# SEE - BE SEEN - in the air

## eConspicuity

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European Microlight Federation

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# SEE - BE SEEN - in the air

## AGENDA

**European Microlight Federation**

**eConspicuity ?**

- Why?
- How can I make myself visible in the air?
- What can I ”SEE” in the air?
- (non) Interoperability of systems

**Actual limitations**

- Let’s be “VISIBLE”- eCONSPICUOUS
- Let’s embrace the digital future

# EMF Ambassador for Ultralight flying in Europe. +60.000 pilots

- Exchange-Cooperation between national UL Federations (23)
- Keep UL flying simple, accessible, safe, responsible- free of unnecessary burdens
- Lobbying at EASA/EU level:
  - Promoting cross - border flights
  - Safe integration of all airspace users – drones - eConspicuity
  - Cooperation with other EU Federations EAS – EHPU

European Microlight Federation

emf

https://emf.aero

MLA Flying in Europe

# EMF - Position on eConspicuity for crewed and noncrewed aircraft

Safe integration of BVLOS RPAS activity with existing aviation will need a System that involves all aircraft being electronically visible.

The System must :

1. Be fully accessible to all aviation activities, including UL, Paramotor, Free Flight
2. Not introduce any extra risks or costs to existing aviation
3. Compatible with existing devices and systems (ADS-B, Mode S, Flarm…) : Interoperability
4. Not create greater airspace constraints than currently exist and enable more and easier access to existing airspace constraints

° Position similar to EHPU and defended by Europe Airsports

European Microlight Federation

emf

https://emf.aero

# eConspicuity – WHY ?

**SAFETY …. and much more !**

- For all airspace users – ATC
- Massive Arrival of Drones: they don't SEE us – we don't SEE them: how to integrate them into 'our' airspace
- For our GA community of +500.000 pilots: – showing to the world: we are there too!
- Special interests for GA Pilots:
  airfield operations, SAR, AAIU, and specific needs by category (gliders, free flight, flying together…)
- In the future?
  Efficient (automated?) dynamic airspace use

**We are flying blind!**

- 80 years old technology - Radio – Radar
- ANSP – ATC: focus on commercial air traffic
- Limitations of our eyes
- Not all traffic is 'showing' up
- Devices are not 'interoperable'

**100x more Airprox than reported….**

# There is much more traffic than you (can) SEE

**GOT AN AIRPROX ?  Reported?**

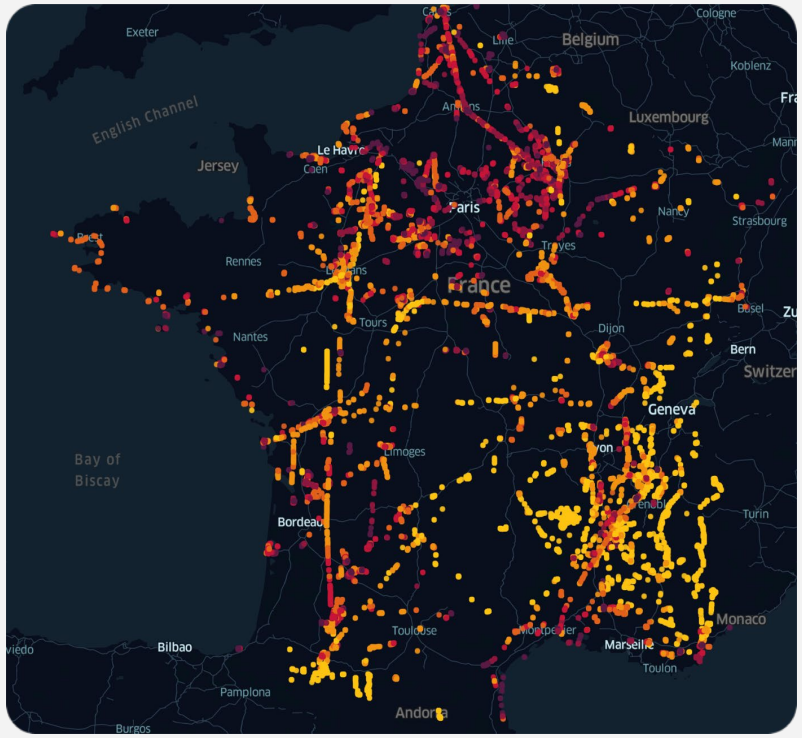
- Do you look out? Enough and efficient? (no…)
  Scanning techniques - EGAST Leaflet 2010
- FIS does not SEE all traffic!
- Not all pilots are ‘visible’ or have devices/radios on board

