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EASA Innovative Air Mobility Implementation Forum

In cooperation with:

Alliance for New Mobility Europe · ASD · Drone Alliance Europe · Global UTM Association · JEDA

Enabling BVLOS operations, the air risk perspective

Vladimir FOLTIN
PCM - General Aviation & ATM Expert, EASA

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Goal:

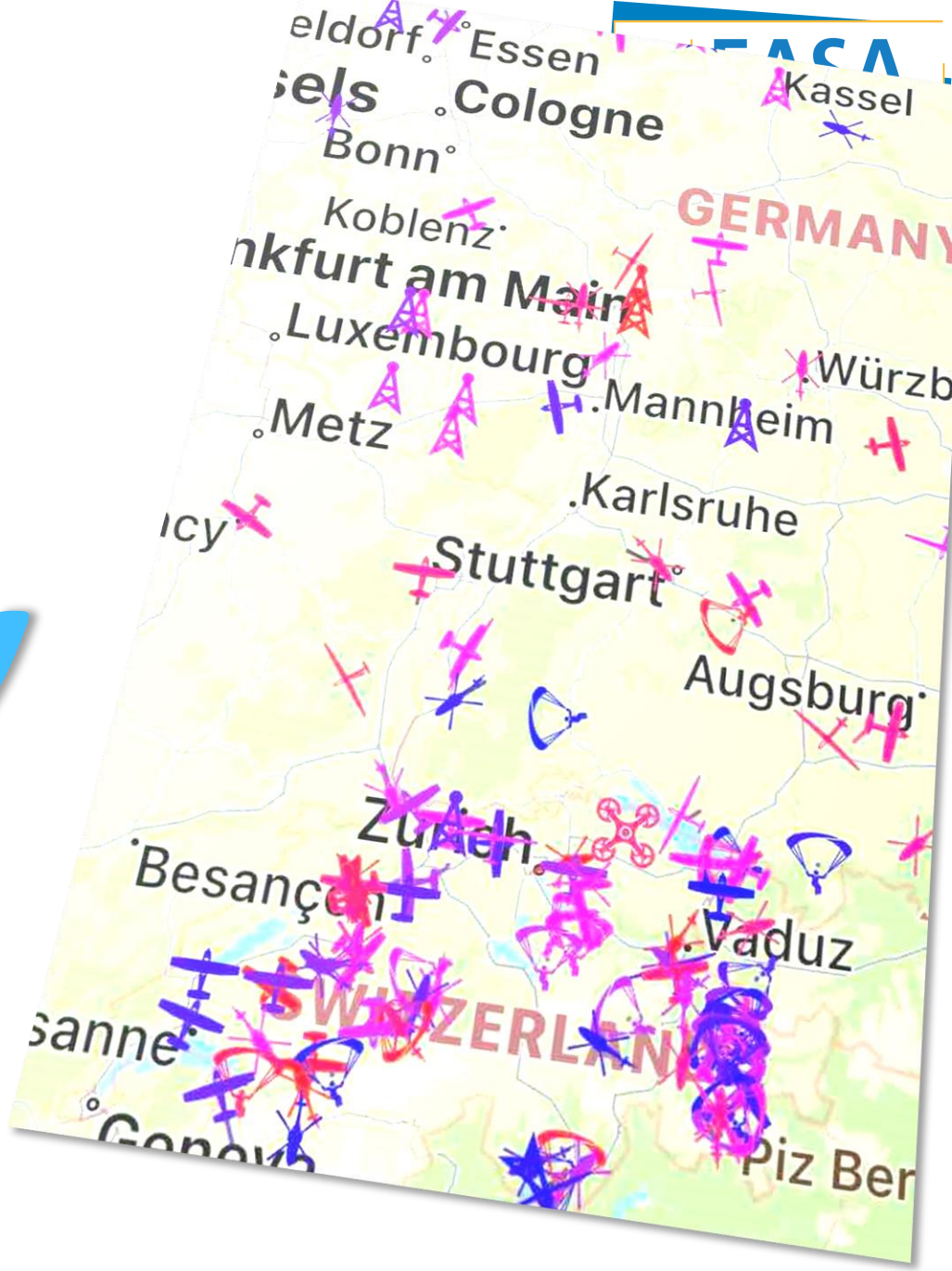
- Update on ¡*Conspicuity* and ADS-L
- Update on GNSS issues

