



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY

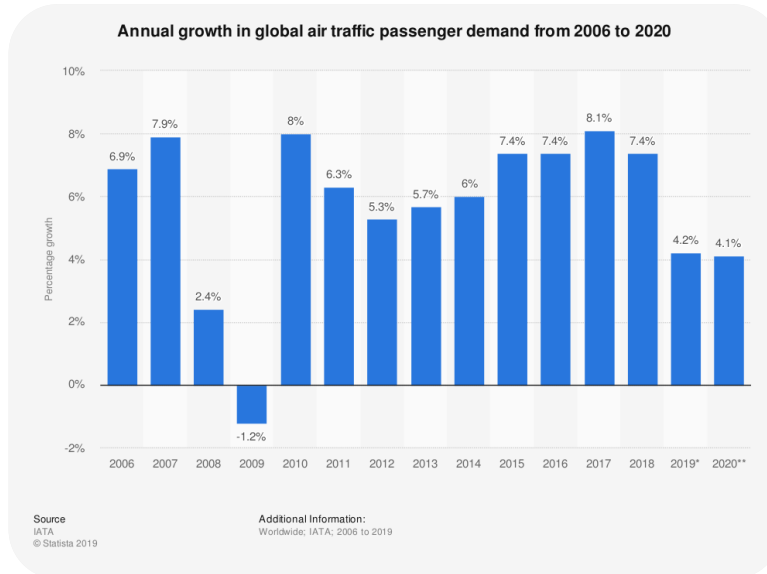


Overview of Aeronautical Spectrum Usage

BY Isaiah Kofi Tefutor (CNS Technical Officer ICAO)

For the PRIDA Workshop
23-25 May in Dakar, Senegal

Aeronautical Frequency Spectrum Management



World wide consistent growth of air traffic Doubles every 15 years

- ➔ In 2019 over 4.5 billion scheduled passengers
- ➔ Air transport now carries 35% of world trade, by value
- ➔ Between 2019 and 2038, 4.6 % expected growth of no. of airline passengers (pre-Covid-19 numbers)

Aeronautical Frequency Spectrum Management

(Aviation: One of users of Radio Frequency Spectrum)

- ❑ About 100 000 flights take off to the sky and land every day without any incidents.
- ❑ Safe aircraft operation on such a scale is highly dependent upon the availability of sufficient, suitably protected Radio Frequency Spectrum that can support the high integrity and availability requirement associated with aeronautical safety systems.

