



THE VTOL
SHOW AND
SAFETY
CONFERENCE



Cologne, Germany

17–20 Nov 2025

Exhibits Open 18–20 Nov

europeanrotors.eu

iConspicuity

How to improve Mid-air collision avoidance

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supported by



Mid-air collision avoidance

See and avoid, is it sufficient?

BEA *Safety together*
Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

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Accident to the Piper PA18 registered F-BAYP on 21/01/2025 at Les Allues

Collision with tandem paragliders on approach, loss of control, collision with house

Responsible entity **France - BEA**

SUMMARY

The translation below is for information only:

During the approach to the Méribel altiport, the aircraft collided with a tandem paraglider. The pilots lost control of the aircraft and it collided with a chalet. The paragliders managed to land.



L'avion est entré en collision avec un parapente avant de s'écraser sur un chalet de Méribel © Aucun(e) - Kylie Richards

Mid-air collision avoidance

See and avoid, is it sufficient?

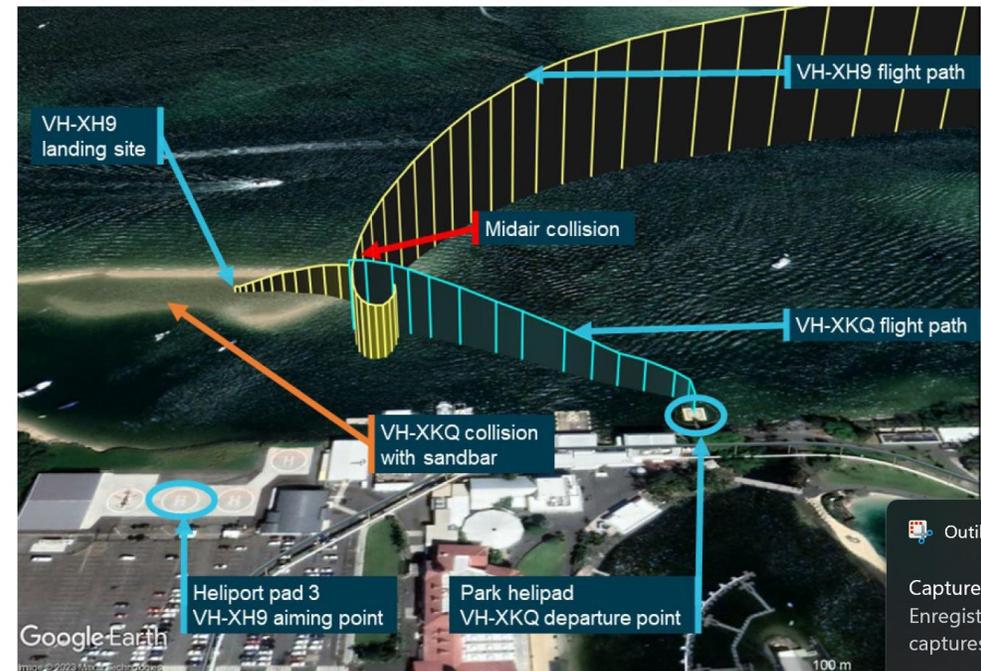
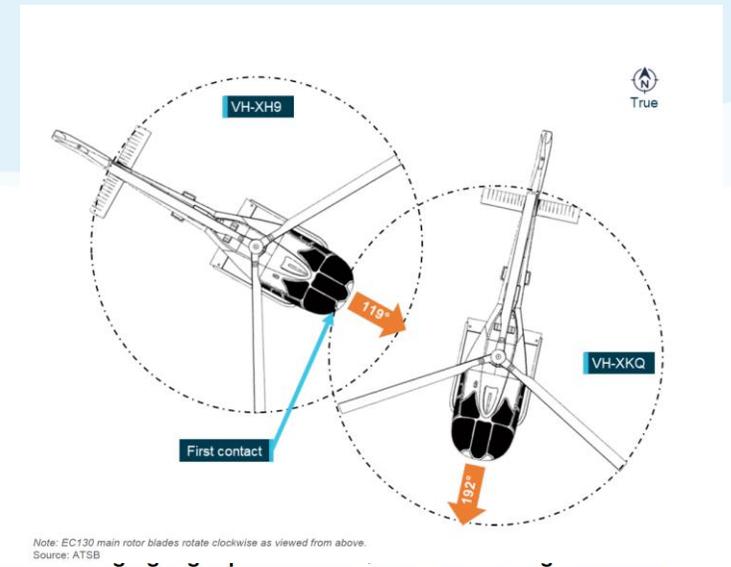


Australian Government

Australian Transport Safety Bureau

Midair collision involving Eurocopter EC130 B4, VH-XH9, and Eurocopter EC130 B4, VH-XKQ

Main Beach, Gold Coast, Queensland, on 2 January 2023



Note: Satellite image was taken near high tide. Sandbar was exposed at the time of the accident. Source: Google Earth, annotated by the ATSB

Mid-air collision avoidance

See and avoid, is it sufficient?



