EASA
European Union Aviation Safety Agency

i*Conspicuity / E-Conspicuity Roadmap - update*

GA.COM & GA.TeB meeting 1-2023

27 June 2023

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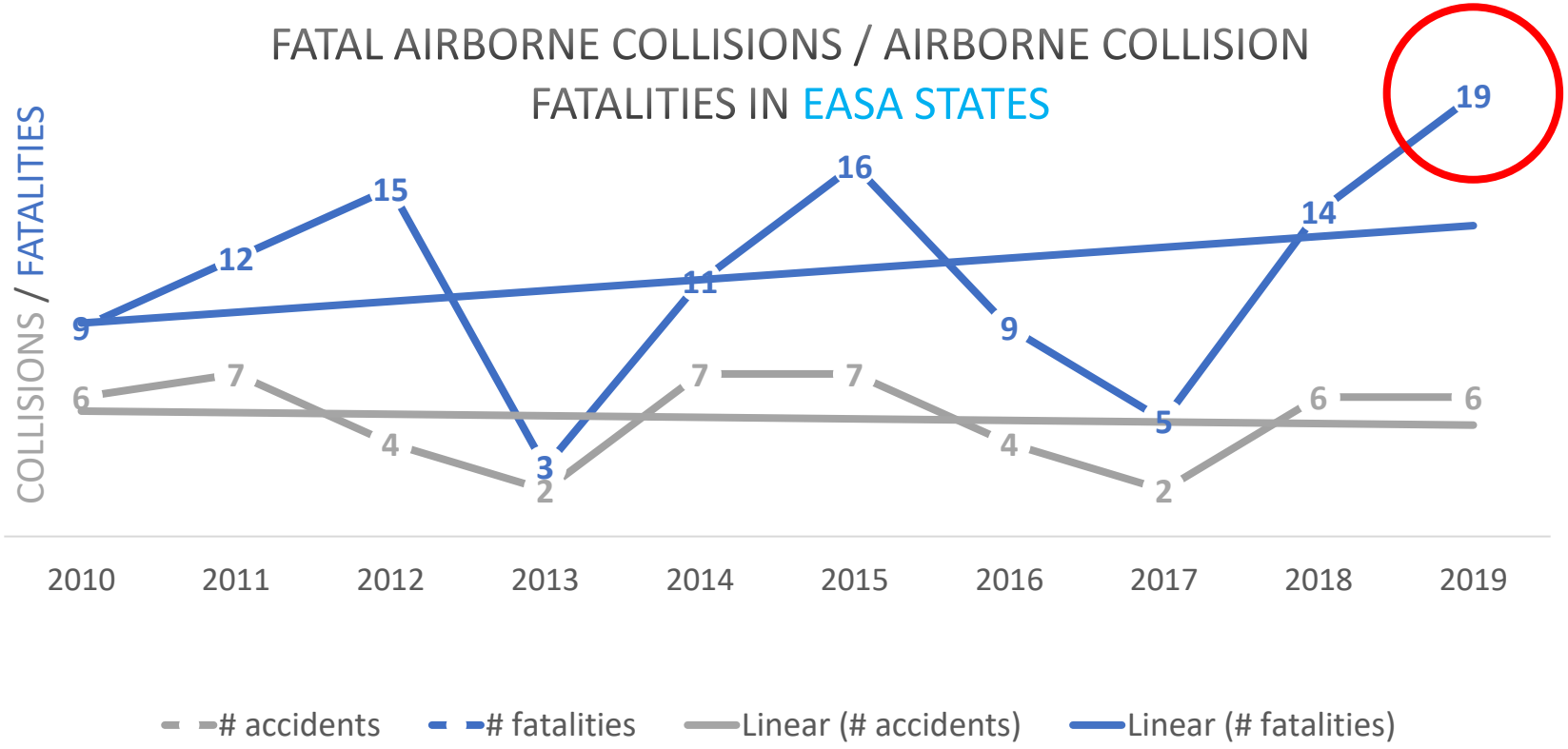
ATM Expert