**Pilots : please report !  - Just culture**

All national CAA have to report to EASA: See AIP ENR 1.14
But :  lack of DATA …

- NL : https://onderzoeksraad.nl/en/onderzoek/the-approach-to-airproxes/
- UK : UK AIRPROX Board (UKAB) Factsheet - https://www.airproxboard.org.uk/media/faadvokn/ukab-factsheet.pdf

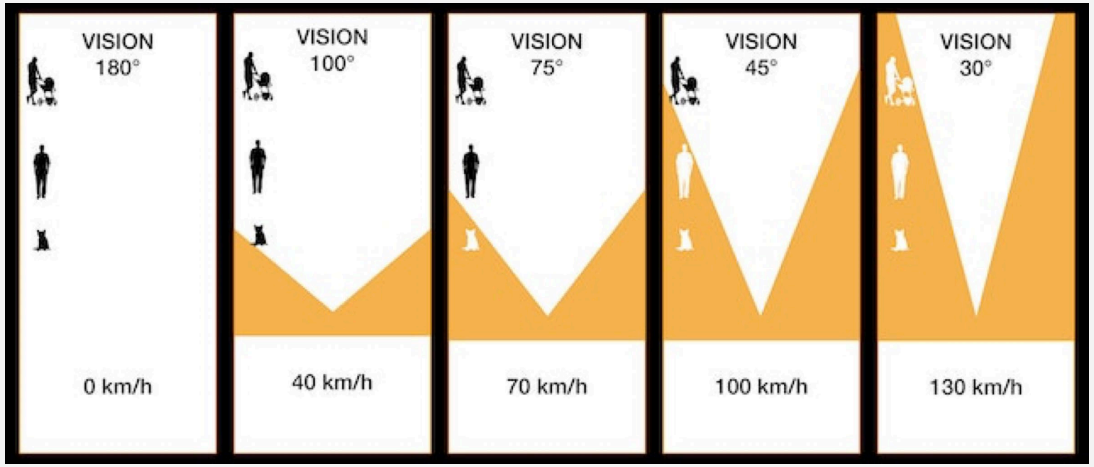
NMAC – France 2023 – SafeSky data



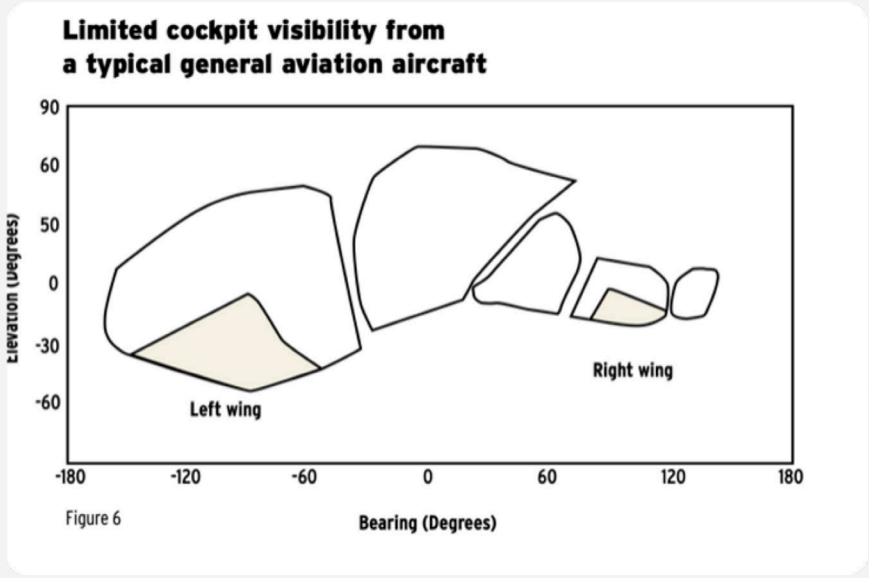
# Limitations of ’SEE and AVOID’

COCKPIT

EYES - VIEW




Aging – Reaction time – Scanning techniques




# EASA 2024 Safety Review

Top 4 things to focus on:

- Manage Your Flight
  Prepare thoroughly, and stay alert at all stages

- Stay in Control
  Practice your emergency reactions to maintain control even in stressful situations.
- Cope with Weather
  Don’t take chances! Know how to handle tricky weather conditions

- See and be Seen - Avoid mid-air collisions
  -keep good awareness of where you are and where other aircraft are
  -install eConspicuity equipment to SEE and BE SEEN by other aircraft

[EASA Annual Safety Review (ASR) 2024]


**EASA Annual Safety Review 2024 - GA Introduction**

# RISK OF AIRPROX?

Lower altitudes

Tourist places

Approach of airfield

# Drones :  U-Space or Segregated zones ?

**U-Space :**

- Drones using LTE
- SERA 6005,c
  In non-controlled zones:  enter only if you are **electronically VISIBLE** – ADS-L
- Not all pilots are ‘visible’ or have devices/radios on board

And/Or?

