

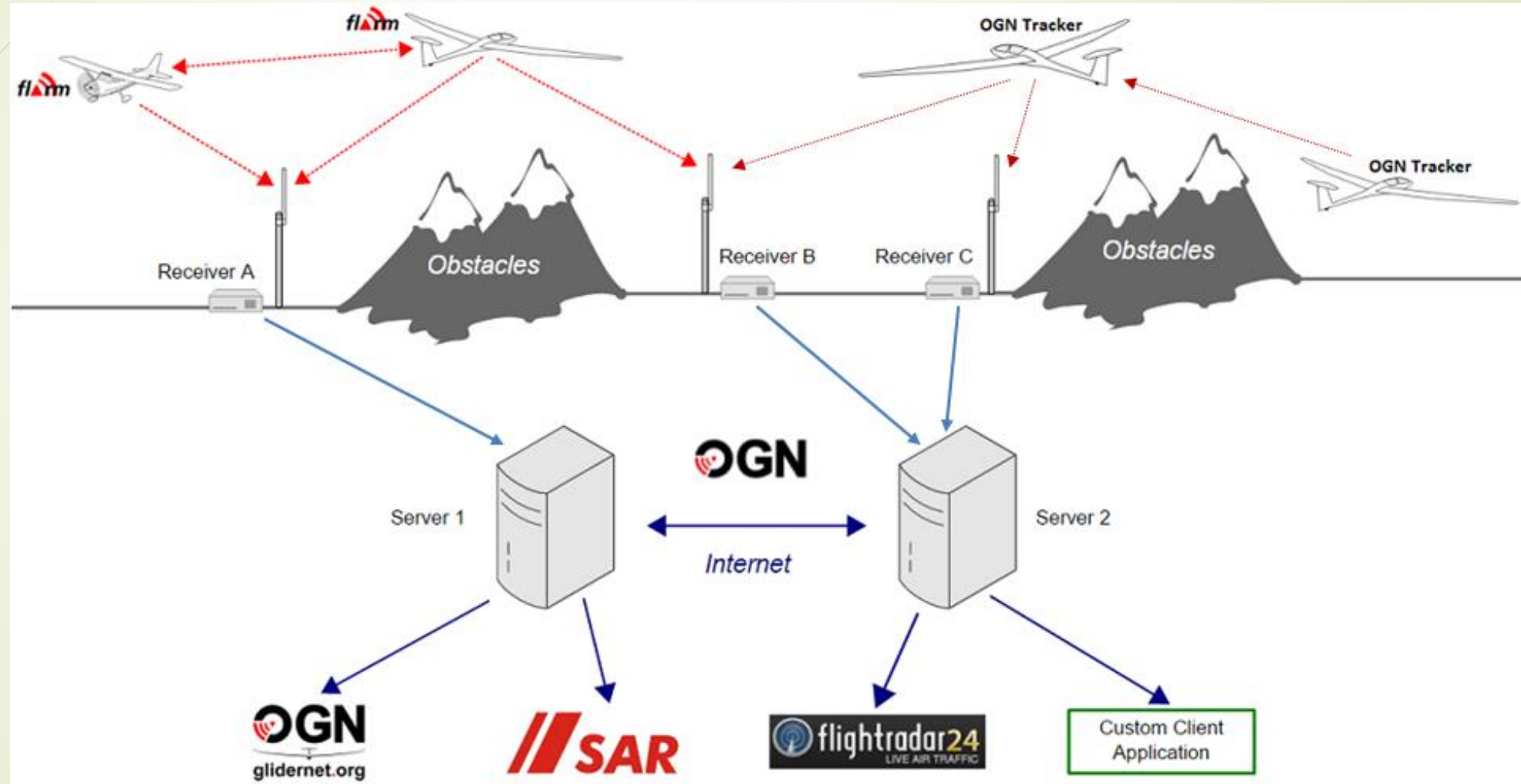
iConspicuity in Spain

Angel Casado

Jornadas de Aviación General

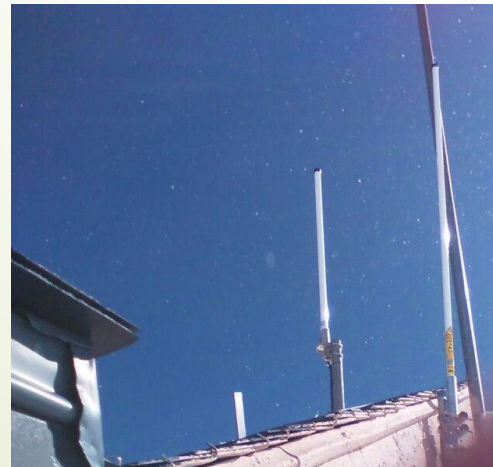
Madrid – Diciembre 2025

How Open Glider Network works:



3

OGN stations:



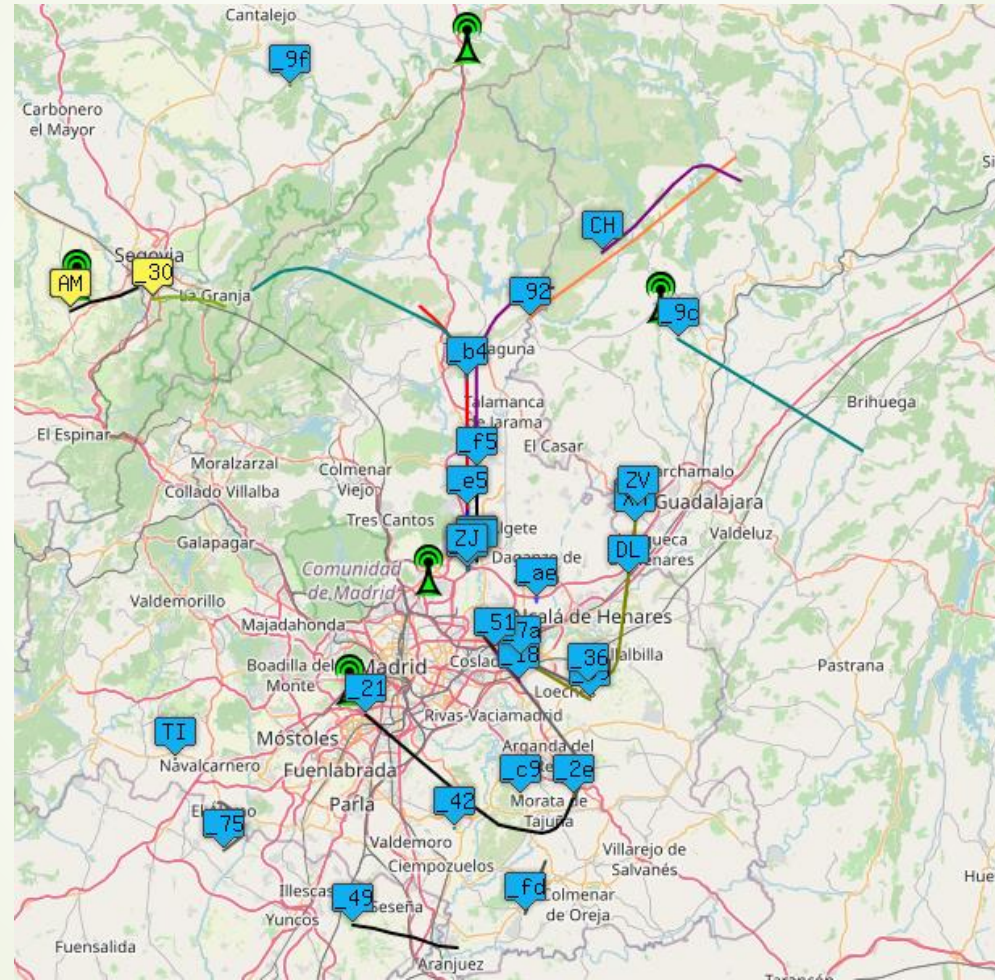
Devices

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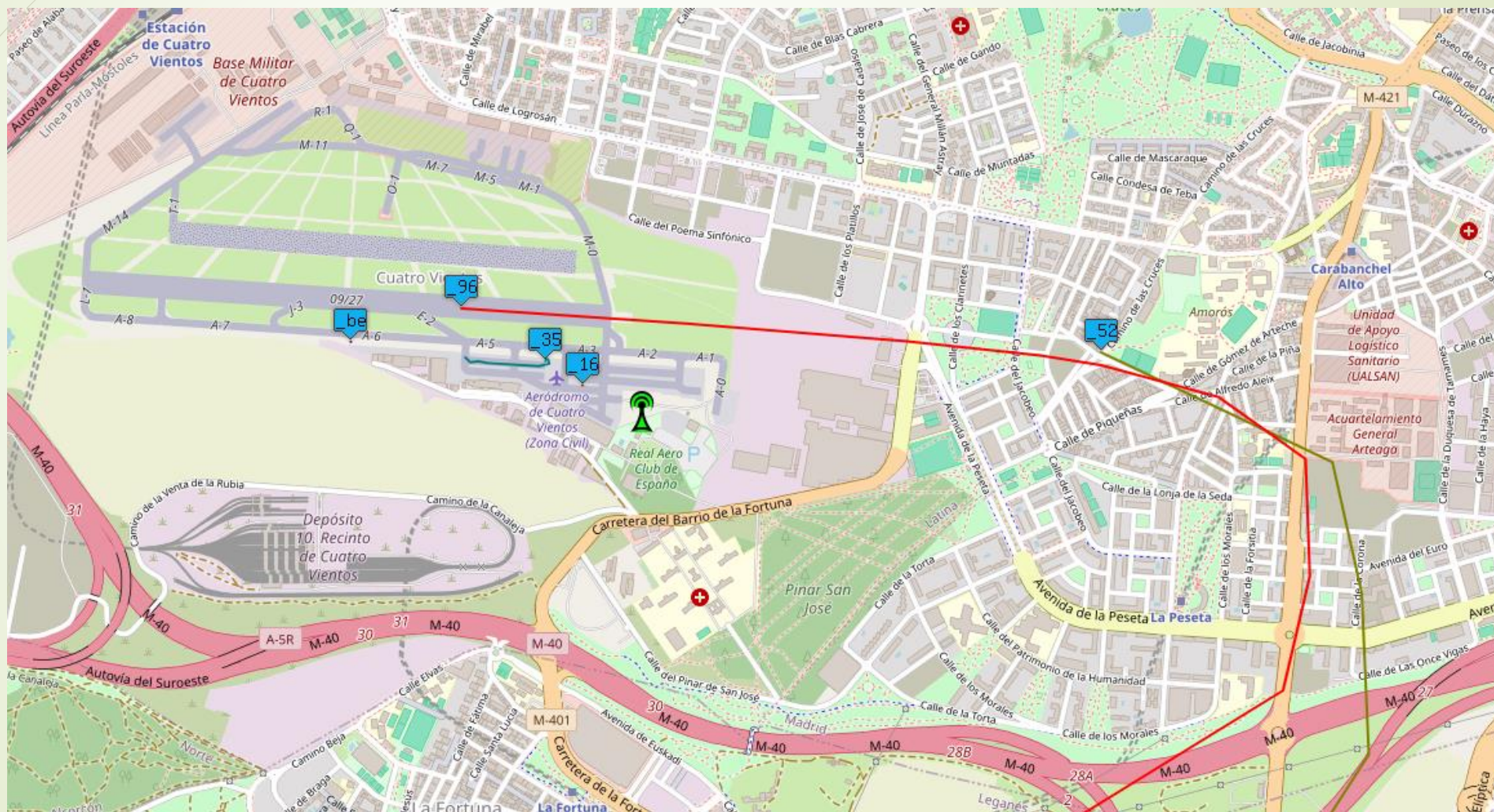
What it does