U-space compatible ✓

iConspicuity

Connected aircraft …

… for better situational awareness



iConspicuity

EASA
European Union Aviation Safety Agency

JOINT
HIGH-LEVEL
ROADMAP

EUROCONTROL

Use Cases

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Reduce collisions

and other airborne hazards by **enhancing situational awareness** of their surroundings

Access U-space

through **affordable and interoperable electronic conspicuity** for manned aircraft operating without ATC services

Additional benefits*

Complement FIS and SAR without requiring changes to existing ATM/ANS principles and/or operational practices

* Subject to further research

Target Solution

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Simple

System design that ensures interoperability and affordability for end users

One Language

To ensure interoperability.
ADS-B and ADS-L are good candidates for common language(s)

One Link

Air-Ground transmission for U-space
A direct radio Air-Air link for pilot awareness
A second link for other purposes

Candidate Technologies

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1090 MHz

Worldwide used protected spectrum requiring certification and licensing

978 MHz

Regionally deployed protected spectrum requiring certification and licensing**.** **Needs evaluation and planning in Europe**

SRD 860

Unprotected and unlicensed but **regulated and standardised** spectrum **currently available in all Europe** until ~2030

Mobile Telephony

Possible complementary link in altitudes where network is available, but not supporting direct air-to-air and **requiring network**

EASA EUROCONTROL

Approach

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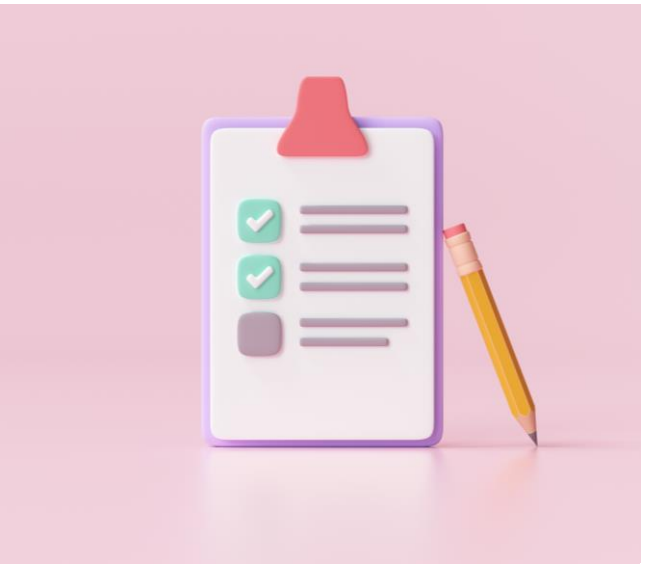
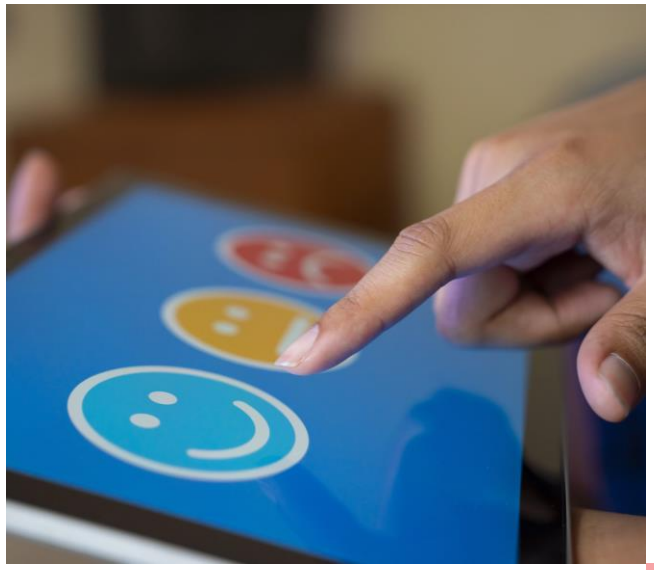