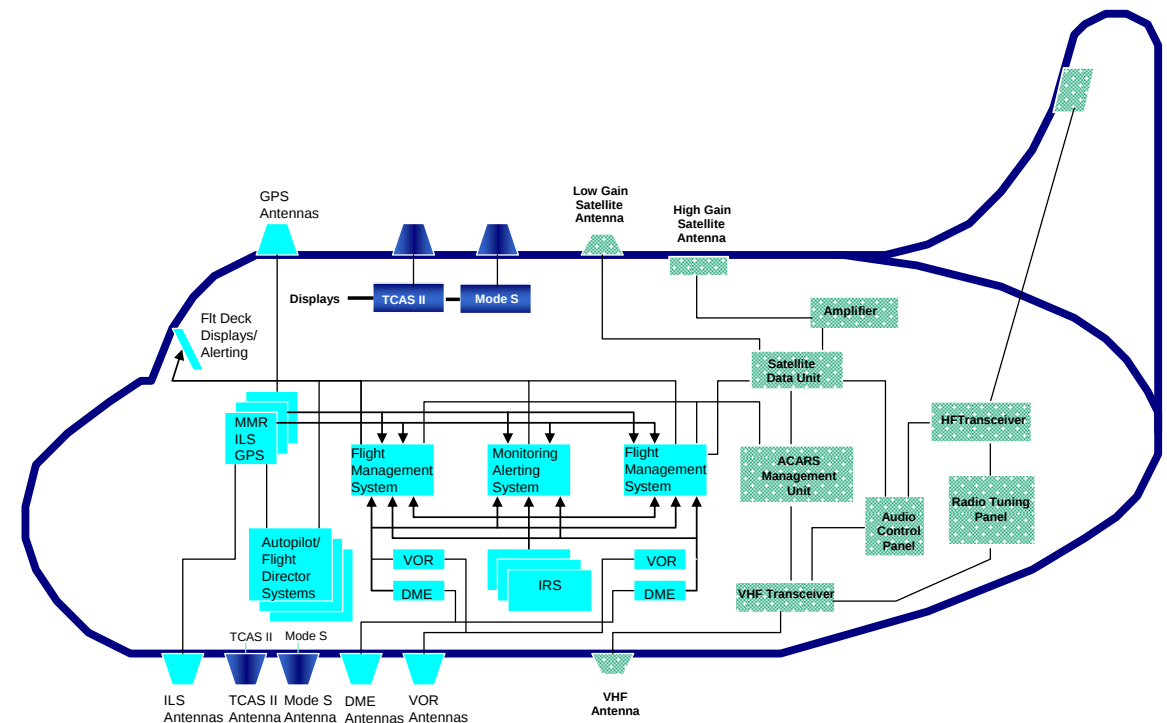
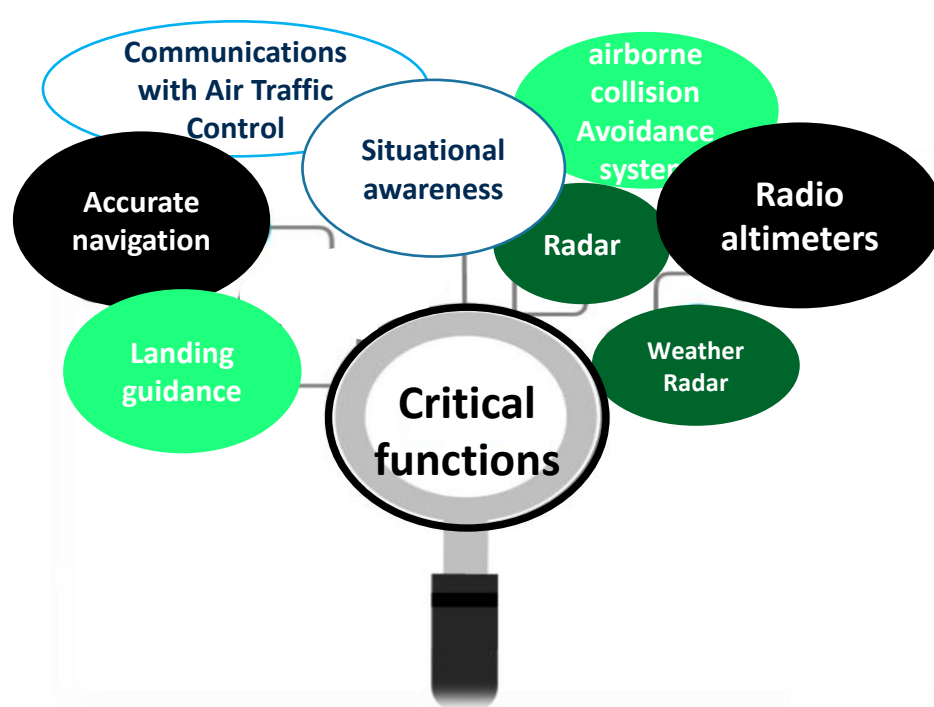


Communications, Navigation and Surveillance Systems – Prerequisite for aircraft operation



❑ An average size commercial aircraft is fitted with **over 30 antennas**.

