

2023 World Radiocommunication Conference
Agenda Item 1.7

Space based VHF (AMS(R)S) allocation in
the 117.975-137 MHz band

Datalink functions



Introduction.

- Resolution 428 (WRC-19) in the considering a) “that the optimization of air traffic management (ATM) over oceanic and remote areas necessitates appropriate aeronautical surveillance and communication means, in order to meet the required communication performance for reduced separation minima, **without modification to aircraft equipment**”
- Resolution 811 (WRC-19): “1.7 to consider a new aeronautical mobile-satellite (R) service allocation in accordance with Resolution 428 (WRC-19) for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, **while preventing any undue constraints on existing VHF systems operating in the aeronautical mobile (R) service**, in the aeronautical radionavigation service, and in adjacent frequency bands;”
- SB-VHF datalink services provided: POA (Plain Old ACARS) and VDLM2.
- SB-VHF datalink infrastructure to be fully integrated with existing Communications Service Providers(CSPs) ground one.

Characteristics and main features of ACARS and VDLM2

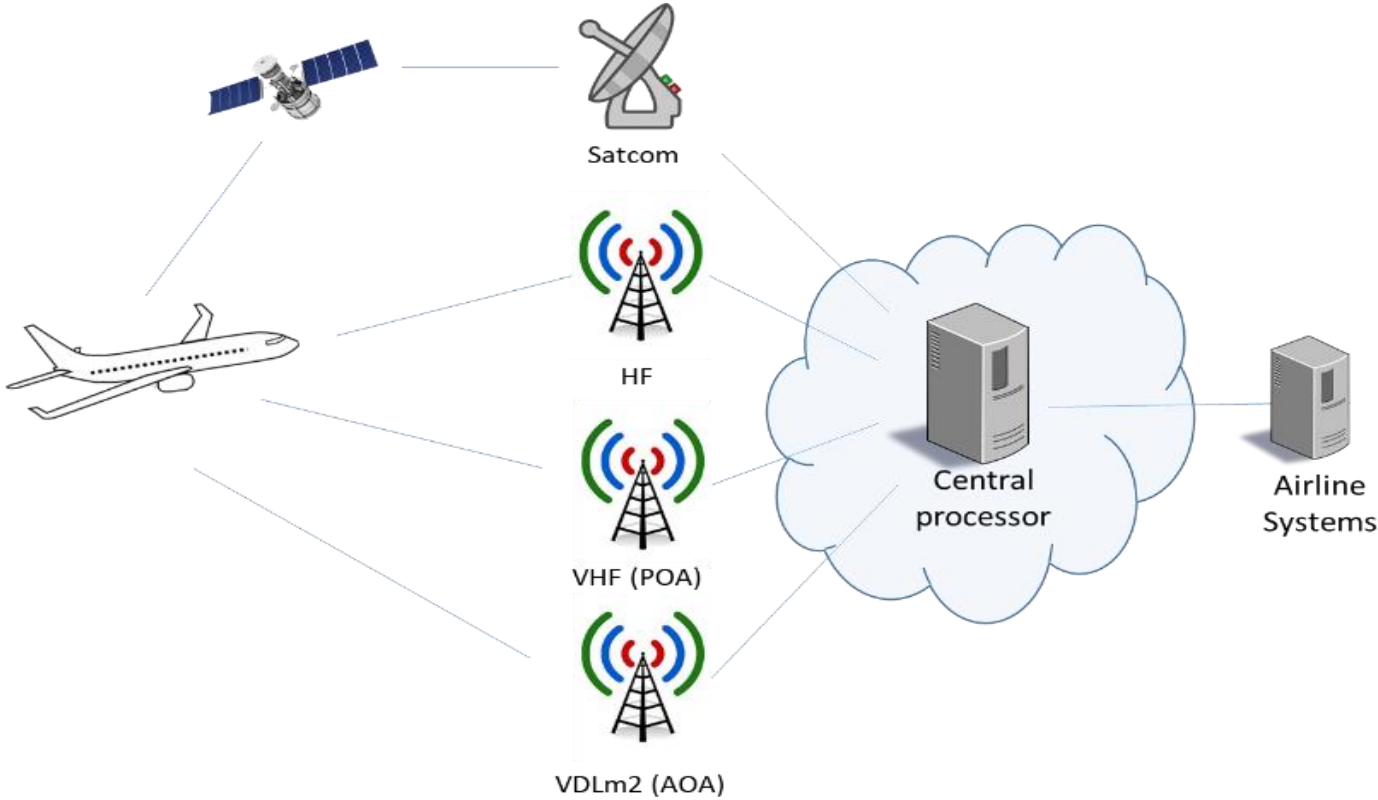
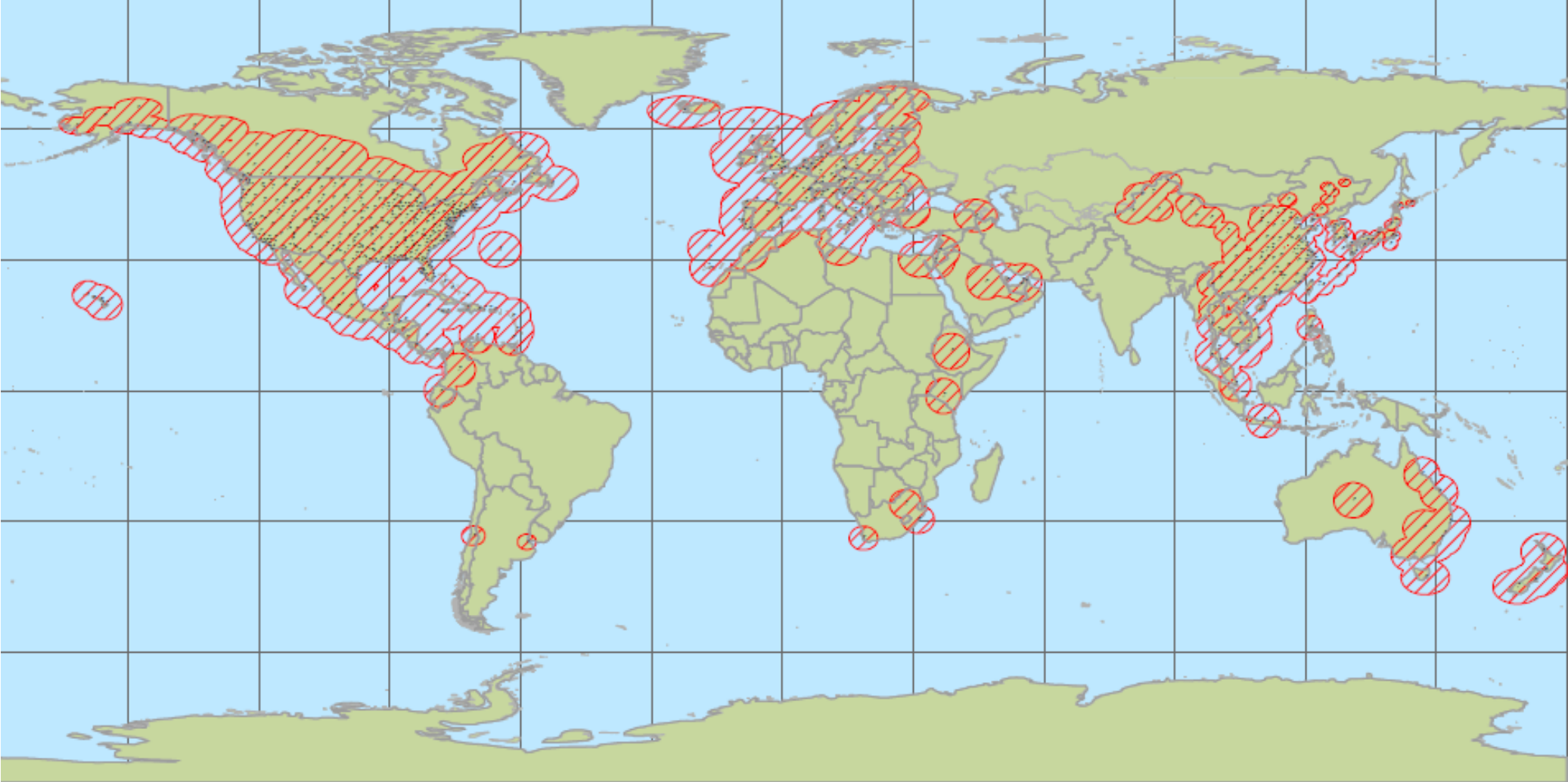