Consider

Key criteria

U-space **mandate**
Voluntary elsewhere
Different needs (IFR vs glider)
Dual use cases (e.g. ADS-B for ATC and U-space)



Communicate

Throughout the process

A **clear strategy and communication** campaign to get stakeholders to implement the right solutions

Address

Use Cases

Pilots' **situational awareness**, Europe-wide at all altitudes

U-space conspicuity, initially geographically limited & low altitude

Assess

Candidate technologies

'One link' based on a **comparison of options** considering **assessment of** ground-based **operations and** the **business case for all users** (airborne and on the ground) .

Timeline & Implementation Milestones

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Q1 2025

‘One language’ proposal considering previous and ongoing developments

2025

Comparative assessment of options

2026

Consolidation of ‘one link’ proposal including transitional arrangements

2027+

Community awareness and endorsement of the concept

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Future ¡*Conspicuity* *

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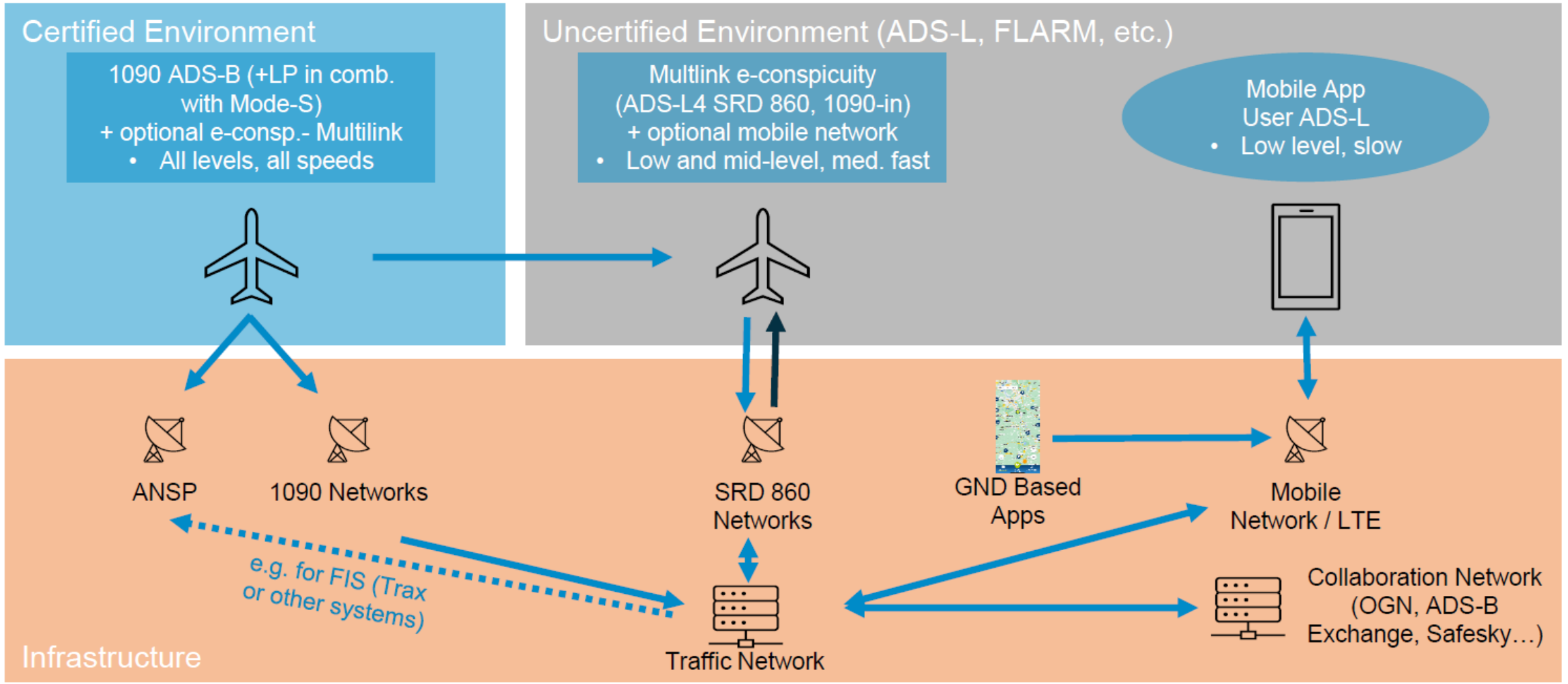