Safety data 2009 - 2019



60 FATAL COLLISIONS ~ 6 PER YEAR

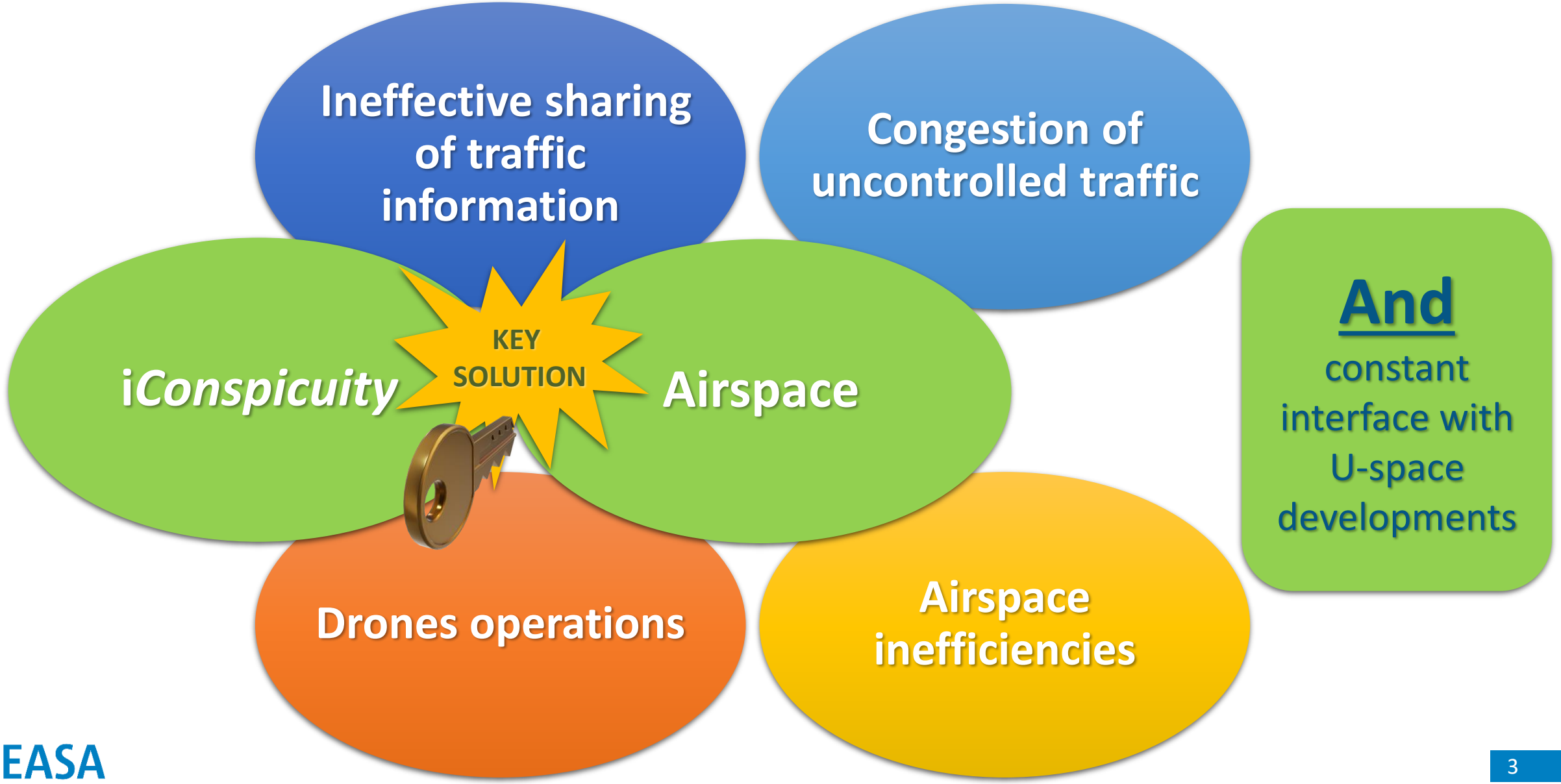
137 FATALITIES ~ 13 PER YEAR

ALL UNCONTROLLED TRAFFIC

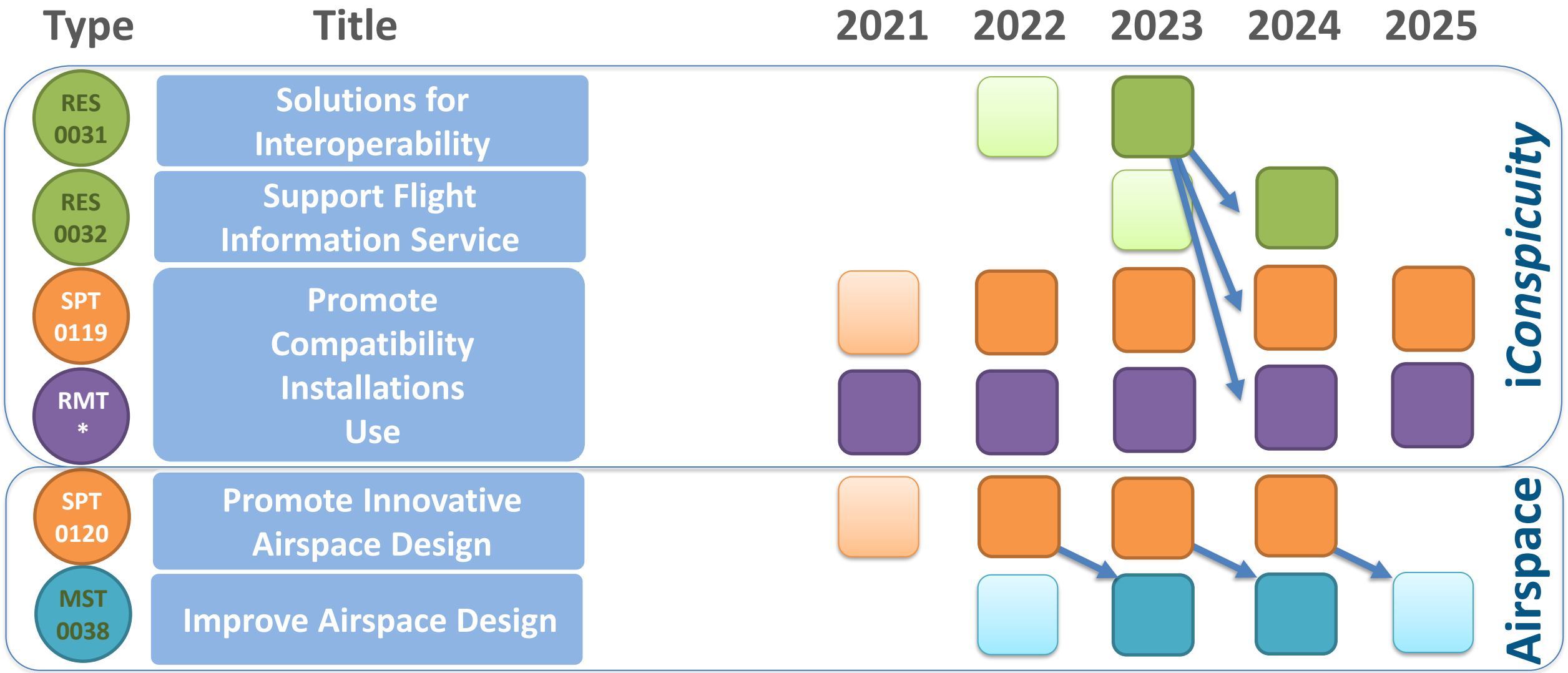
ALL SMALL AIRCRAFT*

*MANY ROTORCRAFT

Problems and Solution Areas



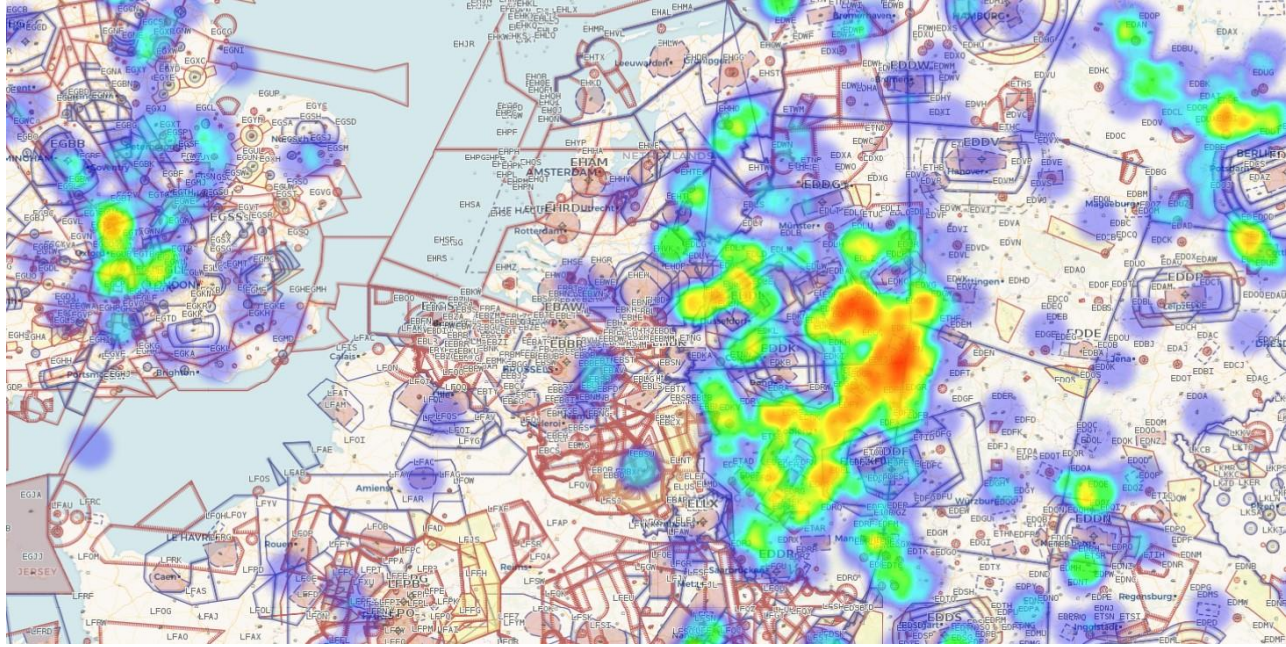
EPAS Actions – i*Conspicuity* & Airspace



*RMT.0690 (CS-STAN), RMT.0230 (U-space), RMT.0519 (CS-ACNS)

U-space

A set of ***'new services'*** and ***'specific procedures'*** designed **to support** safe, efficient and secure **access to airspace for** large numbers of **drones *without airspace segregation*** for the sole use of drones



iConspicuity

'in-flight capability' to transmit position and/or to receive, process and display information about other aircraft, airspace, weather or support to navigation in a real time with the objective ***to enhance pilots' situational awareness***