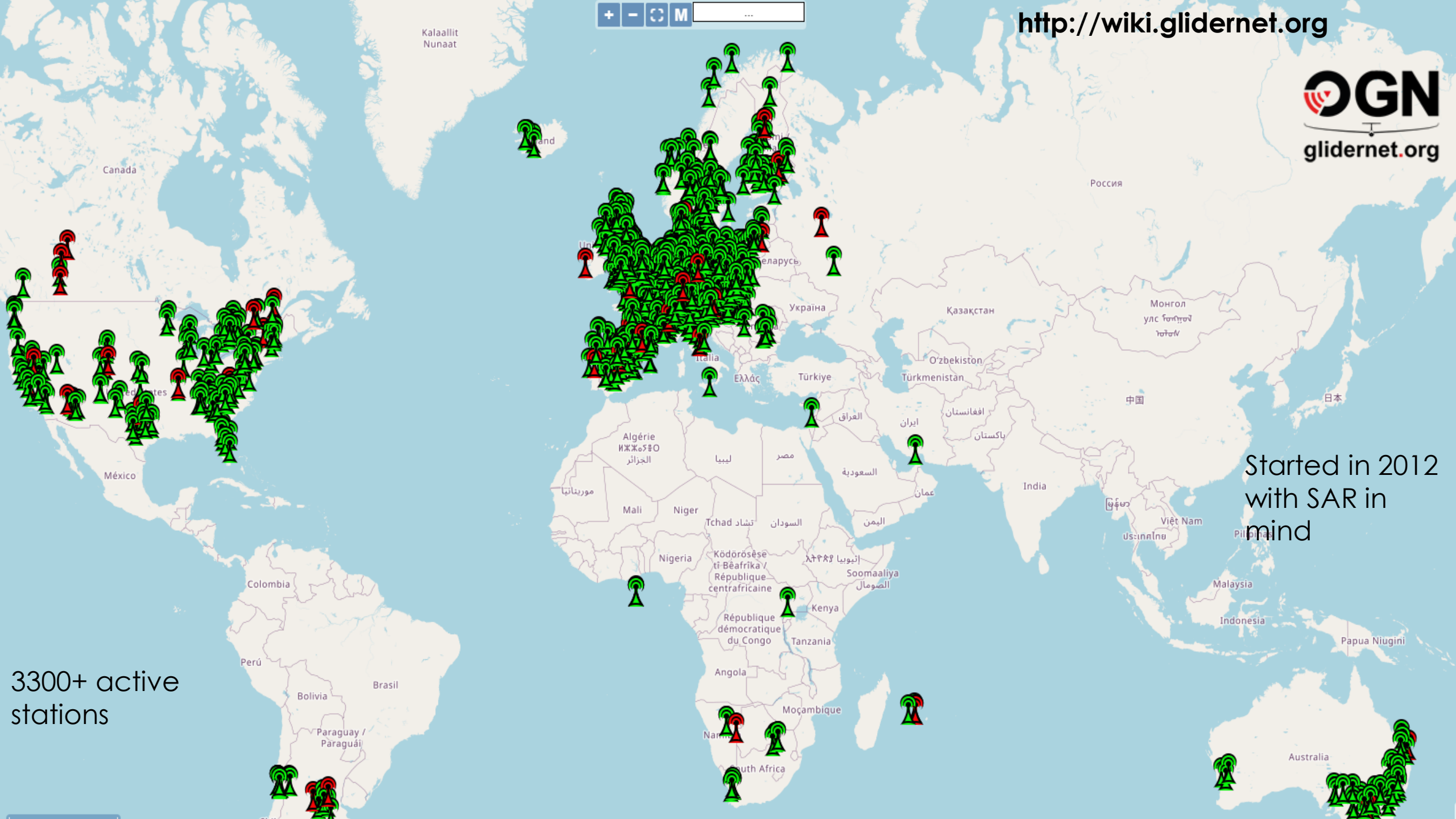
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The viewer client

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3300+ active
stations

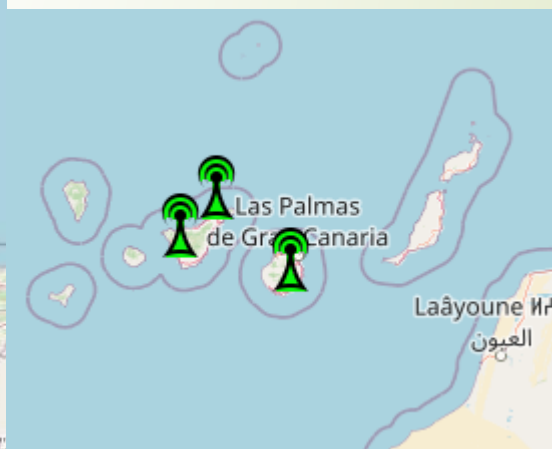
Started in 2012
with SAR in
mind



9

In Spain ... 80+ stations

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The **OGN** network gathers data from:

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- Flarm
- OGN trackers (IGC/OGN)
- FANET devices
- ADS-B/ADS-L
- Satellitals:
 - SPOT
 - Spider
 - inReach
- PAW - PilotAware
- SafeSky – Mobile APP
- Flymaster
- Oudie
- LoraWan (TTN & Helium)

But we need a common protocol !!!