Figure 4-1: ACARS network overview

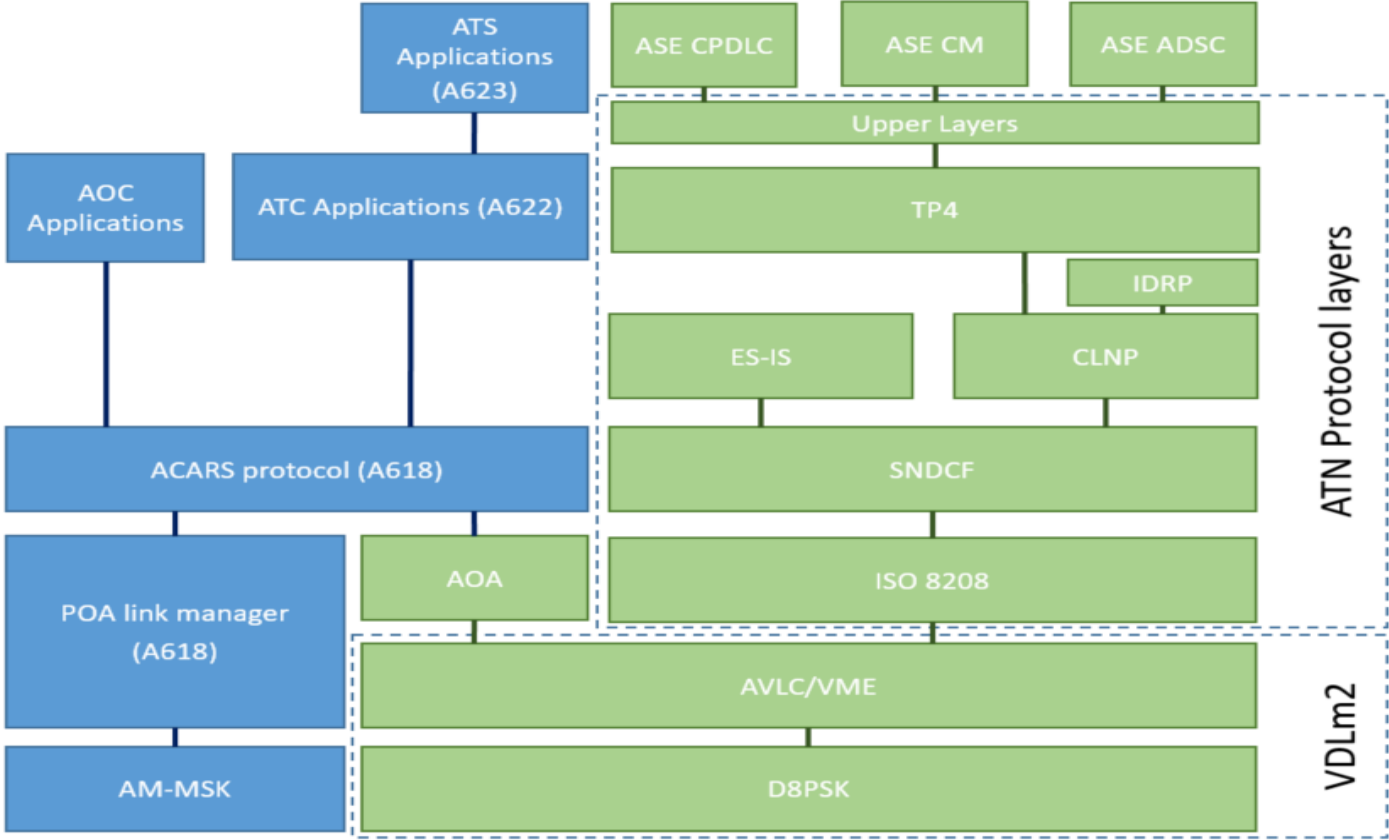
Example of VDLm2 World Operational Coverage