High Level Roadmap

i*Conspicuity* for Rotorcraft and General Aviation

Step 1

Propose an E-C nspicuity solution fo U-space airspace

A C/GM SERA.6005(c):
Manned aircraft operating in** airspa e designated by the competent authority as a **U-space irspace**, and p provided with an air traffic control service by ANSP, shall continuously make themselves **electronically conspicuous to** the **U-space service providers

Step 2

Build on the U-space solution

Expand the functionalities and **address the GA and Rotorcraft conspicuity issue generally**, **including** the possibility to use the information broadcasted **for Flight Information Service**

Constraints & Boundaries

Development of e-Conspicuity for SERA.6005(c) by Q4 2021

Aircraft (manned)

- **Affordability** (to end users)
- Technology **available now** (aviation & other)
- **Single device policy**
- Simple installations
- Enable airborne collision risk mitigation for manned aircraft

USSP

- Minimum necessary position information (incl. from 3rd parties)
- **Affordable infrastructure** (ideally compatible with UAS needs)
- Minimum performance meeting U-space objectives

Resources

- Existing international standards (aviation & other)
- **Pan-European applicability**
- ITU regulated spectrum
- **Machine readable**
- Open standards (non-proprietary or free of royalties)

Suitable for urban and low level environments

e-conspicuity - constraints and boundaries

Aircraft (manned)

- **Affordability** (to end users)
- Technology **available now** (aviation & other)
- **Single device policy**
- Simple installations

