Distress and Safety System (GMDSS); the Aeronautical Mobile Service and the Radio Determination Service).





# World Radio Communication Conference



- At the WRC each administration has one vote.
- To facilitate the decision process the WRC recognizes six regional organizations to prepare, discuss, and form positions
- Region 1 (Europe, Africa, Russia ) : CEPT, ATU, ASMG, RCC
- Region 2 (North and South America) : CITELE.
- Region 3 : Asia , Pacific Australia : APT
- Each nation/administration uses its associated regional organization to prepare positional reports and studies in support of the WRC.



Asia-Pacific  
Telecommunity (APT)



Arab Spectrum  
Management Group  
(ASMG)



African  
Telecommunications Union  
(ATU)



European Conference of Postal  
and Telecommunications  
Administrations (CEPT)



Inter-American  
Telecommunication  
Commission (CITEL)



Regional Commonwealth  
in the Field of  
Communications (RCC)



# World Radio Communication Conference



- We, ICTS, must encourage the scientific communities to engage within both their government's communications agencies, their regional alliance, and the ITU-R's Working Parties to protect AMT interests.
- Without this advocacy, member administrators will not be able to make informed decisions that accurately represent the telemetry interests (commercial, scientific, government) of their countries and regions.



# 2007- A “Banner Year“ for AMT



- At the 2007 WRC, worldwide telemetry users secured a “global” AMT band.
- After a long fought effort to secure additional spectrum for telemetry that started in 1993, the global scientific community was recognized for its economic and scientific value and additional allocations were approved.
- As one of the outcomes to Agenda Item 1.5 at the WRC in 2007 the spectrum from 5091 MHz to 5150 MHz was allocated to AMT services.
- WRC-07 article 5.444B adds the use of the band 5091-5150 MHz for aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution 418 (WRC-07).
- This was a big win for the international scientific and aeronautical communities where telemetry transmission across international borders can be very confusing and regulation bound. With this allocation, the ITU-R has recognized this issue and has made AM(R)S (which includes AMT) primary in this band



# 2007- A “Banner Year“ for AMT



- Scientific, commercial, and government flight test communities are highly encouraged to rapidly make use of this band.
- It can help solved many of the regulatory and equipment provisioning issues facing a mobile test team that requires access to multiple locations in different countries.
- Many telemetry vendors recognize this and are now developing and producing transmitters, receivers, and antenna to utilize this band.
- The ITU-R, serving to ensure efficient and economical use of the spectrum by all radiocommunication services, is also very sensitive to other user’s needs (broadband, cell phones) which are actively seeking additional spectrum allocations.
- If the telemetry community fails to occupy this band, they risk it being reallocated at future WRCs to the benefit of other users.
- The community needs to protect its investment.



# Current Threats and Challenges



- World Radiocommunication Conference 2019 : from 28<sup>th</sup> of October to November 22nd, in Sharm El-Sheikh, Egypt
- The Conference was attended by 3000-some delegates from nations around the world.
- The Conference identified :
  - over 15 GHz of globally harmonized millimeter wave spectrum for 5G
  - spectrum for high-altitude platform stations (“HAPS”)
  - spectrum for constellations of hundreds or even thousands of new satellites
  - spectrum for earth stations in motion communicating from aircraft
  - maritime vessels and vehicles on land with satellites in geostationary orbit
  - spectrum for wireless access systems, including radio local area networks.
- The Conference expanded
  - coverage of the Global Maritime Distress and Safety System in Polar regions
  - improved flight tracking with an updated Global Aeronautical Distress and Safety System



# Current Threats and Challenges



- No items on the agenda dealing expressly with Aeronautical Mobile Telemetry
- Recommendation (ITU-R M. 2122) was approved early last year, focuses on the band 5150-5250 MHz in ITU Region 1 (Europe, Africa, and the Middle East), as well as in Brazil.
- Care was taken during the work on the document to ensure that it not compromise long-standing ITU-R Recommendation M. 1459 which continues to provide important protection for AMT in other parts of the world and other spectrum ranges.
- WRC-19 adopted an ambitious provisional agenda for the next Conference in 2023
- Items include :
  - measures to address protection of the aeronautical mobile service in the band 4800-4990 MHz
  - possible identification of additional spectrum in the 3 and 6 GHz ranges for international mobile telephony
  - development of regulatory provisions to facilitate communication for sub-orbital vehicles
  - new allocations for the aeronautical mobile service.



## Telemetry spectrum Protection and ICTS



- The International Consortium for Telemetry Spectrum strives to inform the international telemetering community of vital issues that we all need to monitor and alert members as needed to preserve this critical scientific capability.
- ICTS monitors and reports on regional and international telecommunications regulation and policy activities that could affect this community.
- If you develop, use or rely on radio frequency (RF) telemetry, you should engage in the development of these international regulations and policy decisions that could affect you locally.
- The ICTS was formed in 1999 and is chartered under the sponsorship of the International Foundation for Telemetry (IFT).
- The IFT is a non-profit organization dedicated to serving the professional and technical interests of the telemetering community.