**Segregated zones :**

- temporary?
- Prohibited for GA pilot (categories)?  TMZ?

Solution ?

All traffic must be **electronically VISIBLE**


**UK : ‘Roadmap’ on integrating drone operations into UK airspace** (25 September 2024)

https://flyer.co.uk/drones-to-be-sharing-same-airspace-by-2027-says-caa/

# How can I make myself visible in the air ?

## RADIO

1090 Mhz (1030Mhz)

ADS-B out

MODE S°

(ELT)
(TCAS)

For ATC : YES

For Pilots ?

868 Mhz

(UAT - 978 Mhz)

PowerFLARM
OGN Tracker
Flying Neurons
Pilote Aware
SkeyEcho
Syride
Skytraxx
Flymaster
InReach
Spot
Naviter
Spider
FANET
Microtrack (France only)

For ATC : NO

For Pilots ?


## LTE

### Software

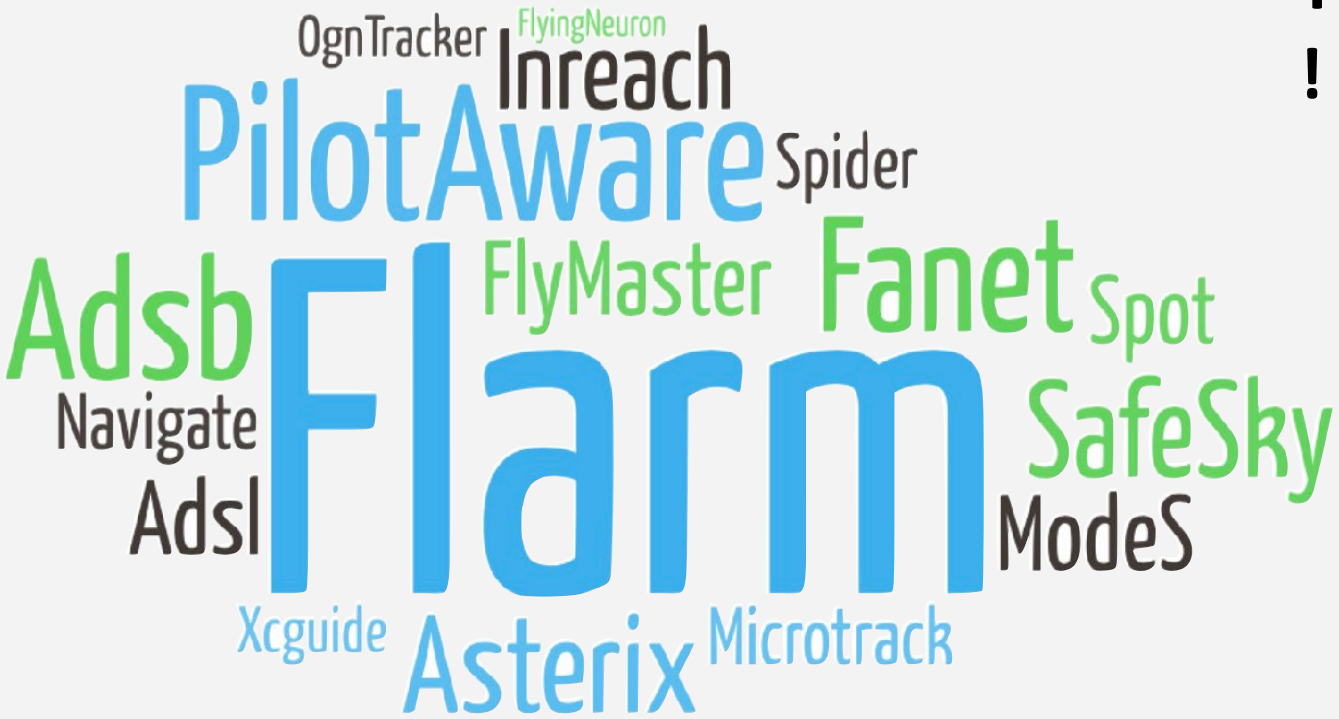
SafeSky

EASYVFR
AirNavPro
AirSports.no
ADAC own
software
GAGGLE
eVario
TheFlightVario
WinIt
XC Track
XCGuide

For ATC : NO

For Pilots ?