- *Enable airborne collision risk mitigation for manned aircraft*

USSP

- Minimum necessary position information
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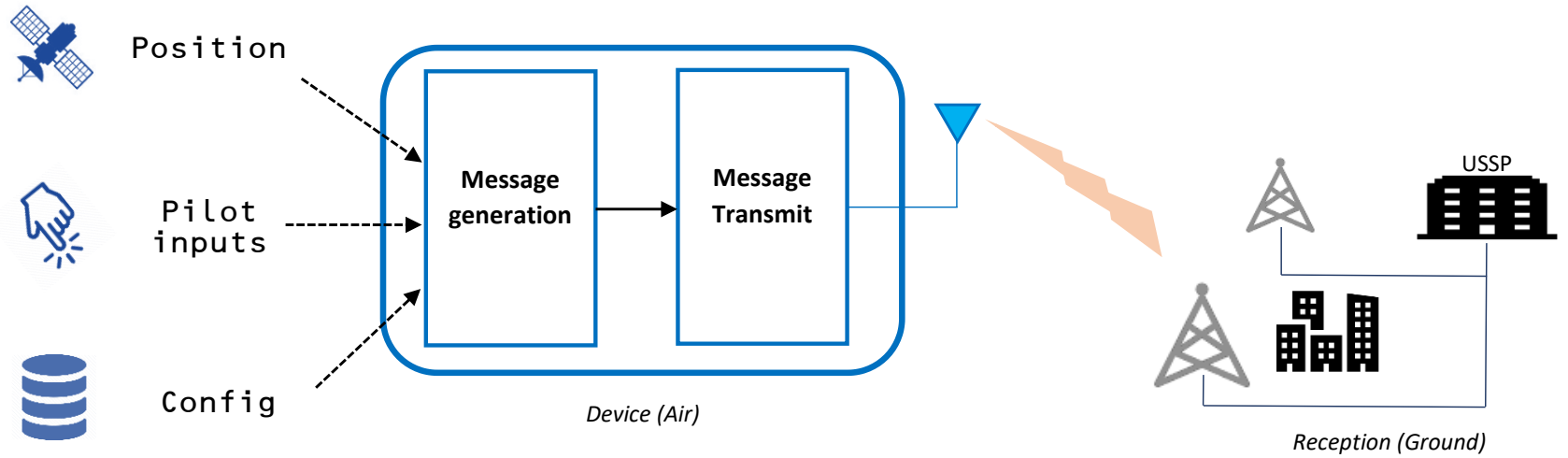
Resources

- Existing international standards (aviation & other)
- **Pan-European applicability**
- ITU regulated spectrum
- **Machine readable**
- Open standards (non-proprietary or free)
- **Saturation of frequency** (1090MHz)

Suitable for urban and low level environments

Introducing ADS-L



- **Minimum standard** for making manned aircraft in U-space conspicuous to USSPs
- **Automatic Dependent Surveillance (ADS) Principle: "-L" is for "Light"**
  - Compatible with **low-cost devices** and **mobile telephones**
  - **GNSS-based** parameters
  - Derived from **ADS-B** and **simplified**
- Should support possible **future applications** ( )

ADS-L Required parameters

- Aircraft address, address type
- Timestamp
- Aircraft category
- Position, altitude
- Velocities, track
- Position accuracy
- Version

Means of Transmission

ADS-B Out (1090 MHz)

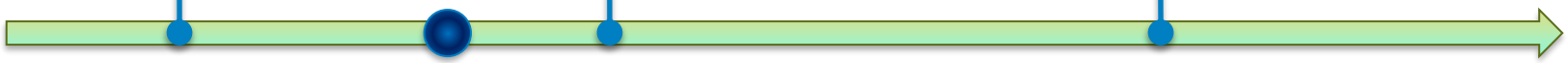
For certified aircraft, using the **existing certified technology** already installed on board

ADS-L (SRD-860)

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

ADS-L (Mobile telephony)

Mobile telephony application transmitting in compliance with ADS-L specifications



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.*

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Mobile Telephony - Feasibility Study

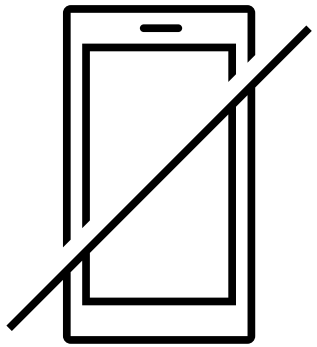
Can existing mo… aircraft … USSPs today?

Aerial Mobile Telephony is now possible in Europe !

