

# ICAO WRC-23 PREPARATORY WORKSHOP

AI 1.10: NON-SAFETY AMS IN 15.4-15.7 GHz AND 22-22.21 GHz

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Authors:

Jérôme André [jerome.andre@anfr.fr](mailto:jerome.andre@anfr.fr)

Alexandre Marquet [alexandre.marquet@anfr.fr](mailto:alexandre.marquet@anfr.fr)

**01 | Description of proposed non-safety system operating under new AMS allocation**

**02 | Coexistence studies with ARNS in 15.4-15.7 GHz**

# 01 | Description of proposed non-safety system operating under new AMS allocation

## Principle

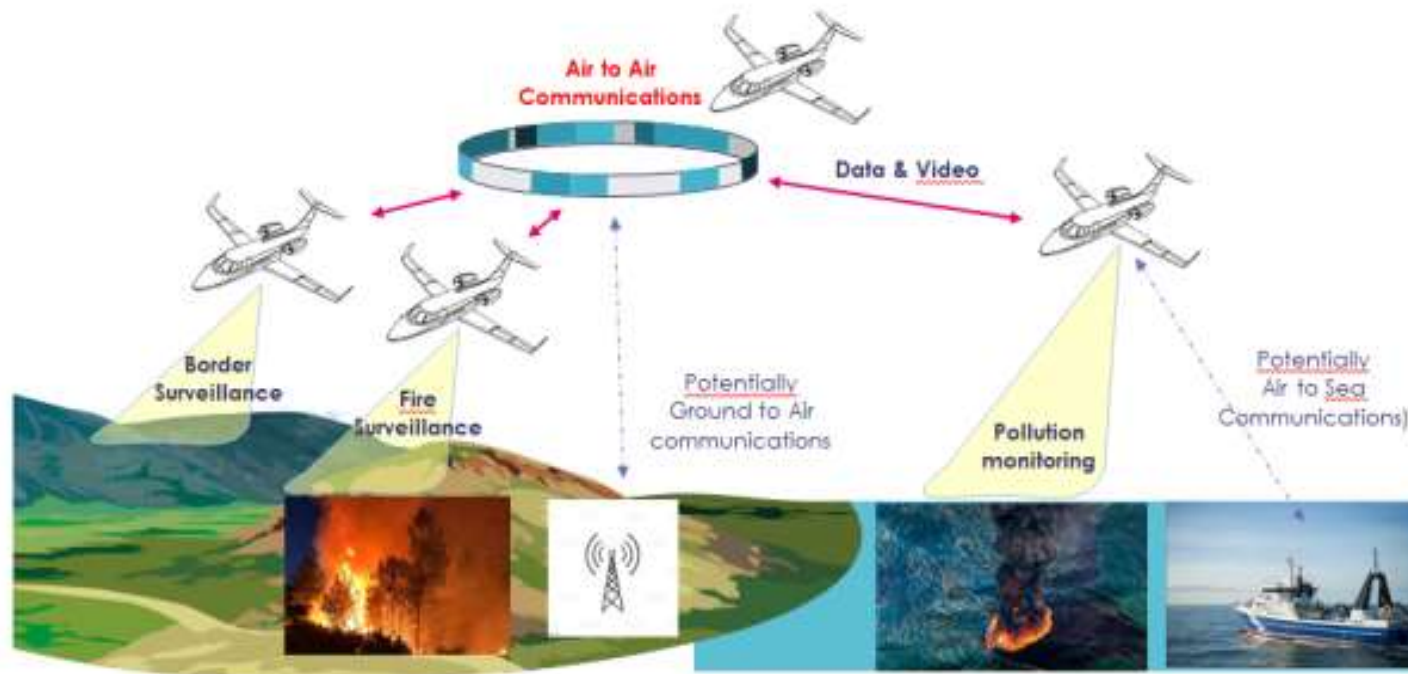


Figure from WDT PDN Rep. ITU-R [NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES]

## 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

### ICAO position

*“To support ITU-R studies as called for by Resolution 430 (WRC-19).*

*To support, based on the agreed results of studies, new allocations to the aeronautical mobile service only for use by non-safety aeronautical mobile applications.*

*To ensure that any such modification does not adversely affect the status or provision of aeronautical safety services.”*

⇒ **Coexistence studies between ARNS in 15.4-15.7 GHz and the new system under AMS non-safety**