Helicopter mid-air collision on the Gold Coast, April 2025

<https://youtu.be/dum4SfnX8uk>

(08:15 – 15:16)

Mid-air collision avoidance



GA Flights and eConspicuity

- 70% of lower airspace (< 5000 ft AGL) traffic is un-certified
- Lack of system inter-operability
- ADS-B out represents < 10%

Mid-air collision avoidance

And don't forget Drones...



Mid-air collision avoidance

COLLISION RISKS facts

Low altitude < 2000'



Overhead tourist sites



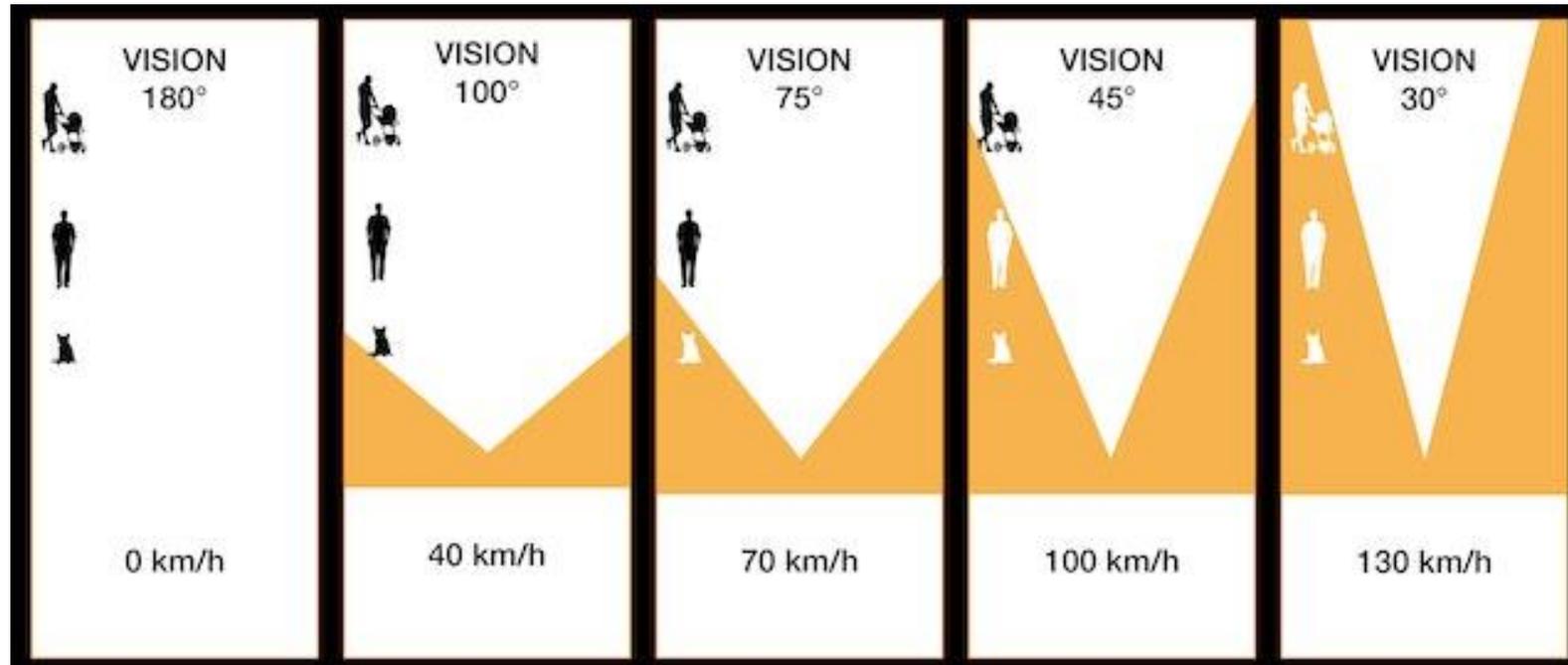
Aerodrome approach



Mid-air collision avoidance

See and Avoid Human Factors limitations

1 - Speed is reducing field of view



• **“Looking is not the same as searching”**: a VFR pilot spends an average of 20% of its time scanning the sky without actively searching for potential hazards

Mid-air collision avoidance

See and Avoid Human Factors limitations

2 - Glare

When the source of glare is 5 degrees from the line of sight, visual effectiveness is reduced by 84%.