CEPT/ECC Decision (22)07 of 18 November 2022
on harmonised technical conditions for the usage of aerial UE for communications based on LTE and 5G NR in the bands 703-733 MHz, 832-862 MHz, 880-915 MHz, 1710-1785 MHz, 1920-1980 MHz, 2500-2570 MHz and 2570-2620 MHz harmonised for MFCN

Legal certainty for aerial use

Standardization
(frequencies, services, roaming …)



Smartphones / Dedicated devices

Mobile Telephony – Next Steps

Expert group

Ad-hoc Group of Experts with background in aviation and mobile telecommunication networks
EASA, ACJA (GUTMA & GSMA) and relevant OEMs

Existing Standards

Review of the CEPT/ECC decision and collection of existing and relevant mobile telecommunication network standards and specifications

EASA Specification

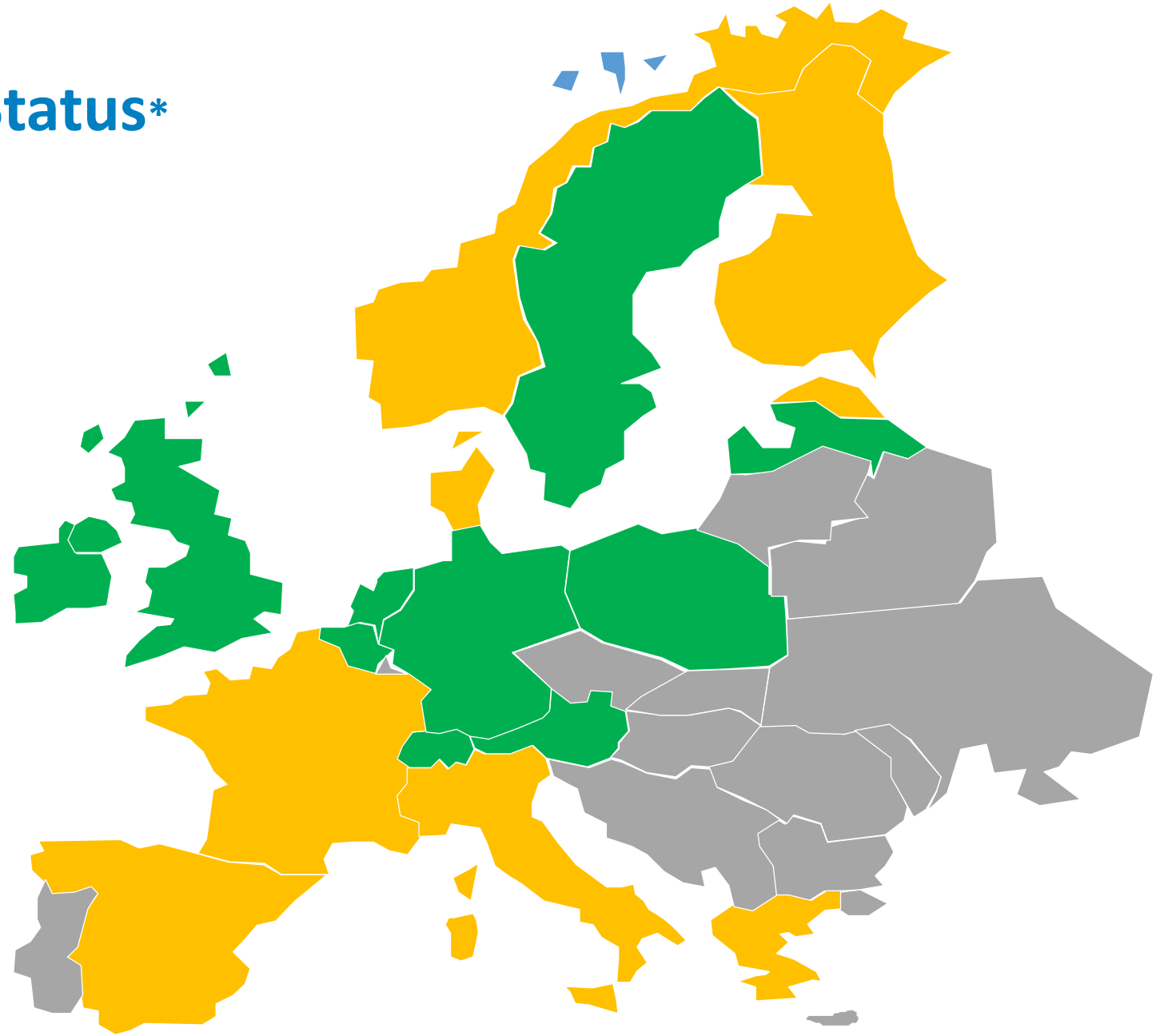
Drafting of EASA Technical Specification for ADS-L transmissions using (aerial) mobile telecommunication networks
(possible fusion with ADS-L 4 SRD860 specification)