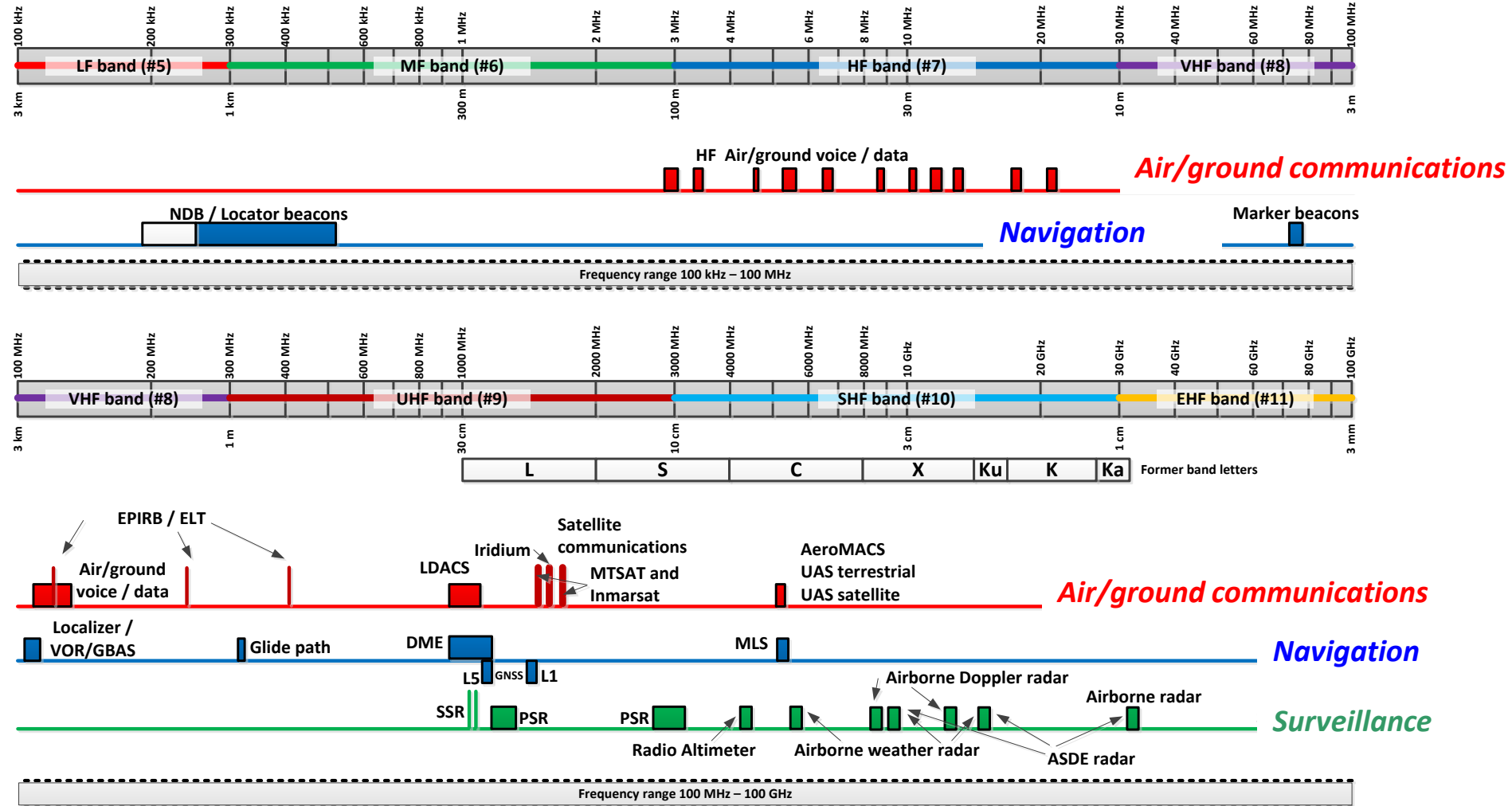
❑ A large number of Communications, Navigations and Surveillance systems, which uses those antennas, are necessary **to provide functions critical to the safe flight of aircraft**.



Aeronautical Frequency Spectrum Management

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Over 1 GHz of frequency spectrum in global allocations to aeronautical safety services