Source: "Limitations of the see-and-avoid principle" by Alan Hobbs

Mid-air collision avoidance

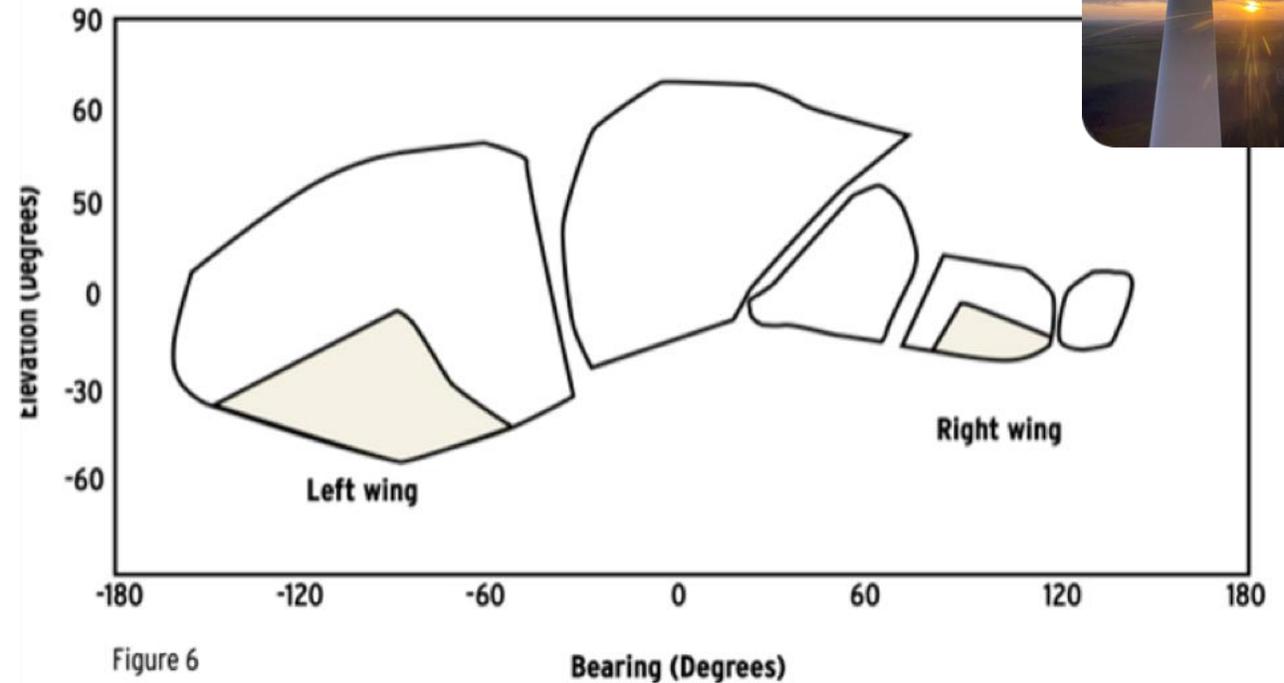
See and Avoid Human Factors limitations

3 - Cockpit visibility



- Cockpit obstructions reduce the field of vision by up to **30%**.