Example of POA World Operational Coverage

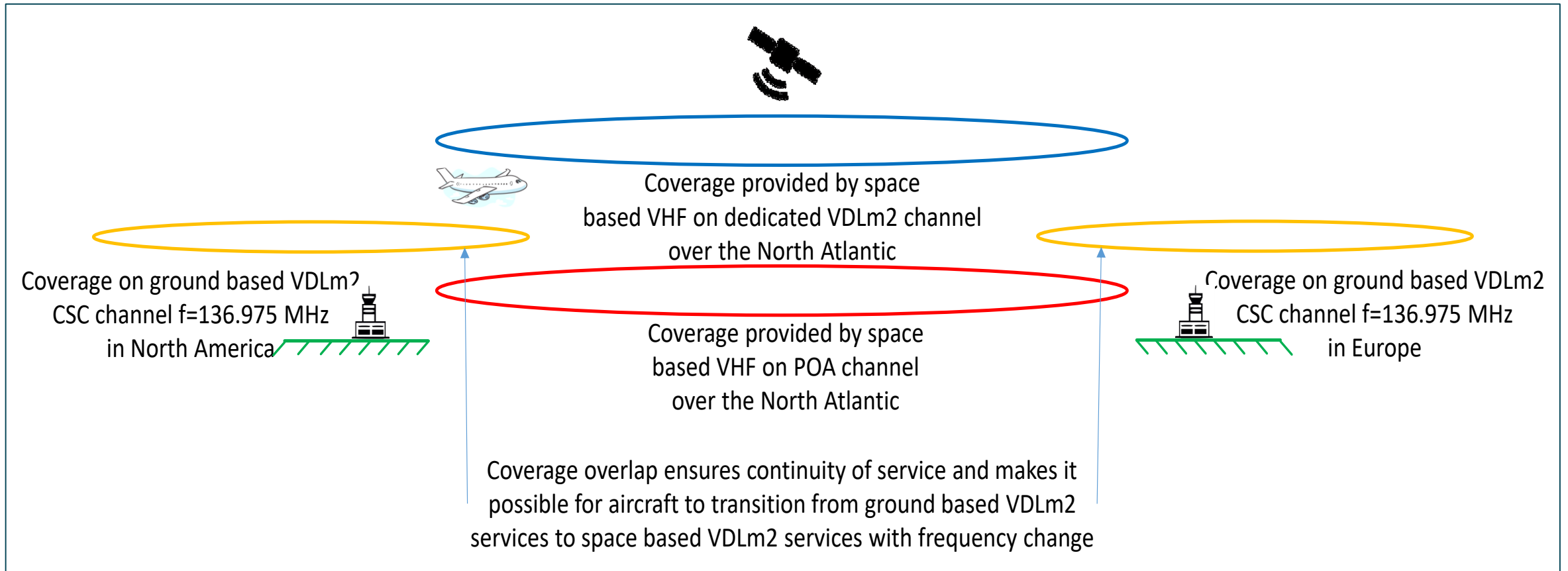


Functional architecture of ACARS and ATN capable avionics

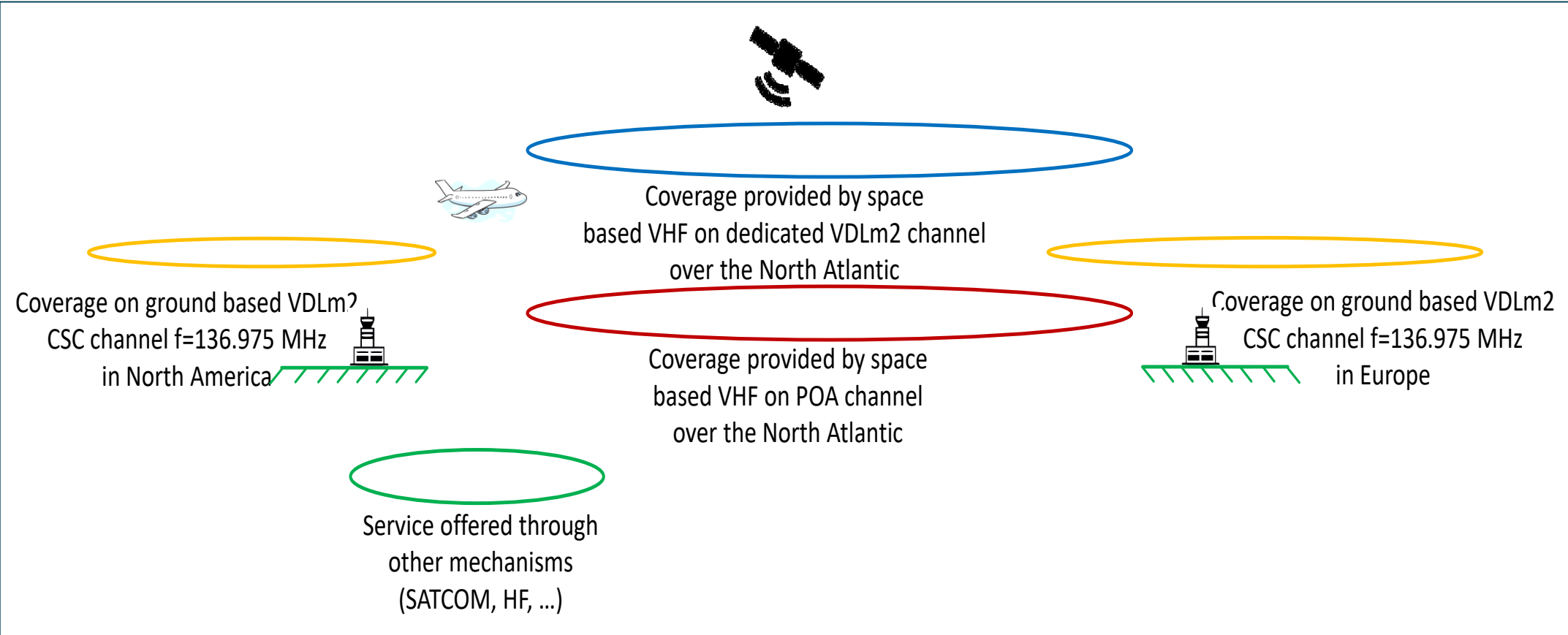


Comments:
 ATC Applications (A622) include 'bit-oriented' applications such as FANS and ADS-C.