- The pressure of the **U-Space** force to all the actors to make every one to be electronically visible
- So the key providers: Flarm, OGN, Skytraxx, SafeSky, PAW with the leadership of **EASA** joined to develop:

➤ ADS-L

- Starting in March 2024 the **OGN stations** receives: **ADS-L**, Flarm, OGNTP, FANET, PAW and ADS-B ... and **integrate sources** from: ADS-B, SPOT, Spider, InReach, Skymaster, Naviter, LT24, xcsoar, MAVlink, LoraWan (TTN & Helium), Airmate, FlyXC and **SafeSky**



ADS-L Coalition with AESA as a member

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SKYRECON



NEW

Means of Transmission - iConspicuity

ADS-B Out (1090 MHz)



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

ADS-L (SRD-860)



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

ADS-L (Mobile telephony)



Mobile telephony application transmitting in compliance with ADS-L specifications

2022

2025



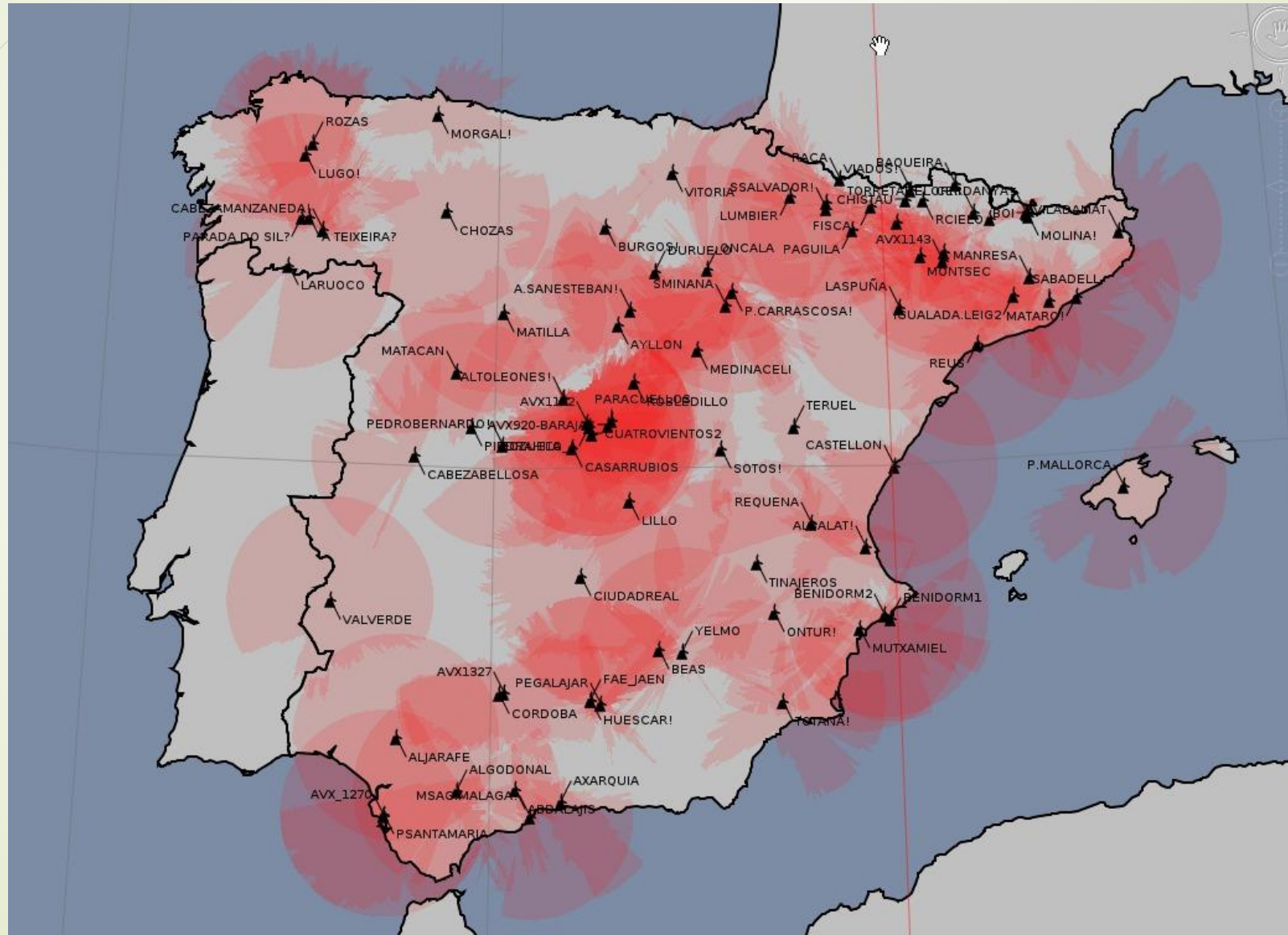
Agreement ENAIRE-RACE-AOPA-AEPAL-RFAE

- Installation of **60 ADS-L/ADS-B/MLAT** (plus legacy protocols ...) stations
 - Training to the constituents
 - 4 years span
 - And much more ...
-
- It is serving as an example for other countries:
 - Belgium 21 stations
 - Norway 50 stations
 - USA 20 stations initially
 - And some other institutions are jumping on board:
 - RFAE 5 stations now and request for 30 stations
 - DGA 5 stations