Limited cockpit visibility from a typical general aviation aircraft

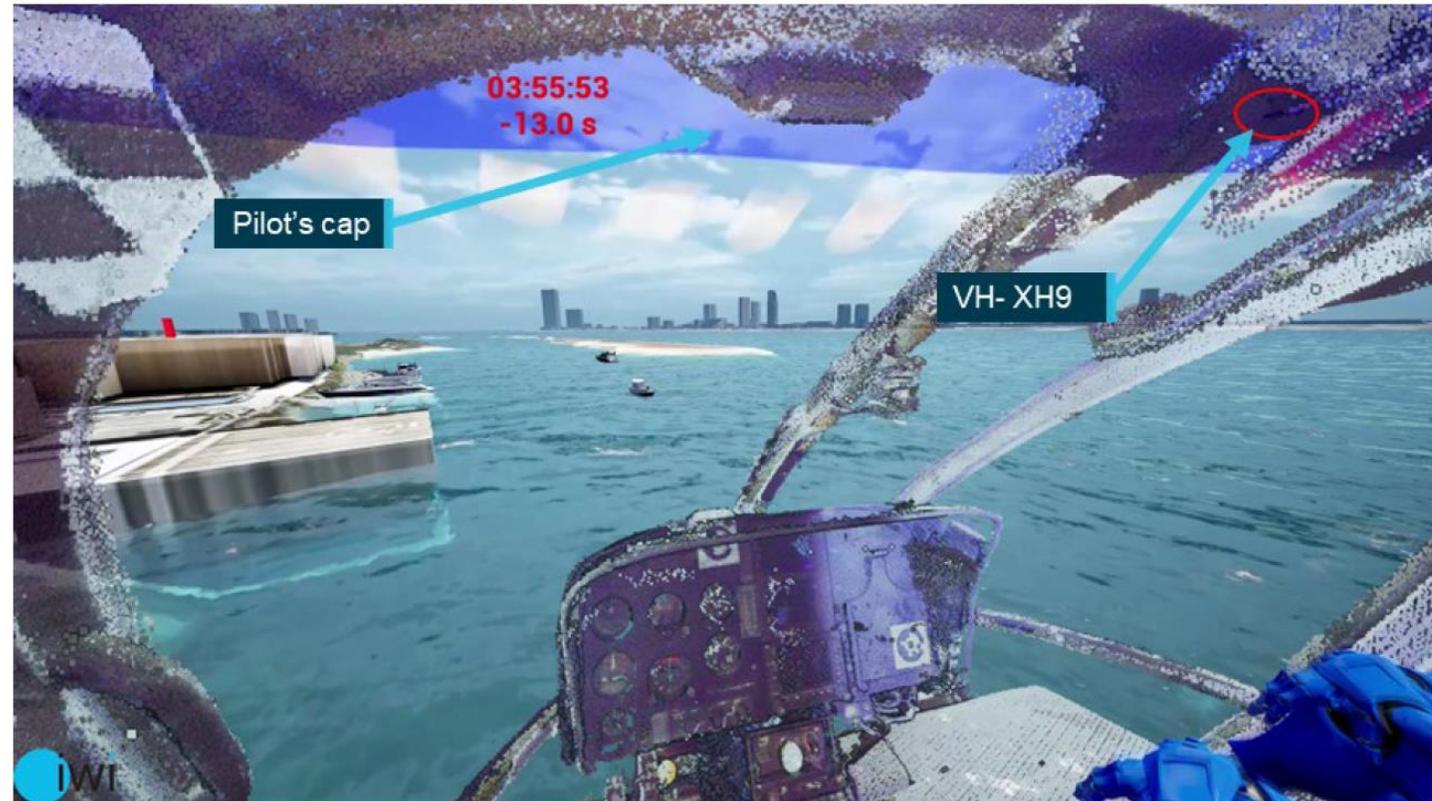


Mid-air collision avoidance

See and Avoid Human Factors limitations

3 - Cockpit visibility

Figure 38: Simulated view from XKQ, 13 s before collision (looking straight ahead)



Note: Pilot's cap is represented by the transparent blue section at the top of the image.
Source: iaviation GmbH, annotated by the ATSB