 ATS Applications (A623) include so-called 'pre-FANS' character-oriented applications such as Pre-Departure Clearance, Oceanic Clearance, D-ATIS, etc.

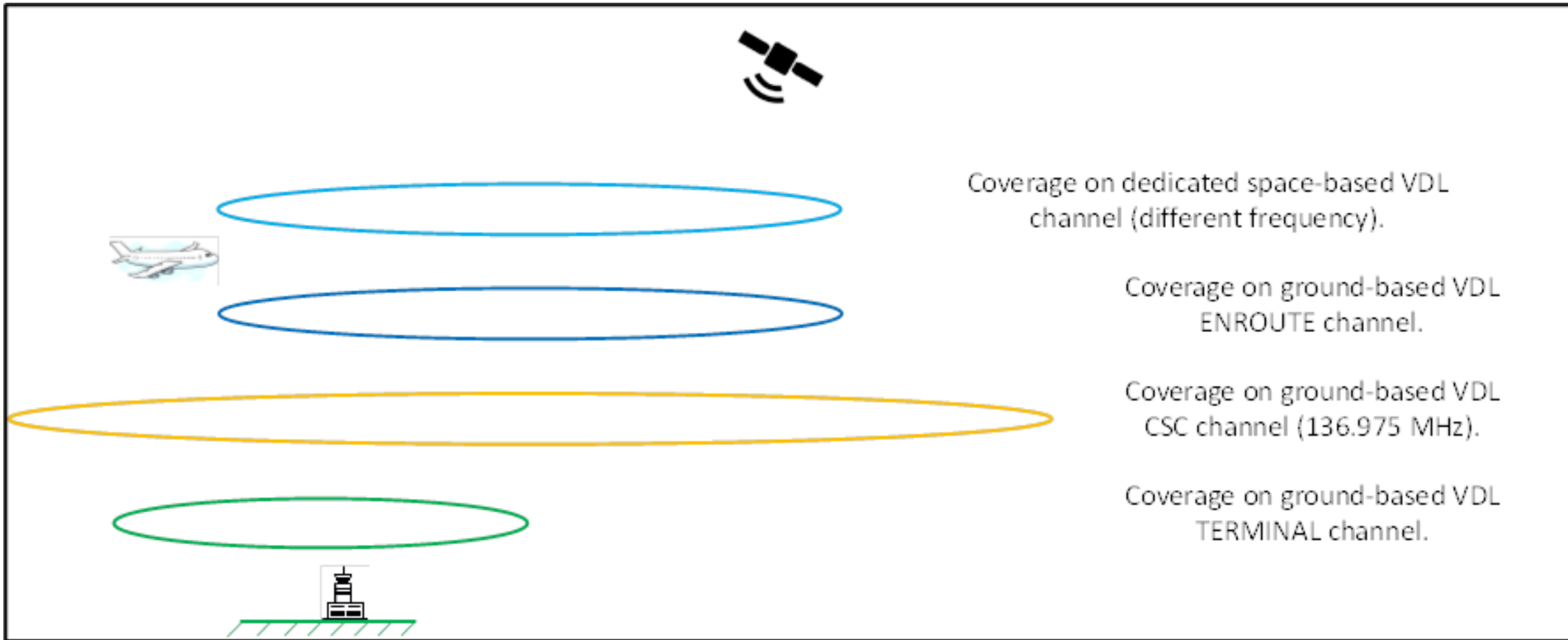
Use case: VDLm2 extension of coverage using an alternative frequency