* Outcome of the ¡*Conspicuity* interoperability research (EASA.2022.HVP.12)

Pilots' views

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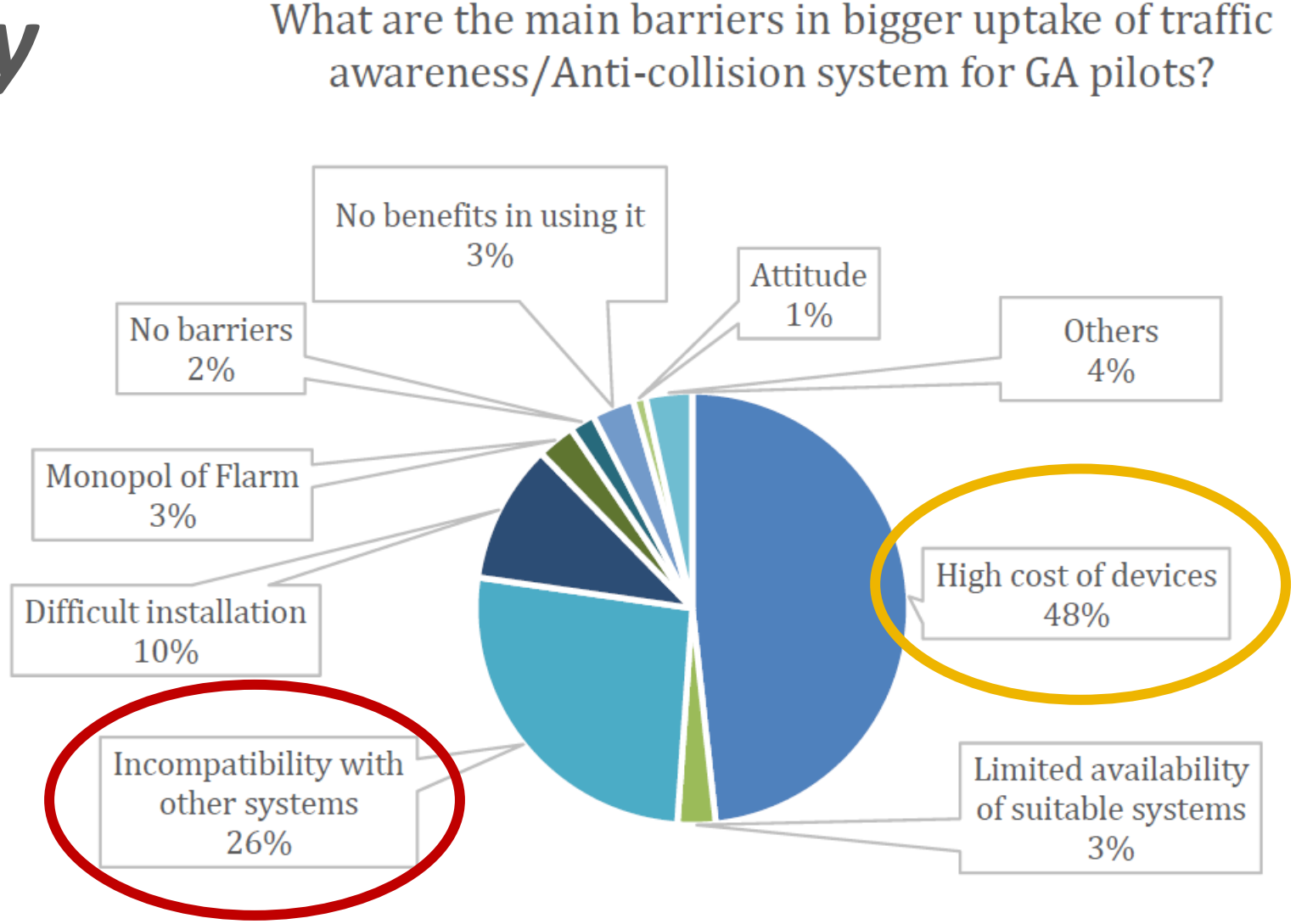
→ ¡*Conspicuity*