# Telemetry spectrum Protection and ICTS



- Over the past few years, several factors within and external to the telemetering community have resulted in a change in the way the electromagnetic spectrum is viewed.
- These factors include:
  - Commercial RF spectrum utilization is increasing rapidly and this trend will continue
  - Frequency bands used for telemetry continue to be at risk of reallocation and interference
  - Telemetry data rates are increasing, thereby increasing the RF bandwidth needed
- We are caught in the midst of these trends as we seek to keep pace with the extraordinary growth in telemetry data being required of test programs
- The purpose of the ICTS is to establish an international information exchange of telemetry practitioners to promote and defend the benefits of electromagnetic spectrum utilization for scientific telemetering applications.
- In this endeavor, the main objective of the ICTS is to create a forum for information exchange on potential telemetry spectrum issues





# Telemetry spectrum Protection and ICTS



- We, the telemetry community, need to better inform national, regional, and international spectrum managers of the importance of telemetry to their economy and security
- ICTS seeks to inform and invite open participation in the group to all telemetry practitioners, including government, industry, academia, etc.. by sharing information on the use, research, and development of new technologies for improving the use of telemetry spectrum
- ICTS seeks to prepare members for World Radio-communications Council (WRC) agenda items affecting the telemetry community
- ICTS attends and support the European Test and Telemetry Conference (location rotates between France and Germany) and the International Telemetry Conference (USA).
- These Conferences will showcase original technical papers and innovation ideas in test, telemetry, telecontrol, instrumentation and recording technologies for industrial, automotive, scientific, aerospace, space, naval and military applications.



## Telemetry spectrum Protection and ICTS



- ICTS encourages participation from the general population in both attendance and presentations related to AMT spectrum.
- Membership is not required to participate
- ICTS is available to help
- ICTS has points of contact in many nations who are willing to answer questions, provide information, and develop presentations to assist the international telemetry community.
- Through ICTS connections, we can put you in touch with subject matter experts and a wealth of library information on many aspects of telemetry.



# Telemetry spectrum Protection and ICTS



- Next WRC :
- Any new threats ?





# Conclusion



- Contact us :
  - via email [ICTS@telemetryspectrum.org](mailto:ICTS@telemetryspectrum.org)
  - visit our website at [www.telemetryspectrum.org](http://www.telemetryspectrum.org).



# Conclusion



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## Welcome to the "protectors" of Telemetry Spectrum

The International Consortium for Telemetry Spectrum (ICTS) is an international group of telemetry practitioners whose main objective is to ensure the future availability of electromagnetic spectrum for telemetering.

The ICTS is dedicated to the promotion and stimulation of technical growth in telemetering and its allied arts and sciences. Learn about and contribute to telemetry advancement. [More](#)

### Upcoming Events

Spring: ICTS Meeting at ETTTC (15-17 June, 2021, Toulouse (France)

Fall; Annual ICTS Meeting at ITC (15-18 October, 2021, Las Vegas (USA)

Congratulations to our new 2021/2022 Officers- Mr. Christian Herbepin (Chairman), Mr. Scott Hoschar (Vice Chairman), and Mr. Tim Chalfant (Secretary). Our 2021/2022 Regional Coordinators are Mr. Luc Falga (Region 1- Europe/Africa), Mr. Guy Williams (North and South America), and Mr. Jamie Presser (Asia and Oceania).

Interested in serving the international telemetry community? Concerned about WRC-23 and preserving adequate RF spectrum for scientific telemetry? contact us ([ICTS@telemetryspectrum.org](mailto:ICTS@telemetryspectrum.org))!



# Conclusion



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- [ICTS By-Laws](#)
- [ICST Charter](#)

## ICTS 2020 Proceedings

- [Spring ICTS Newsletter](#)
- [Fall Business Meeting Minutes](#)

## ICTS 2019 Proceedings

- [Business Meeting Minutes](#)
- [ICTS Annual Report to the IFT](#)
- [Spring ICTS Newsletter](#)
- [Region 1 \(Europe/Africa\) Report](#)
- [Region 2 \(Americas\) Report](#)
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- [Economic Impact of Telemetry Spectrum](#)

## ICTS 2018 Proceedings

- [40th ICTS General Session \(Nuremberg\) Agenda](#)

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Region 3 (Asia/Pacific): Jamie Presser  
[region3@telemetryspectrum.org](mailto:region3@telemetryspectrum.org)



# Conclusion



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- Our silence can be deadly !
  - The ICTS stands ready to help and serve the international telemetering communities to become loud!