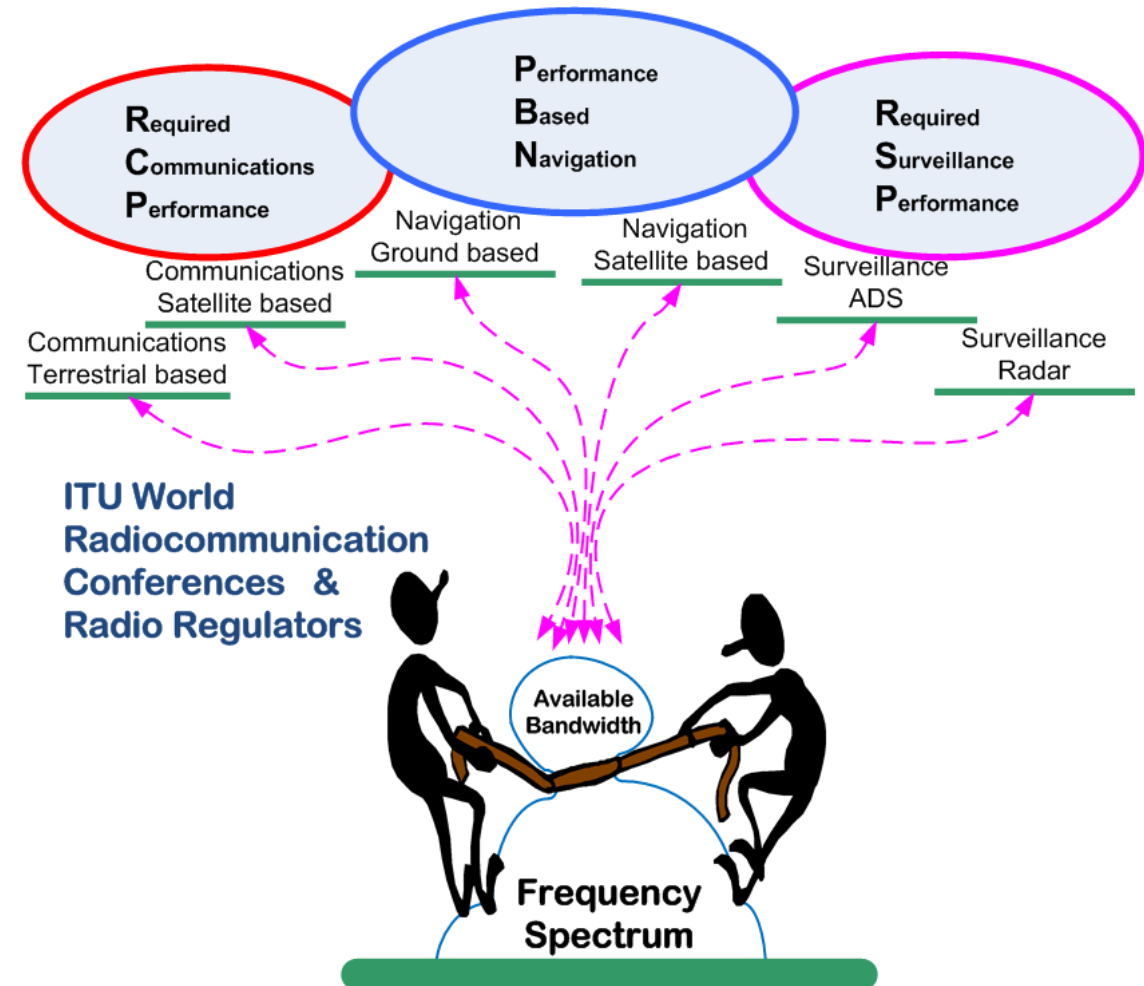
Notes:
 Drawing not to scale
 Not all Regional or sub-Regional allocations are shown
 Band identification (e.g. VHF) and band # per Radio Regulations
 The satellite communication bands used by MTSAT and Inmarsat are not allocated to the Aeronautical Mobile Satellite (R) Service

Performance of Air Traffic Management



Availability and **access to frequency spectrum** is completely dependent on an outside program:

The **ITU World Radiocommunication Conferences**; and the WRC preparatory process in the ITU and the Regional Telecommunication Organizations



The ITU WRC-23 agenda

will be very busy
for aviation

1

Spectrum use by
sub-orbital
vehicles

2

potential
facilitation of
aeronautical VHF
over satellite

3

Finalization of a
satellite
allocation
enabling beyond-
line-of-sight C2-
link for RPAS