ADS-L 4 MOBILE

(expected in 2023)

Aerial Mobile Services Status*

- Ready for commercial use
- Almost ready for deployment
- No information



* Overview based on industry feedback

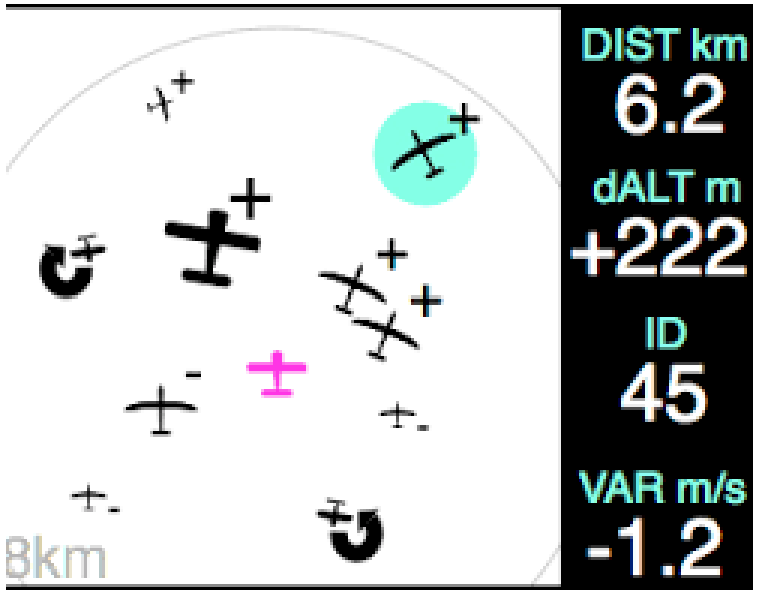
Summary – Step 1

Certified ADS-B out

- ✓ ICAO standard
- ✓ Already used
- ✓ All elements in place

SRD860

- ✓ Utilises past investments
- ✓ Affordable infrastructure
- ✓ **ADS-L 4 SRD-860** PUBLISHED



Mobile Telephony

- ✓ Existing infrastructure
- **Need for implementation**
- SOON **ADS-L 4 Mobile***