- 26% Interoperability
- 48% High Cost



SORA 2.0*

50 %

* Adoption of SORA 2.5 in progress

Electronic Conspicuity in U-space

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ADS-L

Affordable
Interoperable
GNSS based
Privacy & Security


EASA
European Union Aviation Safety Agency

ED Decision 2022/024/R

Technical Specification
for
ADS-L transmissions
using SRD-860 frequency band
(ADS-L 4 SRD-860)

ACCEPTABLE METHODS, TECHNIQUES AND PRACTICES FOR CARRYING OUT ADS-L TRANSMISSIONS USING SRD-860 FREQUENCY BAND AS PERMITTED PURSUANT TO AMC1 SERA.6005(c) POINT (a)(3)(i)

Issue 1
20 December 2022[1]

[1] For the date of entry into force of this Issue, please refer to Decision 2022/024/R at the Official Publication of EASA.

Page 1 of 30

EASA

A/C Transmission Options in U-space

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ADS-B Out (1090 MHz)

For certified aircraft, using the **existing certified technology** already installed on board

ADS-L 4 SRD-860

Non-certified devices transmitting at low power on the licence-free band SRD-860, in compliance with ADS-L specifications

ADS-L 4 MOBILE (telephony)

Mobile telephony application transmitting in compliance with ADS-L specifications

2022

(tbc)

Work in Progress

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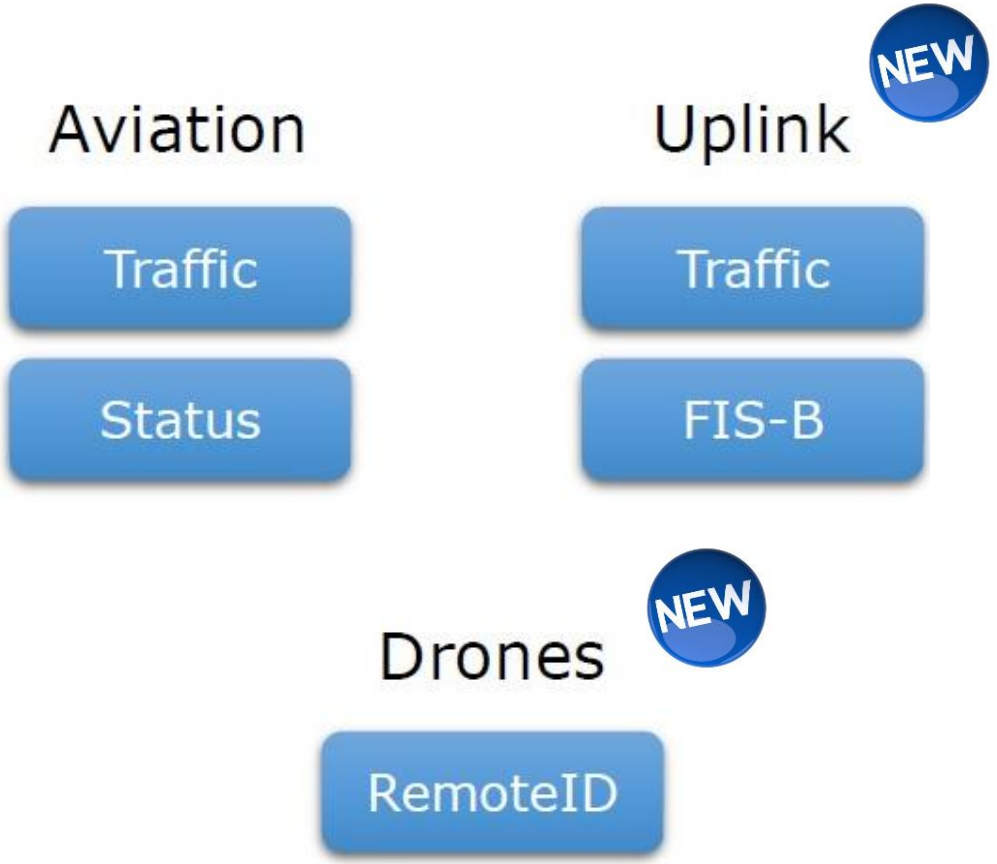
ADS-L