### ITU Working documents

WDT PDN Rec. ITU-R M.[15.4-15.7\_GHZ\_ARNS]

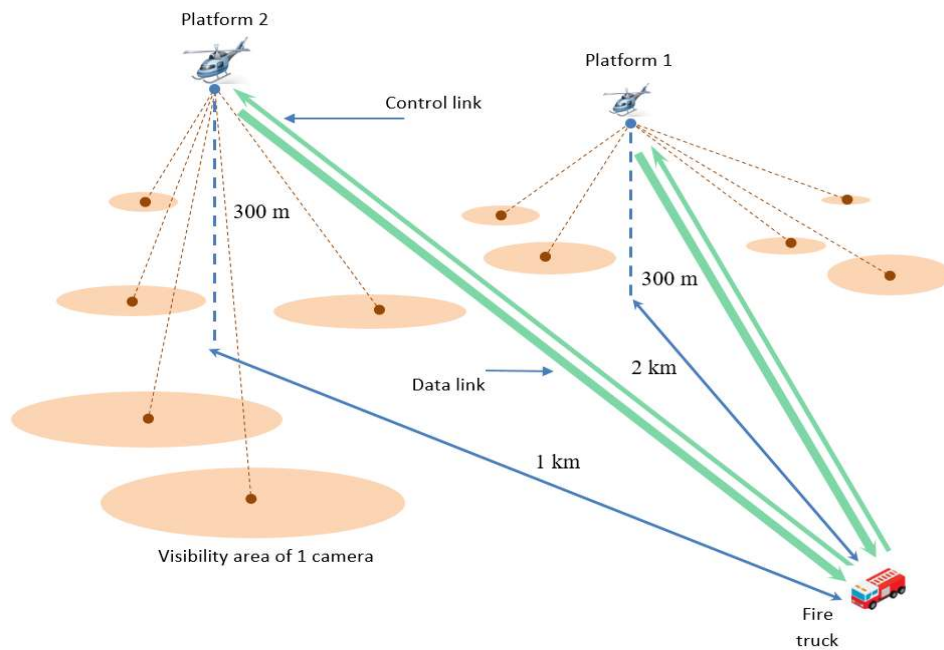
- Proposals for Detect And Avoid (DAA) and Automatic Landing System (ALS) characteristics

WDT PDN Rep. ITU-R M.[NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES]

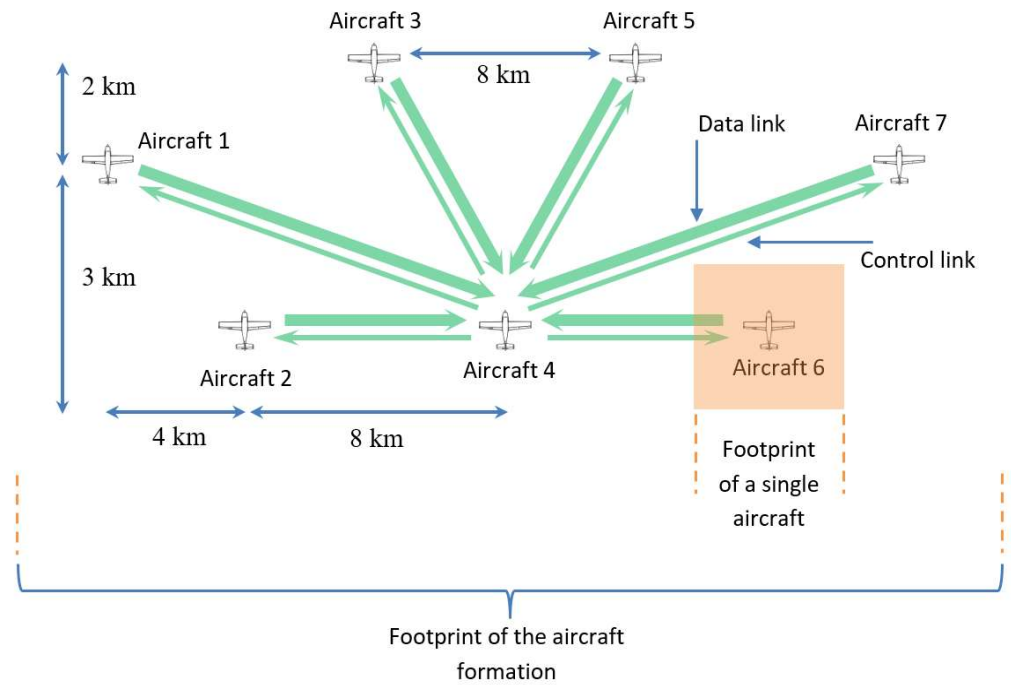
- Proposals for AMS systems in 15.4-15.7 GHz and 22-22.21 GHz
- Compatibility studies