# Multiple systems : not interoperable




**They do not “SEE” each other !**

Norvegian CAA Training Guide
https://training.caa.no/Electronic_Conspicuity/#/%20

New EASA Standard: ADS-L (Sera 6005,c)

- ADS-B
- ADS-L SRD-860
- ADS-L Mobile : available - low investment
- Ground and satellite-based

# WILL I BE SEEN BY OTHER PILOTS?

## NO … UNLESS…

DIRECT VIA SIMILAR DEVICES

- ADS-B : NO, unless
- FLARM : yes for other FLARM USERS
- Mode S : NO, unless
- Other devices: NO, unless

INDIRECT VIA DEVICES/SOFTWARE
- Via OGN and SafeSky

## NEED FOR INTEROPERABILITY

BRINGING TOGETHER ALL SOURCES

- DEVICES – SOFTWARE
- GRONDSTATIONS
- NETWORKS

Timestamping, De-duplicating, ADS-L Formatting….

WITH A VIEW OF SENDING THIS TO PILOTS IN THE AIR

# INTEROPERABILITY

## COALITION OF ECONSPICUITY

Collaboration SafeSky – OGN – AVIONIX and partners :

- Collecting all these traffic data (radio + LTE)
- Making them available to Pilots in the Air
- ADS-L compatible


**Free flight**

Gaggle, Syride, eVario, XCTrack, Flymaster, theFlightVario, SKYTRAXX, Air3, Wingit, AirSports.no

**Drones**

Aviant, SkeyDrone, SAFIR-Ready, Naviation, HemsWX, CavokUAS, Norwegian Police Air Support Unit

**Navigation software**

EasyVFR, AirNavigationPro

**eConspicuous hardware**

SkyEcho, PowerFLARM, PilotAware, SafeSky Inside® devices, and any GDL90 device

**Radio protocols**

868Mhz and 1090Mhz, ADS-B, FLARM, Mode S (using MLAT), ADS-L, Fanet, Microtrack, OGN tracker, PilotAware, FlyingNeurons, Spider, Spot, InReach, Navigate, ...

# WHAT CAN PILOTS SEE IN THE AIR WITH SAFESKY?

## All traffic that is  made ‘Visible’ by the collaborative network

## Not all – yet…

Via cooperative networks of ground stations
(ADS-B, Flarm, Mode S° )

SafeSky users (+70.000 in EU)

Users of collaborative devices and software
(EasyVFR, AirNavPro, XC-Track, eVario, …Gaggle, SKYTRAXX, Syride, Flymaster, Microtrack, Flying Neurons, Pilote Aware, Stratux …)

All visible :

- in the SafeSky app – for FREE !
- in all compatible cooperating devices/software

More info :
https://docs.safesky.app/books/safesky-pilot-playbook/page/what-will-you-get

# ACTUAL LIMITATIONS

You can help!

Make yourselves visible!

## Aircraft that do not transmit remain Invisible

- Ask
- Convince
- Urge other pilots to become ‘Visible’ by all means

## Be aware of the limitations

- Mode S: not visible if not in reach of 4 ground stations
- Europe is not (yet) fully covered by ground stations
- Flight Information Services do not see all traffic
- Drone traffic to be incorporated

## Human Factors eC use in flight

- GASCO Study ‘2022)
- Advantages f eC use
- 6 Pitfalls

https://youtu.be/-zVqdQNqbFM

# LET’S BE “VISIBLE” - ECONSPICUOUS

Be part of the solution!