**expected in 2023*

EASA

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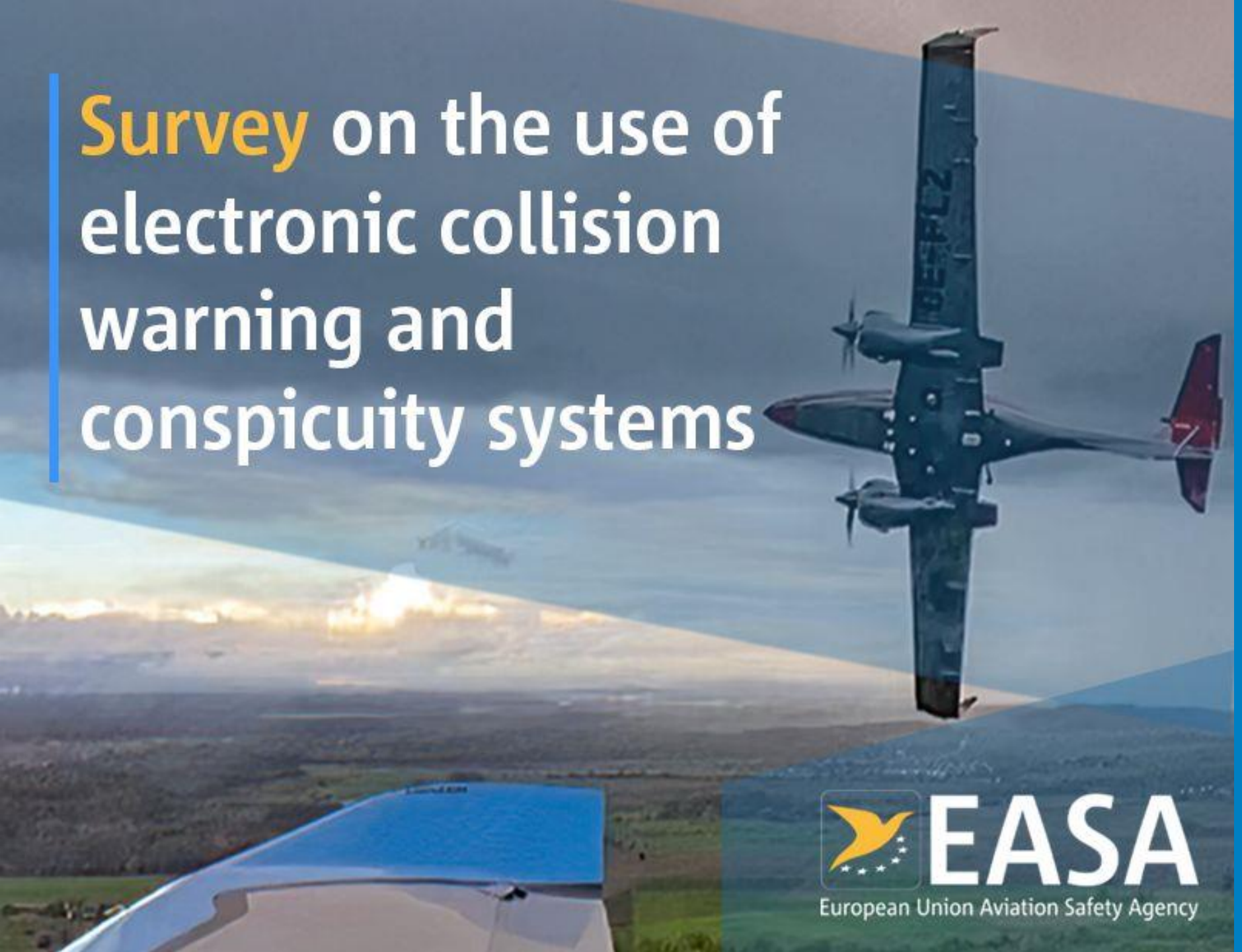
EASA RES.0031– i*Conspicuity interoperability*

Objectives

- → **Review** the existing deployments, solutions, standards
- → **Identify and analyze** the set of requirements enabling interoperability (incl. ATM and U-space)
- → **Develop** a series of case studies, **identify** the suitable deployment scenarios and the coordination actions
- → **Assess** the additional benefits for airspace users (SAR, Big Data, Accidents investigation …)

Comprehensive roadmap for the development of technical standards addressing the interoperability



2000+ pilots joined !

together 4safety

EASA RES.0031 – i*Conspicuity* interoperability Timeline

EASA RES.0032 – i*Conspicuity* 4 FIS …and more

RES.0032	Use of iConspicuity devices/systems in flight information services

EASA will investigate the use of iConspicuity devices/systems in air traffic management flight information services (ATM FIS), considering the 'net safety benefit' and the 'operational safety assessment' principles for the assessment of implementation issues and of possible benefits for Search and Rescue (SAR).

Status	Not started
SIs	SI-0043 Deconfliction of IFR and VFR traffic
SRs	n/a
Reference(s)	European Action Plan for Airspace Infringement Risk Reduction (EAPAIRR) EASA BIS 'Airborne Collision Risk'
Dependencies	RES.0031
Affected stakeholders	Pilots, Aircraft operators - all, NCAs, ANSPs, industry (e.g. avionics and ATM systems manufacturers)
Owner	EASA ED.4 Air Traffic Department

PLANNING MILESTONES		
Starting date	**Interim report**	**Final report**
2024-Q4	2025-Q1	2025-Q2

i*Conspicuity* & ADS-L related queries

- → Mode-S basic surveillance vs U-space
- → ADS-L - future developments
- → …