4 SRD860

Issue 2*



* Draft subject to consultation

Implementations

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South-Eastern Finland

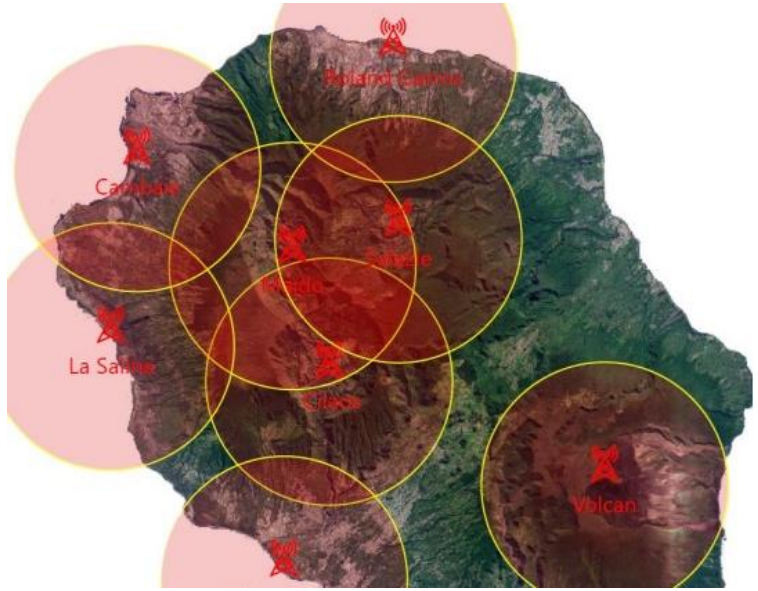
Two ground stations for reception of position data from various systems (ADS-B, ADS-L, UAT, MLAT, FLARM, RemoteID) and UAT retransmissions of nearby traffic, weather, NOTAMS to GA aircraft

Norway (Oslo)

Five transceivers (ADS-B, ADS-L, UAT, MLAT, FLARM, RemoteID) allow drone pilots to receive alerts from nearby GA aircraft (including helicopters and paragliders) and vice versa

France (La Réunion)

The network of eight transceivers (ADS-B / ADS-L / FLARM / OGN / RemoteID) has doubled the number of conspicuous aircraft in the mountains and in the vicinity of airports