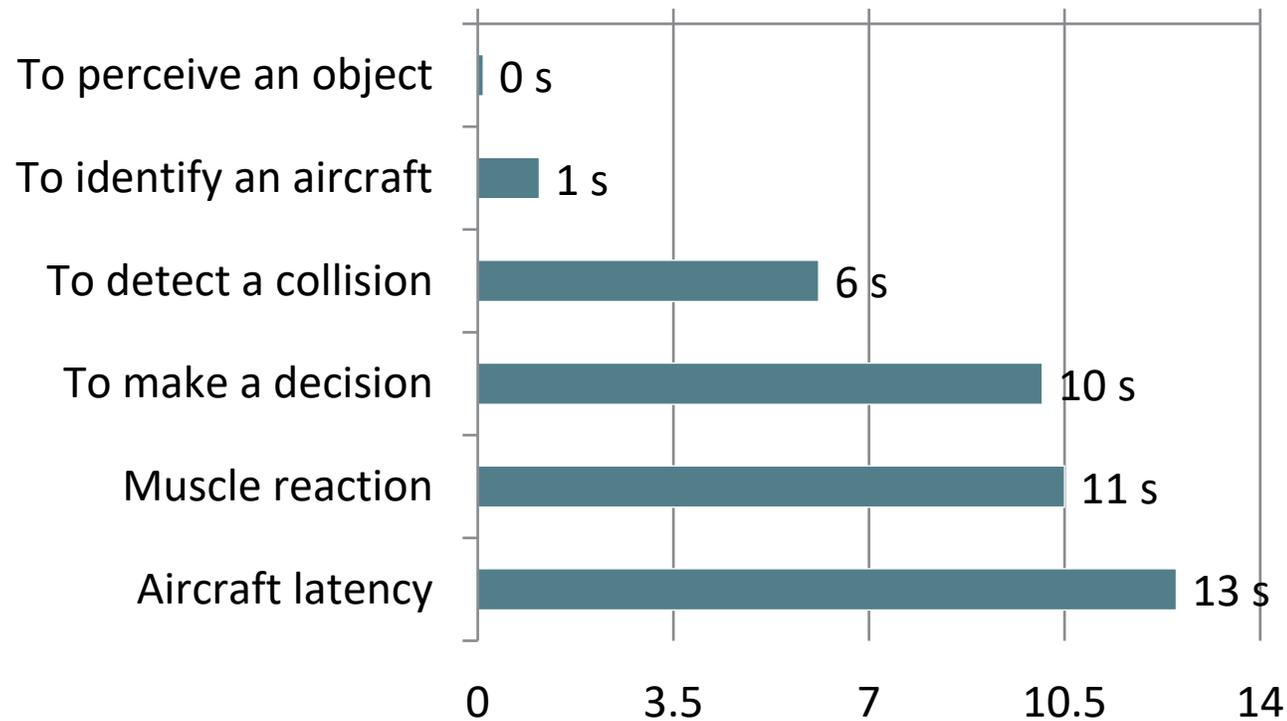


Australian Government
Australian Transport Safety Bureau

Mid-air collision avoidance

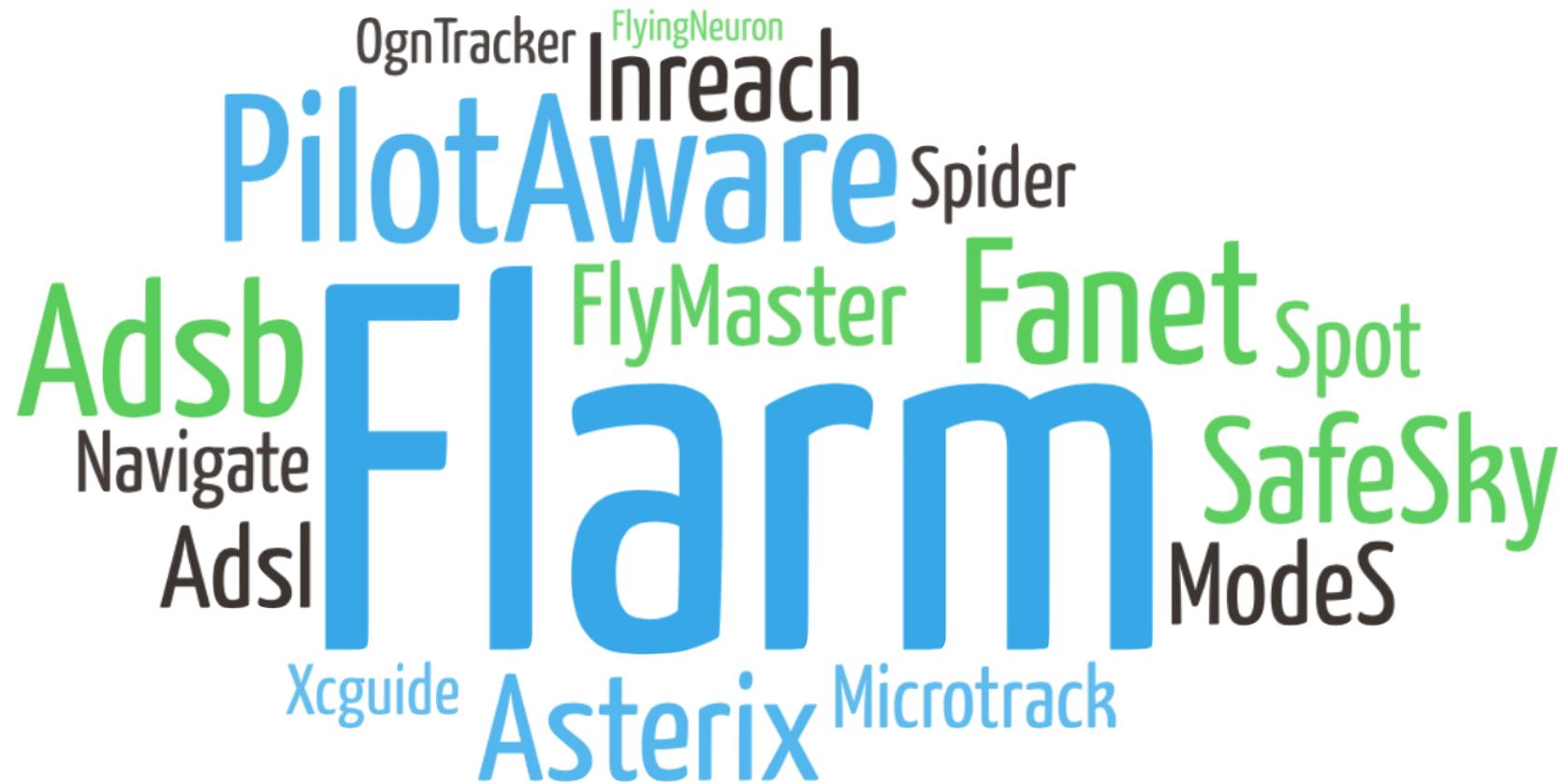
See and Avoid Human Factors limitations

4 - Average reaction time: 12.5 seconds for collision avoidance



Mid-air collision avoidance

What should I use to see and be seen?



Mid-air collision avoidance

What should I use to see and be seen?



Mid-air collision avoidance

Which dangers to be seen?



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- **Situations like this highlight the limitations of See and Avoid** as the only means of conflict detection to prevent mid-air collisions;
- **It is important for all aircraft to “Be Seen” by being equipped with eConspicuity devices** that transmit an aircraft’s position to be electronically conspicuous to other airspace users;
- **Different systems** such as ADS-B, ADS-L, ADS-L based mobile application, or FLARM **are not compatible with each other in isolation**. This is where *iConspicuity* applications and systems **help to collect inputs from different sources** to help pilots to “Be aware” of other traffic around them;

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- The technology in these systems is developing rapidly. **Some can also transmit additional information, such as weather, used radio frequencies, NOTAMs and airspace data, to greatly enhance situational awareness;**
- **The exact type of system you choose for your operation or aircraft will depend on where you fly the most.** Use ADS-B systems if you fly primarily in controlled airspace, while iConspicuity solutions compatible with the ADS-L standard help to integrate different inputs and are the best option in uncontrolled airspace where there is a greater traffic mix.