# 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

## Scenarios under study



Wildfire monitoring

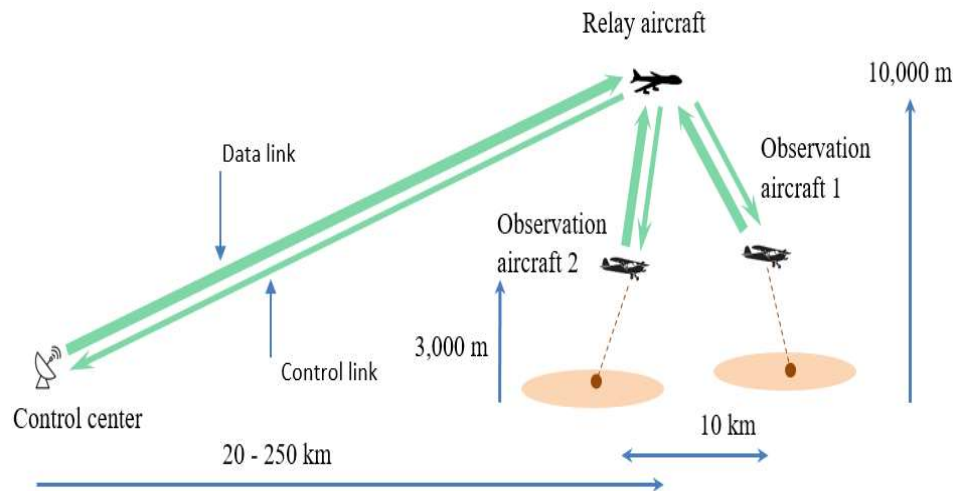


Search and rescue

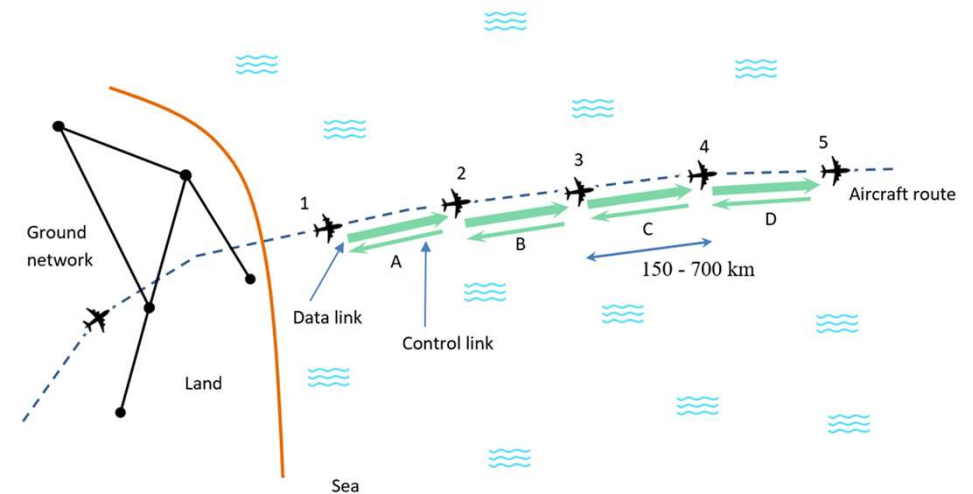
Figures from WDT PDN Rep. ITU-R [NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES]

## 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

### Scenarios under study



Border surveillance



Air-to-air relaying

Figures adapted from WDT PDN Rep. ITU-R [NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES]