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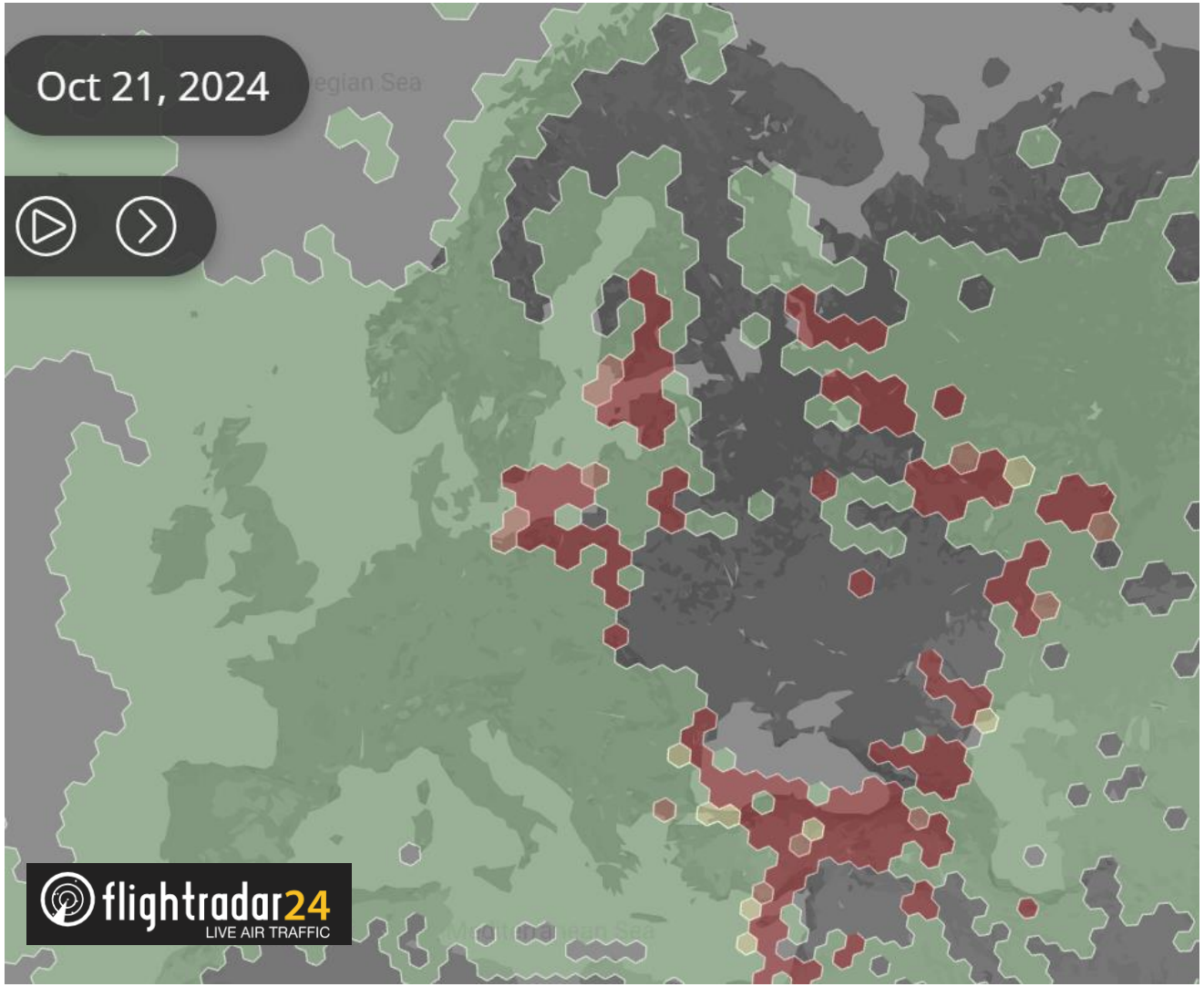
GNSS Issues – The situation



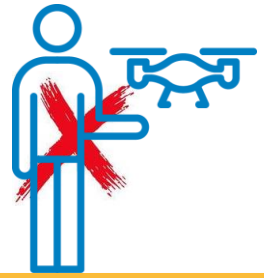
EASA SIB No.: 2022-02R3

EASA
European Union Aviation Safety Agency

Safety Information Bulletin
Operations – ATM/ANS – Airworthiness
SIB No.: 2022-02R3
Issued: 05 July 2024

Subject: **Global Navigation Satellite System Outage and Alterations Leading to Communication / Navigation / Surveillance Degradation**

Reversion to non GNSS based, conventional navigation and approach means (radio aids)



GNSS Issues – Mitigations for UAS

- Effects/impact on the UAS operations to be characterized, considering the diversity of UA and operations
- Higher the autonomy/automation, higher the risk, higher the need of mitigations
- Preliminary high level recommendations for the UAS domains:
  - ATM/ANS: To provide (real time) monitoring on the level of GNSS disturbance
  - UA manufacturers: To assess the effects of GNSS disturbance on their products
  - UAS operators:
    - To maintain awareness on potential GNSS issues
    - To develop contingencies procedures accordingly
    - To plan and take decision on the execution of the operation according to the level of disturbance
  - NAA/CA: To consider/address these issues in their policy/procedures/approval

A SIB dedicated to UAS operations may be created