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If your helicopter or aircraft isn't equipped with a TCAS or ADS-B IN system, an *iConspicuity* solution is an excellent and low-cost way to Be Seen and greatly enhance your situational awareness.

These *iConspicuity* systems **require no certification** and can be deployed via dedicated equipment or as an app on your **smartphone or tablet** (e.g. as an initial solution however with reduced capability to receive ADS-L and ADS-B directly). **The ideal solution should be capable of detecting aircraft using other equipment as well**, as ADS-B, Mode S or FLARM. However, it will not detect transponders with Mode A and C, or Mode S if not transmitting GPS coordinates.

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For more information on *iConspicuity* and associated safety considerations, refer to:

- The EASA webpage and video *iConspicuity* Interoperability of Electronic Conspicuity Systems for General Aviation;
- The EASA ADS-L Coalition: a partnership where members commit to advancing ADS-L to improve situational awareness in the air and on the ground.



ADS-L Coalition



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Regulatory guidance on use of PEDs and EFBs on board an aircraft can be found in:

Regulation (EU) No. 965/2012 – Air Operations, particularly:

- AMC1 and AMC2 NCO.GEN.125 – Portable Electronic Devices (PEDs)
- AMC1 and AMC2 SPO.GEN.131(a) Use of electronic flight bags (EFBs)
- AMC1 CAT.GEN.MPA.141(b) – Use of Electronic Flight Bags (EFBs)

**Thank you for you
attention**