Use case: VDLm2 extension of coverage using an alternative frequency through intermediate means (SATCOM, HF,...)



Use case: VDLm2 with a dedicated frequency



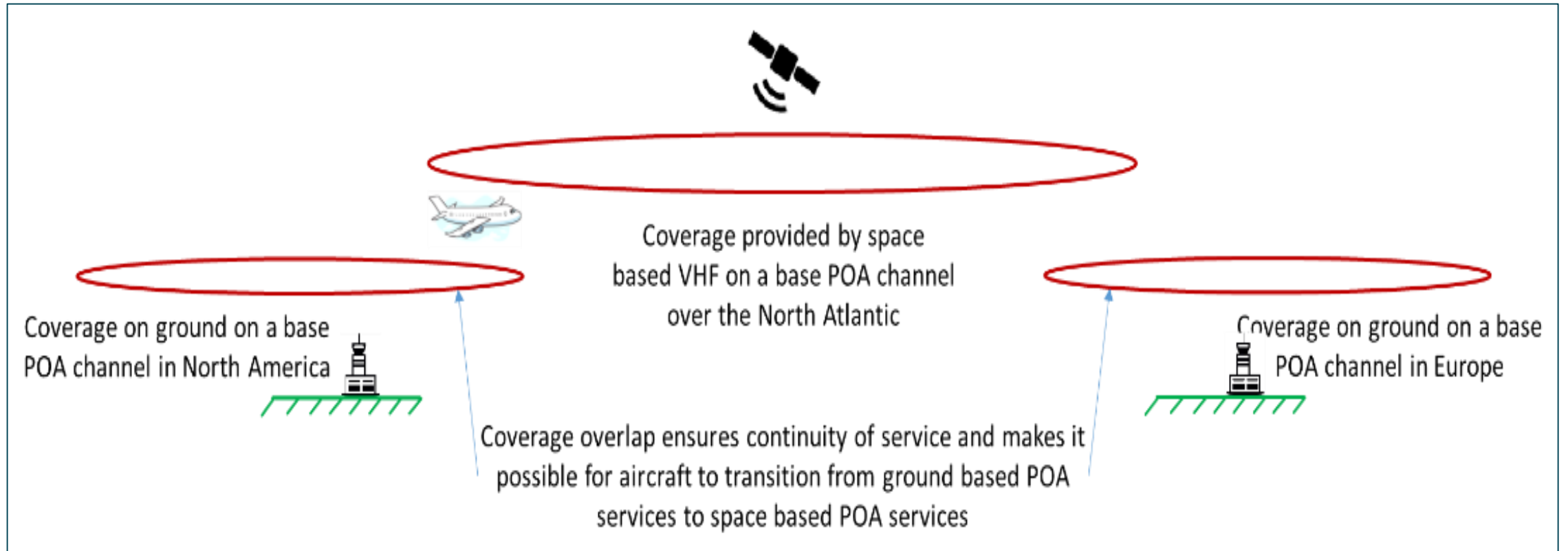
Coverage on dedicated space-based VDL channel (different frequency).

Coverage on ground-based VDL ENROUTE channel.

Coverage on ground-based VDL CSC channel (136.975 MHz).

Coverage on ground-based VDL TERMINAL channel.

Use case: POA over space-based VHF



Conclusions

- Satellite based datalink services could be integrated in existing low density areas CSPs datalink (POA/VDLm2) infrastructure using current operational procedures **without any modification in current avionics**, with potentially and not strictly necessary database update of the datalink avionic (also supported by standard operational procedures).
- Based on the considerations explained in this document, satellite-based datalink services could be provided **assuring no interference with the current terrestrial VDL infrastructure**.

startical

ENAIRe 

indra
At the core