4

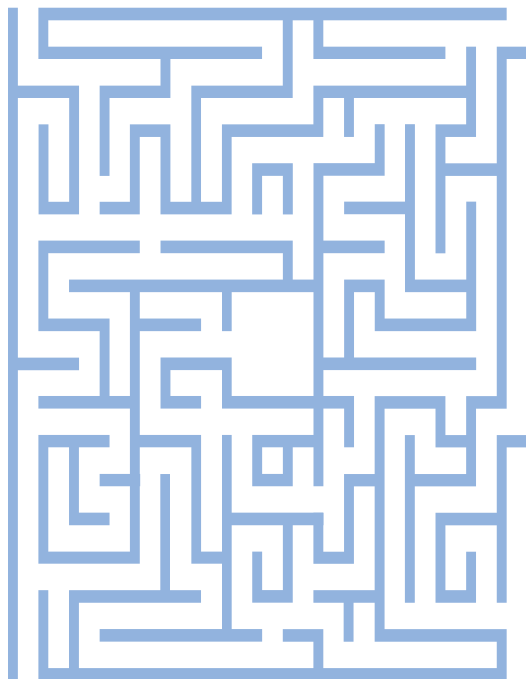
Modifications to
aeronautical HF,
potentially
enabling crystal
clear and reliable
HF voice as well
as HF data

5

Potential new
non-safety
aeronautical
mobile service
allocations

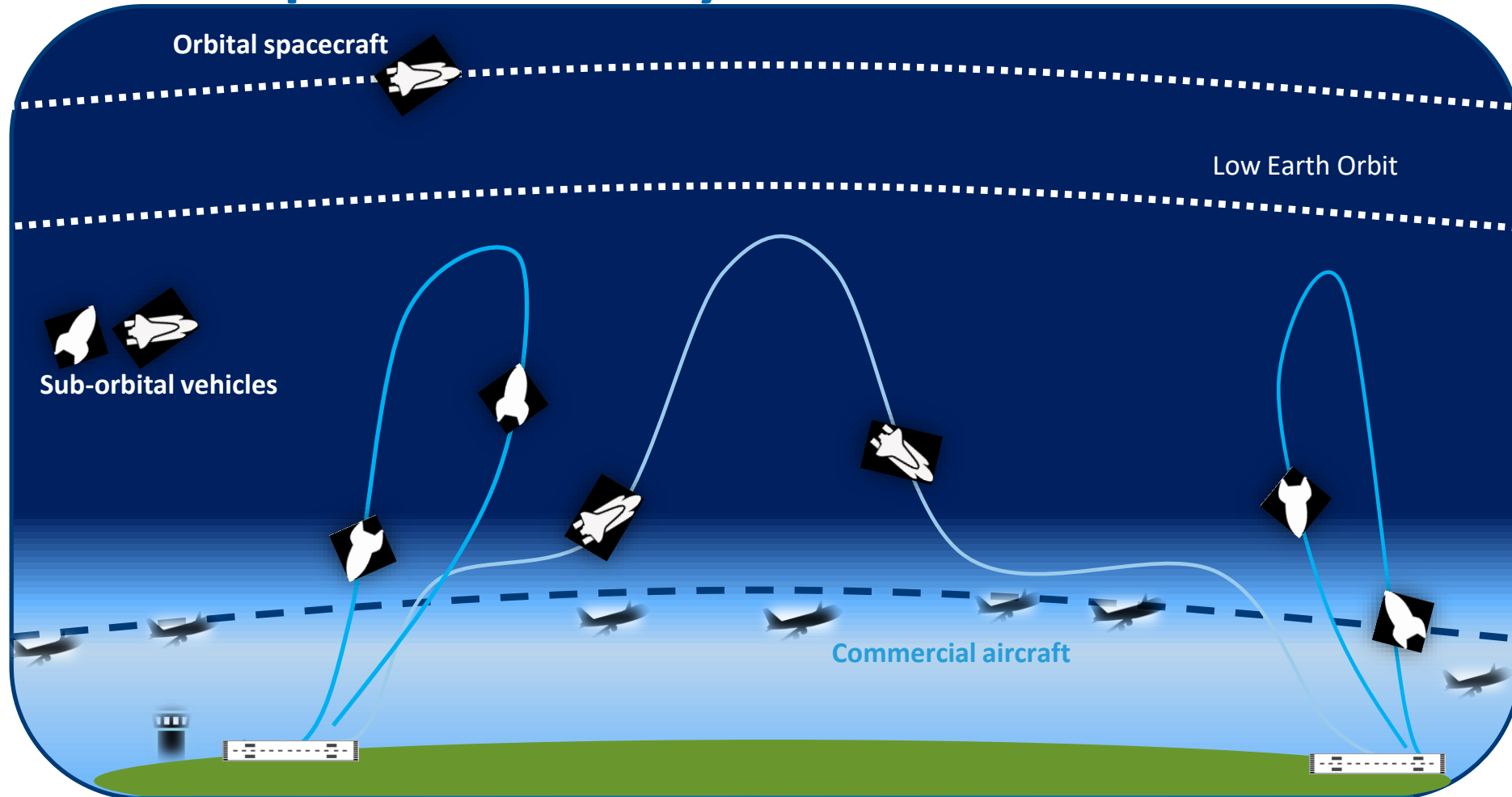
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Difficulties or
inconsistencies
encountered in
the application of
the Radio
Regulations