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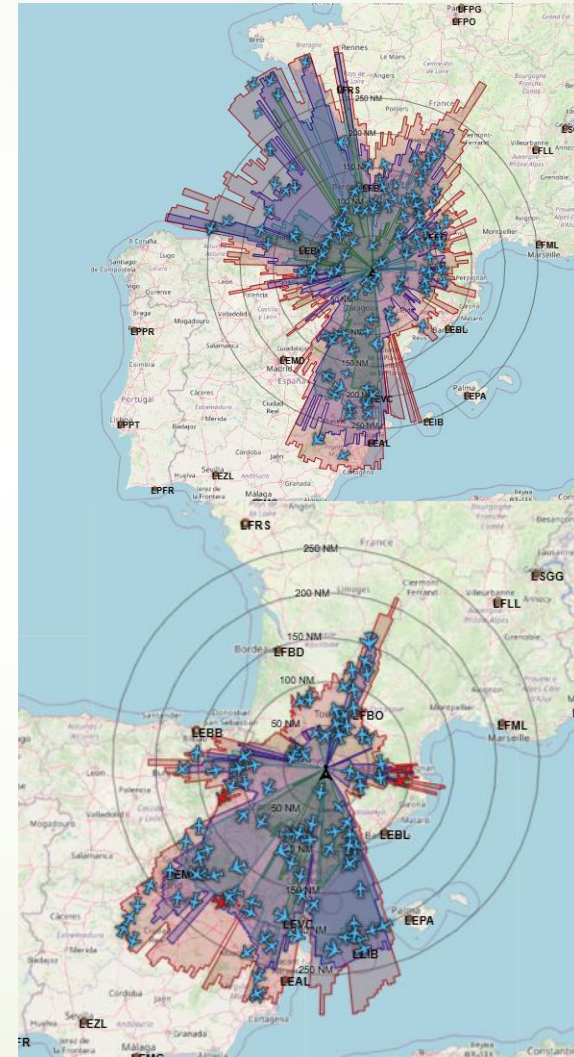
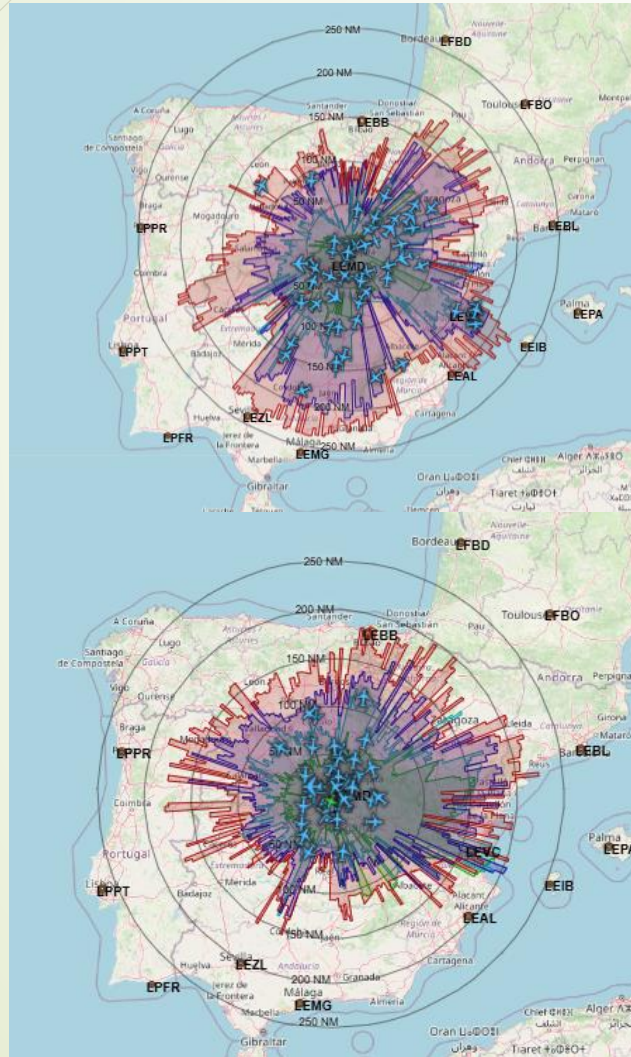
Coberturas teóricas



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Search And Rescue (SAR)

A nice side effect of the iConspicuity

The SAR

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SPAIN OGN query Spot the gliders! Google

Not secure 192.168.1.14/SAROGN/

Google Inbox - acasadoalon... RaspberryPi Server [...] Spot the gliders! Instances | EC2 Man... SPAIN OGN query Soaring Spot :: Home phpMyAdmin Panel de Control | di... DDB Adminer All Bookmarks



Please select the method for the query:

- [Get the query by providing the date](#)
- [Get the query by providing the registration ID](#)
- [Get the query of the flights today](#)
- [Get the status of the OGN stations](#)
- [Get the RELAY analysys](#)
- [Get the meteo observations for an ICAO station](#)
- [Get the OGN process logs](#)
- [Get the live map of the gliders](#)
- [Get the FLARM live range analyzer](#)



Type here to search



regis=EC-ITT 192.168.1.1



The flights for the selected registration are:

Valid registration: EC-ITT TT:

[MAP](#) FN:FD150630,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD150701,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD150702,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD150703,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD150704,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160430,LELT,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160515,LELT,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160605,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160611,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160612,LEOC,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160618,LELT,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160701,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160702,LECI2,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160703,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160704,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160705,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160706,LECI1,EC-ITT,DDA681,IGC

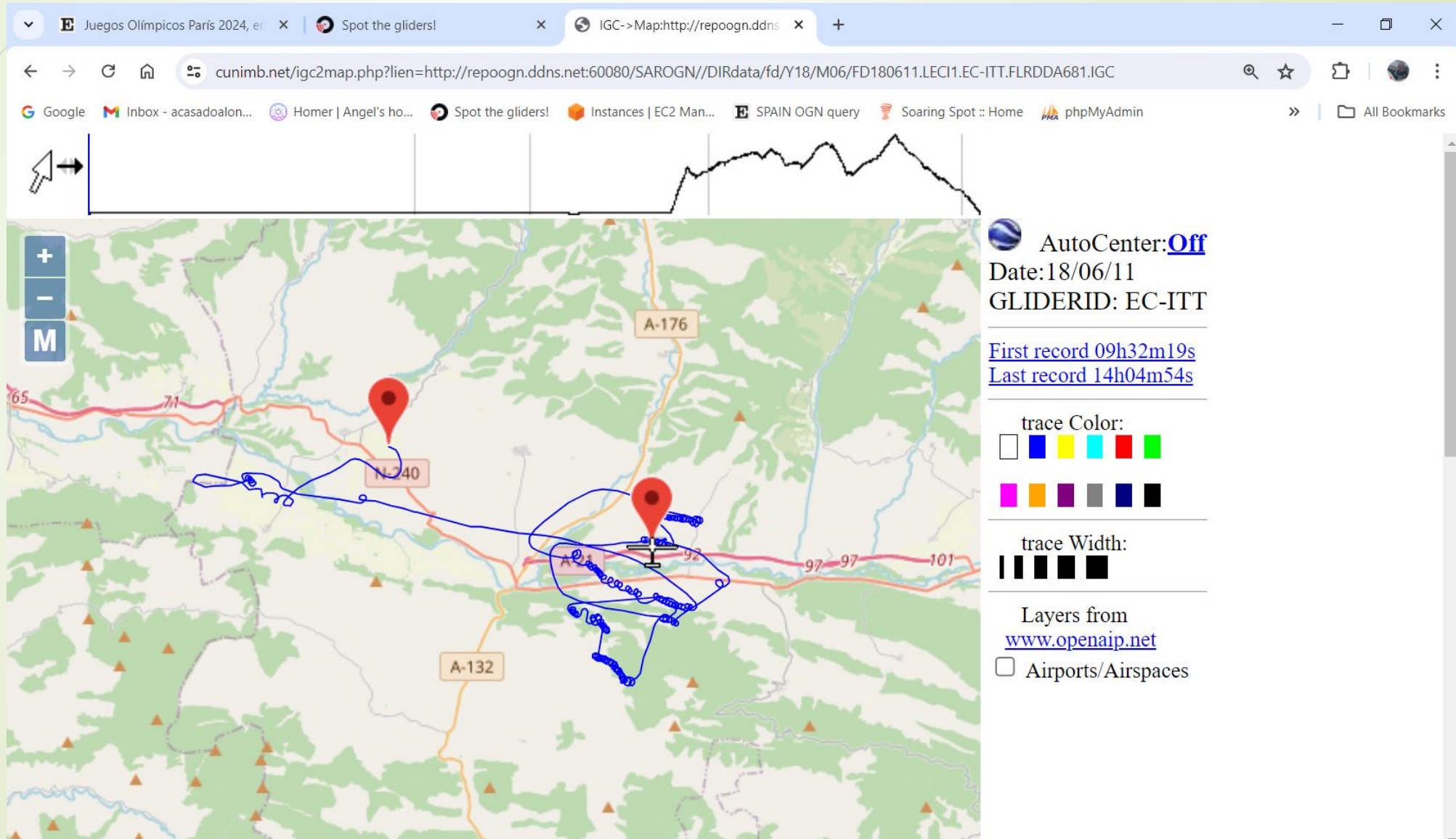
[MAP](#) FN:FD160707,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160708,LECI2,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160709,LECI1,EC-ITT,DDA681,IGC