## 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

### Scenarios under study

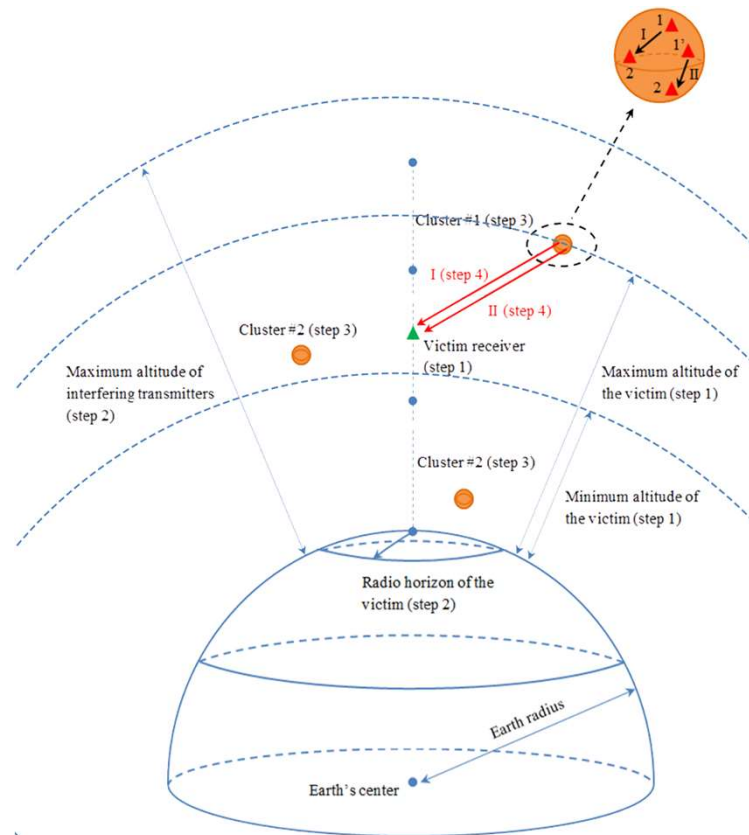


Figure adapted from WDT PDN Rep. ITU-R [NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES]

## 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

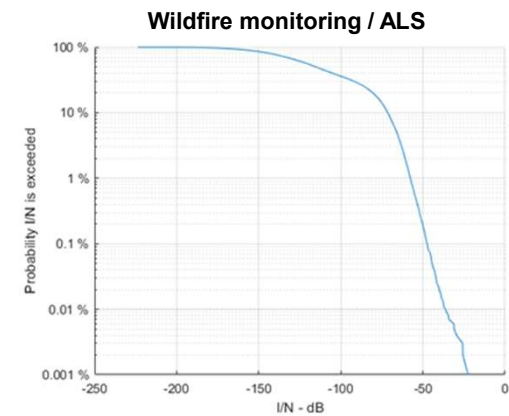
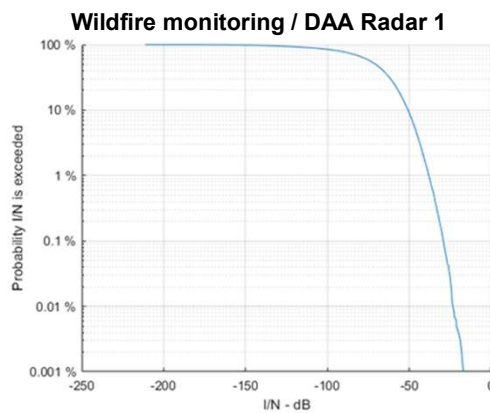
### Methodology

1. Locate the ARNS victim
2. Define a simulation radius  $R_{simulation}$ , depending on the scenarios
3. Compute the number of clusters  $N_{clusters}$  to be deployed
4. Deploy the clusters of AMS systems within the simulation area
5. Compute the aggregate interference power  $I$  at the victim receiver, taking into account geographical and frequency separation
6. Repeat steps 1 to 5 in order to cover  $N_{snapshots}$  times
7. Compare against the victim protection criterion

## 02 | Coexistence studies with ARNS in 15.4-15.7 GHz

### Coexistence studies

Example of preliminary\* result: ECDF of aggregate I/N on Automatic Landing Systems (ALS) and Detect And Avoid (DAA) for the wildfire scenario



\*Results presented here are subject to future contributions to ITU-R WP 5B. They may be slightly different from material available in the current version of WDT PDN Rep. ITU-R M.[NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES].

## Agence nationale des fréquences

T. +33 (0)1 45 18 72 72 78, avenue du Général de Gaulle  
F. +33 (0)1 45 18 73 00 94707 MAISONS-ALFORT CEDEX

[www.anfr.fr](http://www.anfr.fr)

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