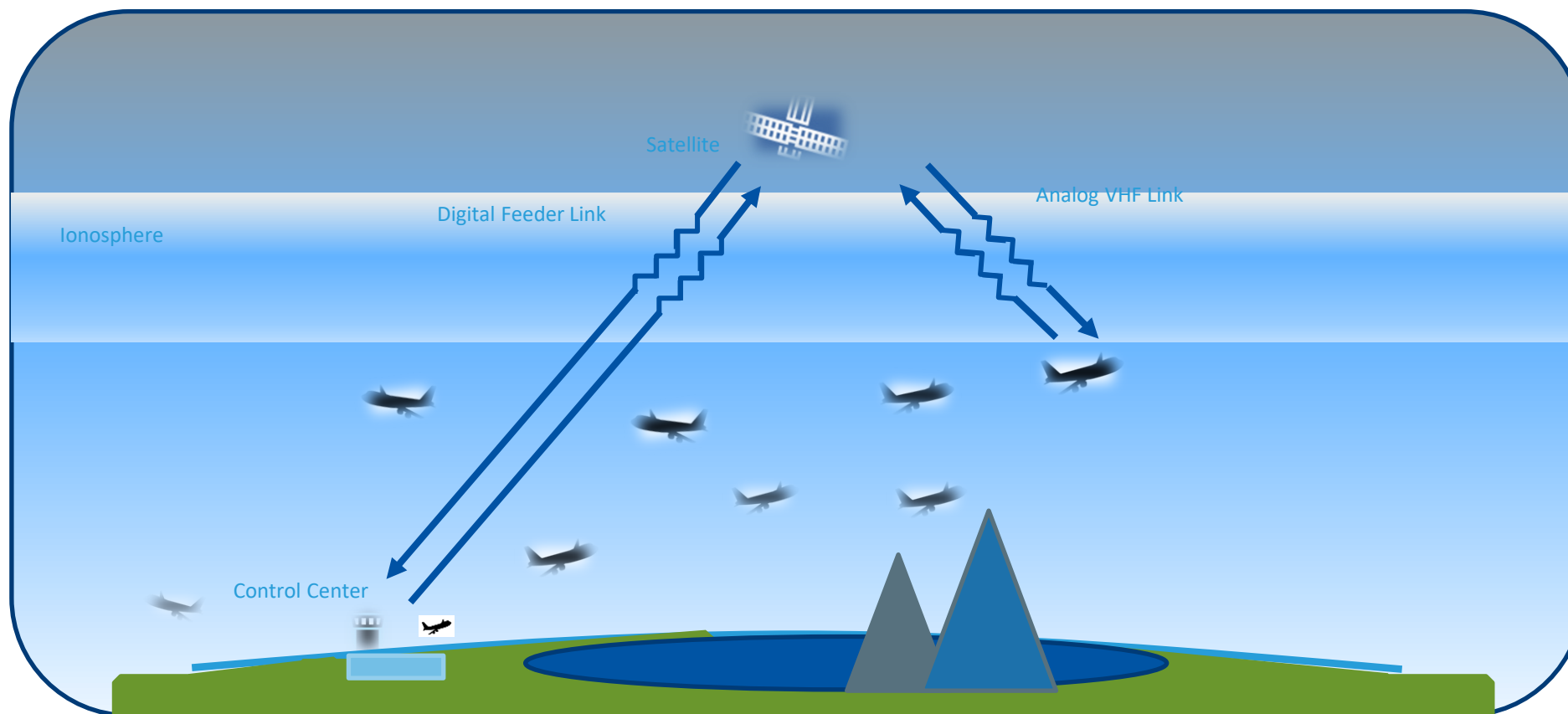
WRC-23

WRC-23 Agenda Item 1.6: Spectrum use by sub-orbital vehicles



WRC-23