[MAP](#) FN:FD160903,LELT,EC-ITT,DDA681,IGC

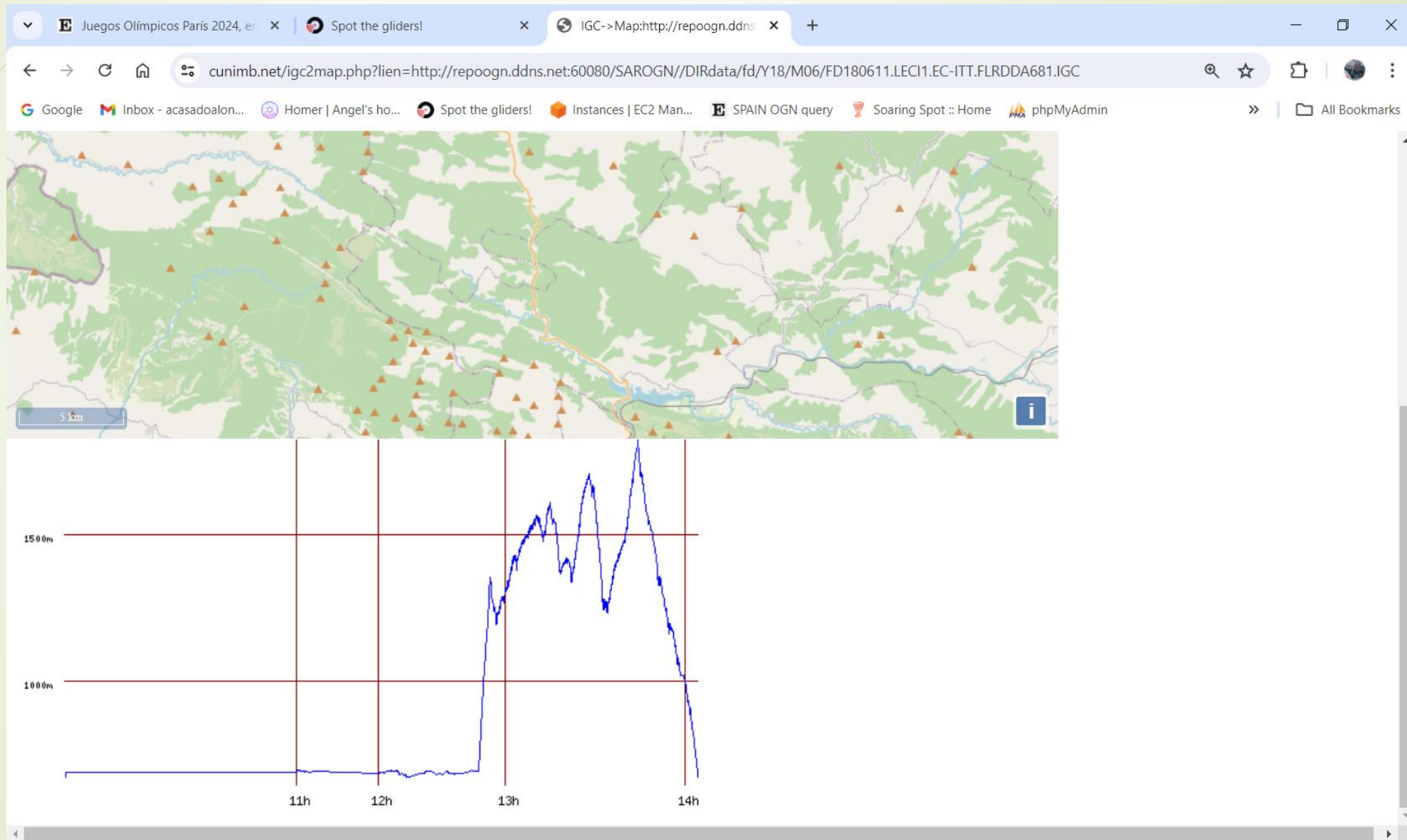
The SAR



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The SAR



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The image displays three logos side-by-side. On the left is the Real Aero Club de España logo, featuring an eagle with spread wings, a crown, and a Spanish flag ribbon, with the text "Real Aero Club de España" below. In the center is the ENAIRE logo, consisting of the word "ENAIRE" in white on a dark blue background. On the right is the CINEA logo, featuring the European Union flag (a circle of twelve gold stars on a blue field) above the word "CINEA" in white on a blue background.

**SUBVENCIÓN CINEA DISPOSITIVOS ADS-B y ADS-L para
aeronaves propiedad de los aeroclub socios del RACE**

Buenos días. Os adjunto la presentación. Aquí va está corrigiendo lo que hablamos ayer. Un saludo a tod