## By all existing means

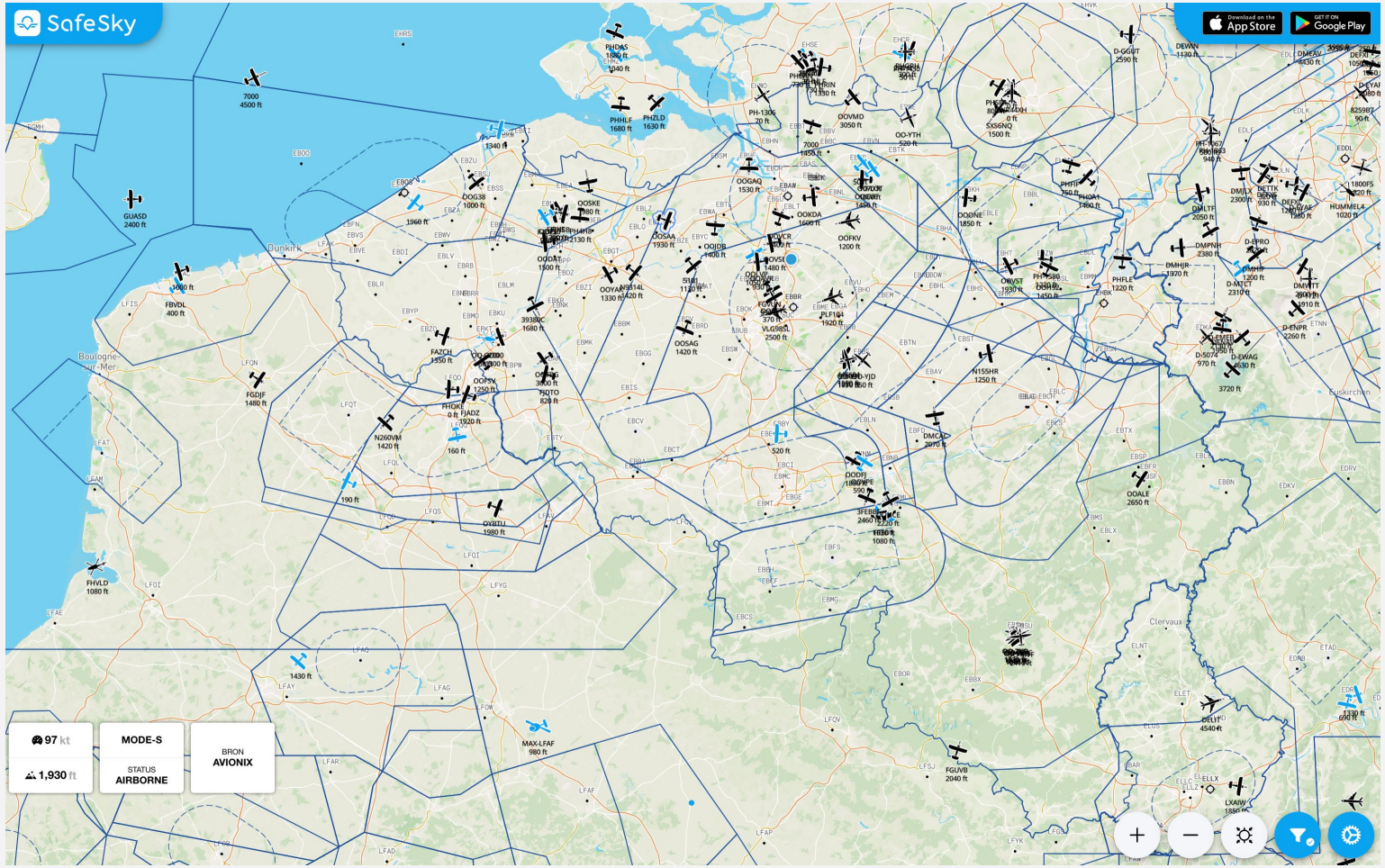
- ADS-B, Transponder Mode S, Flarm
- EasyVFR/AirnavPro
- Other cooperative devices/software
- Or by SafeSky App : it’s free - anonymous

## Use it cleverly

- It is just a help, but a precious one
- Be aware of the limitations (battery – internet connection)
- Ask your co-pilot, or passenger to help you Look Out

## Look out use technology to assist you

# Live from the sky




https://live.safesky.app/map?lat=50.55791&lng=4.71012&zoom=7.50

A very helpful tool : BUT …

- Not all traffic
- Not 100% coverage

- More to come
  - drones (Norway)
  - Ground stations
  - More users of eC

# The future?

Cellular Network – drones +GA

Ground – or Satellite based

Minor adaptations of antennas

Digital airspace

Business cases – outside aviation

**SAFETY**

Direct ‘real-time’ eConspicuity: anti-collision
Follow up of infringement – Just Culture
Direct access to NOTAM – WEATHER - ALERTS

**AUTOMATED – DYNAMIC AIRSPACE**

Airspace use and limitations adapted to real airspace use
Direct communication
Automated follow-up of air traffic in clubs
Data-based policies…