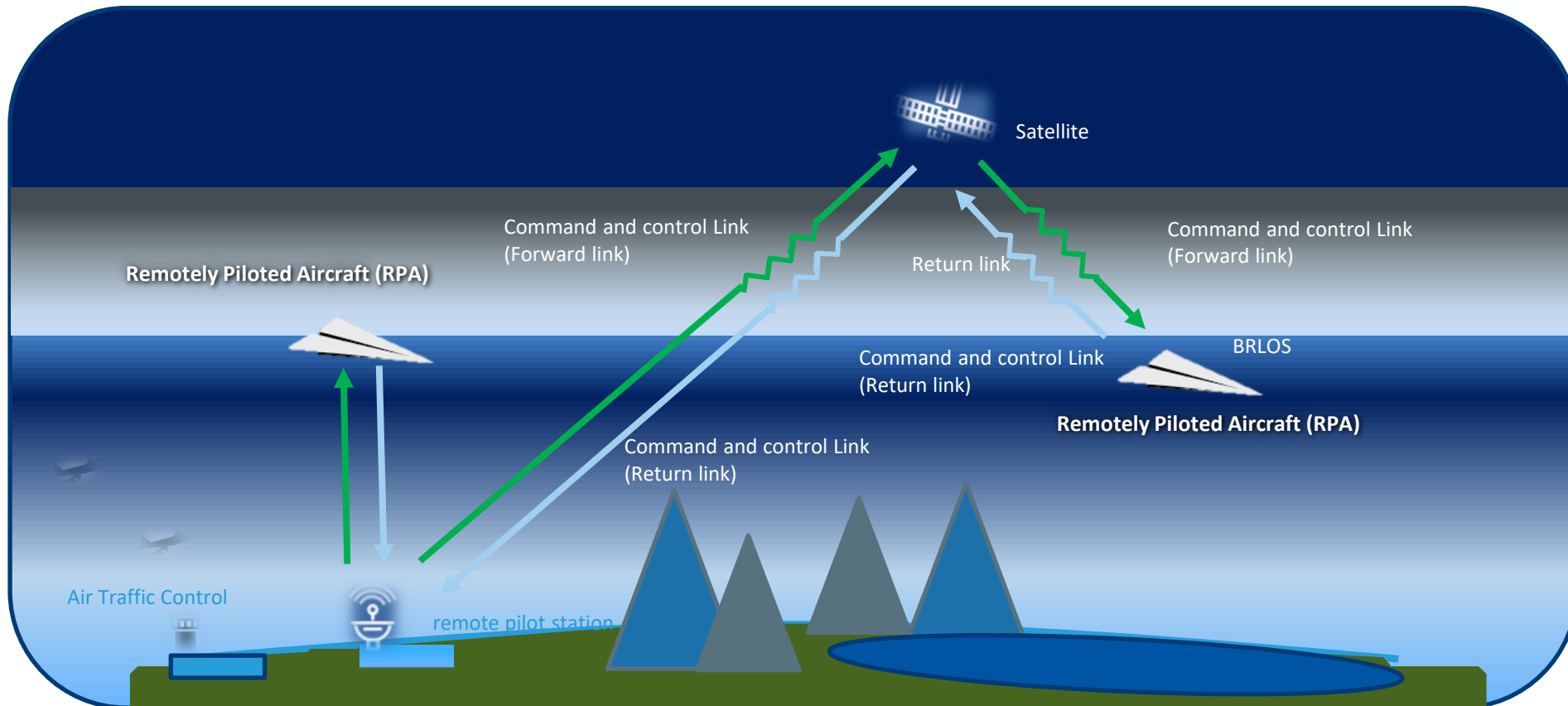
WRC-23 Agenda Item 1.7: Potential facilitation of aeronautical VHF over satellite