La subvención



Objeto de la subvención

- Instalación de nuevos 65 Transpondedores ADS-B
- Adquisición de 100 ADS-L

Cat. C2 Equipamento

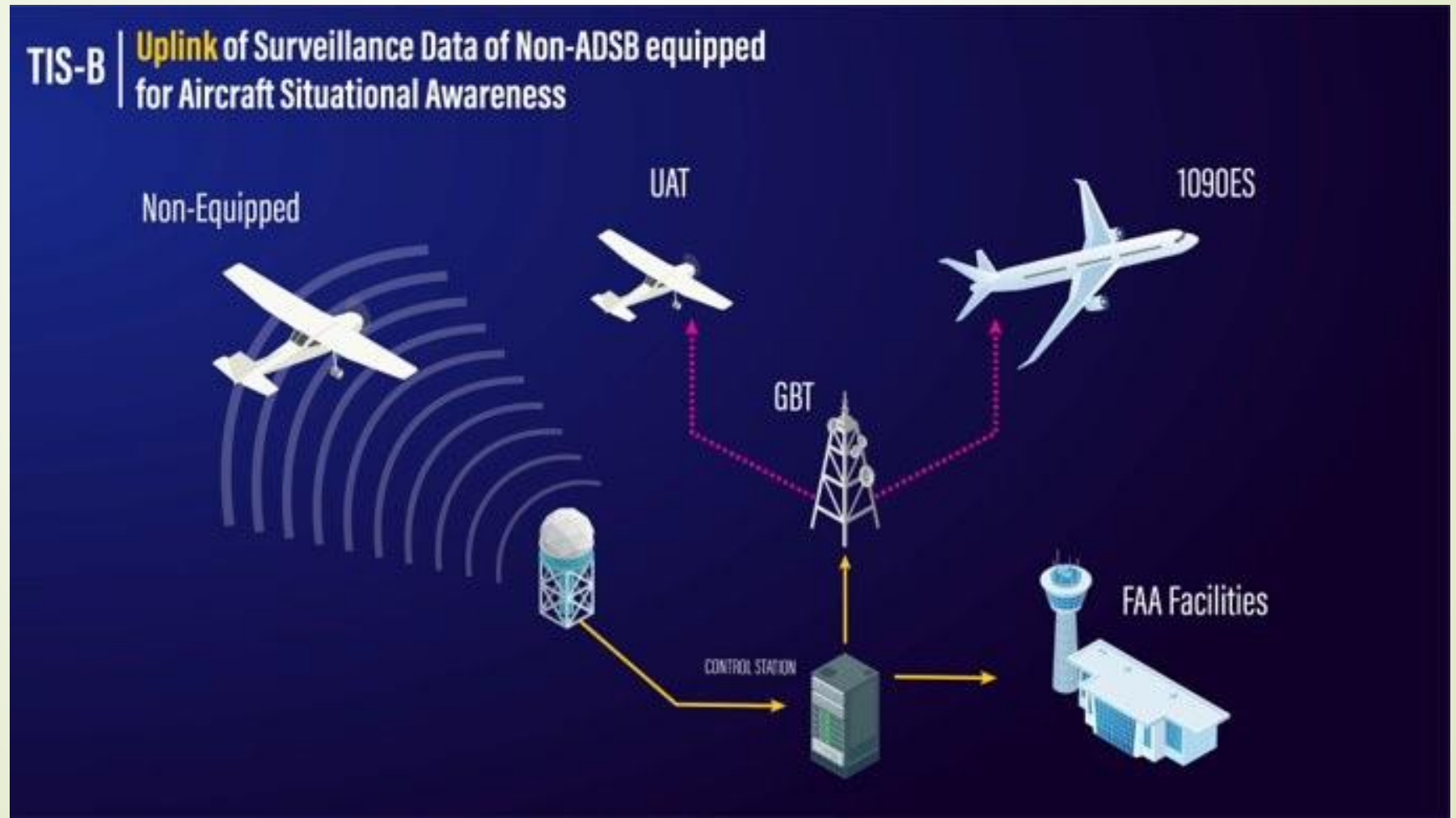


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TIS-B & FIS-B

Traffic Information Services – Broadcast (TIS-B)



Flight Information Services – Broadcast (FIS-B)

FIS-B provides the meteorological and aeronautical data to the cockpit.

Some of the currently available FIS-B products are:

- Airmen's Meteorological Information (AIRMET)
- Significant Meteorological Information (SIGMET)
- Convective SIGMET
- METAR
- CONUS NEXRAD
- Regional NEXTRAD
- NOTAM
- PIREP
- Special Use Airspace (SUA) Status
- Terminal Aerodrome Forecast (TAF)
- Winds & Temperatures Aloft
- TIS-B Service Status



Proyecto TIS-B/FIS-B UAT (978 MHz) ENAIRE-RACE

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- Acordada Prueba de Concepto:
 - Dos estaciones radio: Cuatro Vientos y Robledillo de Mohernando
 - Datos de tráfico extraídos de “FLYK Weather data service” y de AVIONIX
- Defensa ha dado el VºBº a la utilización de la frecuencia 978 MHz para las pruebas
- Adjudicado el proyecto por parte de **ENAIRE** para las estaciones de Cuatro Vientos y Robledillo de Mohernando:
 - Ubicación estación: instalaciones del RACE de: **LECU y LERM**
 - Previsión instalación: Diciembre 2025

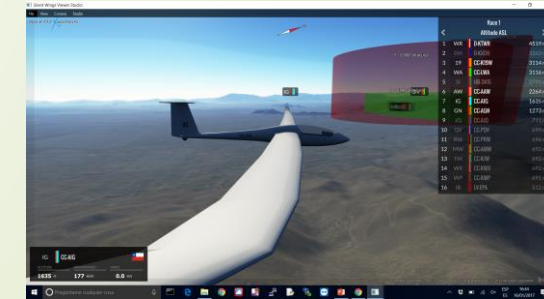
The virtuous circle !!!

1. Deploy the **ground infrastructure** – The RACE, AOPA, AEPAL and RFAE with the help of ENAIRE, with this ground infrastructure we gather the traffic information as much dense as possible, plus all the traffic information coming for the telephone mobile APPs like SafeSky, Flymaster, Volandoo, ...
2. Promote the acquisition of Iconspicuos devices (**ADS-B & ADS-L**) using the CINEA funding (100 ADS-L and 65 ADS-B devices) RACE project.
3. Implement the **TIS-B/FIS-B** project, so all of that information will be available from the cockpit and being used with the Electronic Flight Bags (EFB) line Skydaemon, EasyVFR, Garmin devices, ...



And some other VERY **nice** side effects like:

- Flight book.
- Aero club flight control and fleet control.
- Flight instruction debriefing.
- Competition broadcasting in 2D and 3D in Virtual Reality.
- Accident investigation.
- ETC., ...





Real Aero Club de España



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Questions?



Real Aero Club de España



ASOCIACIÓN ESPAÑOLA PILOTOS
AERONAVES LIGERAS



together
4safety