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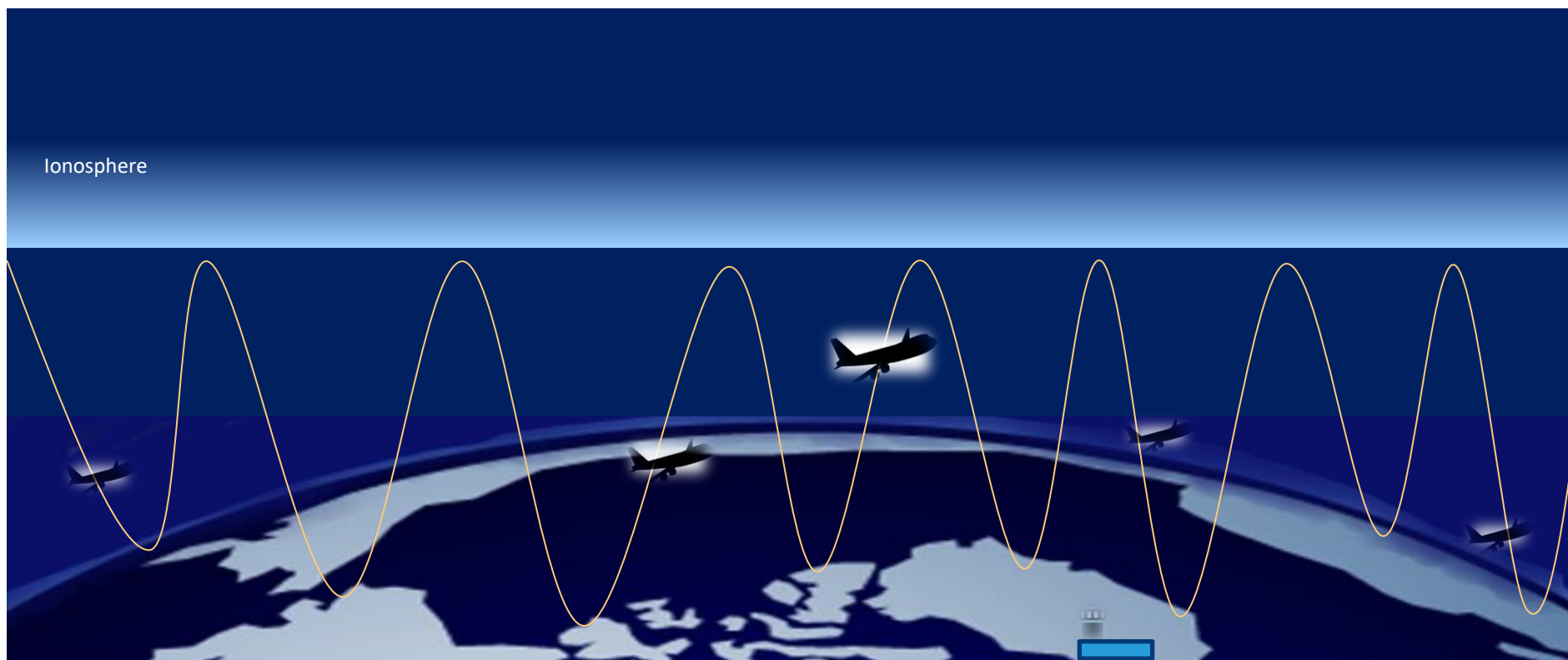
WRC-23

WRC-23 Agenda Item 1.8: Finalization of a satellite allocation enabling beyond-line-of-sight C2-link for RPAS



WRC-23**WRC-23 Agenda Item 1.9:**

Modifications to aeronautical HF, potentially enabling crystal clear and reliable HF voice as well as high speed HF data





Thank You!

More information: Frequency Spectrum Management Panel (FSMP)
<https://www.icao.int/safety/FSMP>