

Glider Tracking Challenges on competitions

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International Gliding Commission

March 2018



Objectives

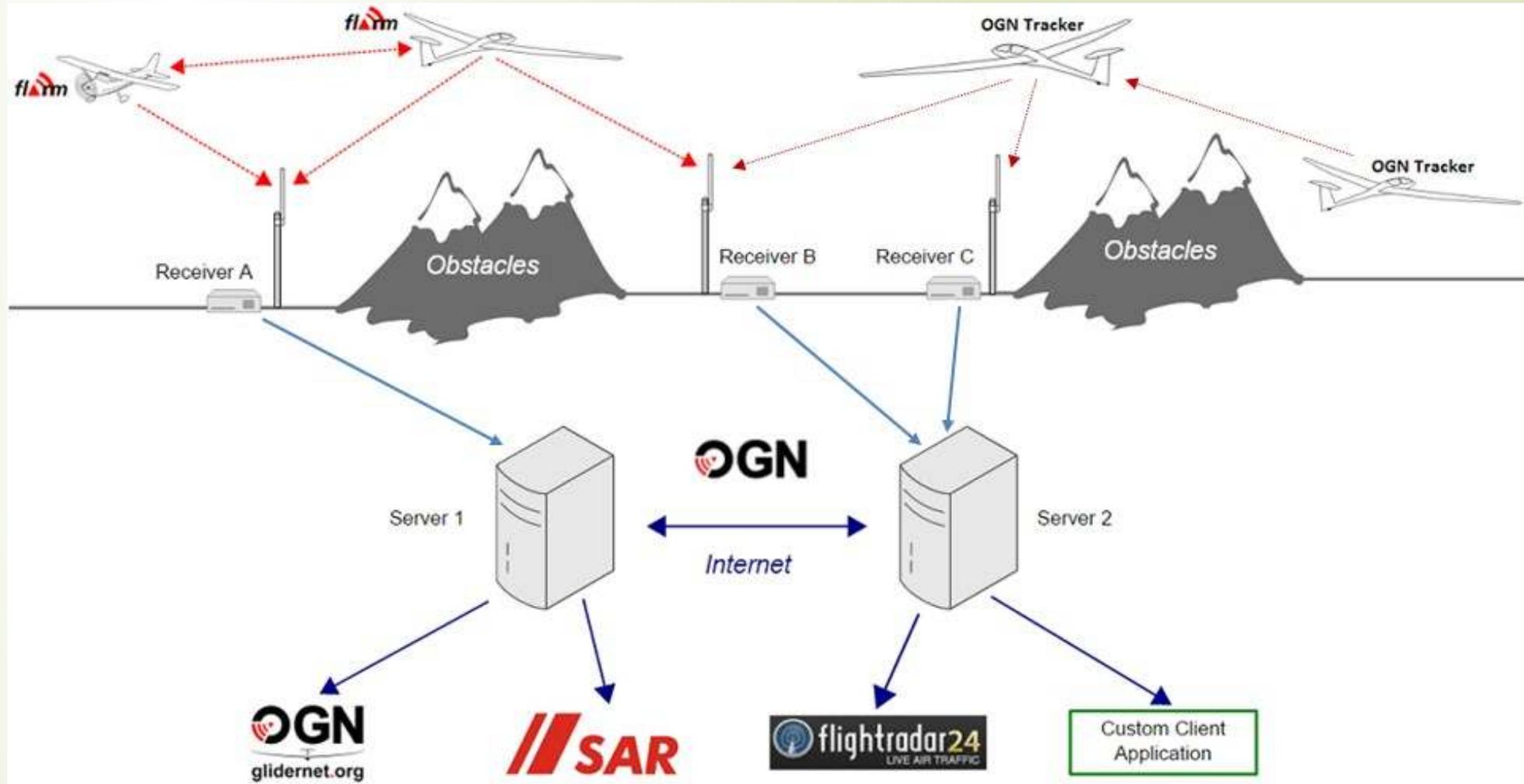
- ▮ How live tracking is changing the strategies on competitions
- ▮ Challenges on live scoring
- ▮ Some issues with tracking, visibility and drones



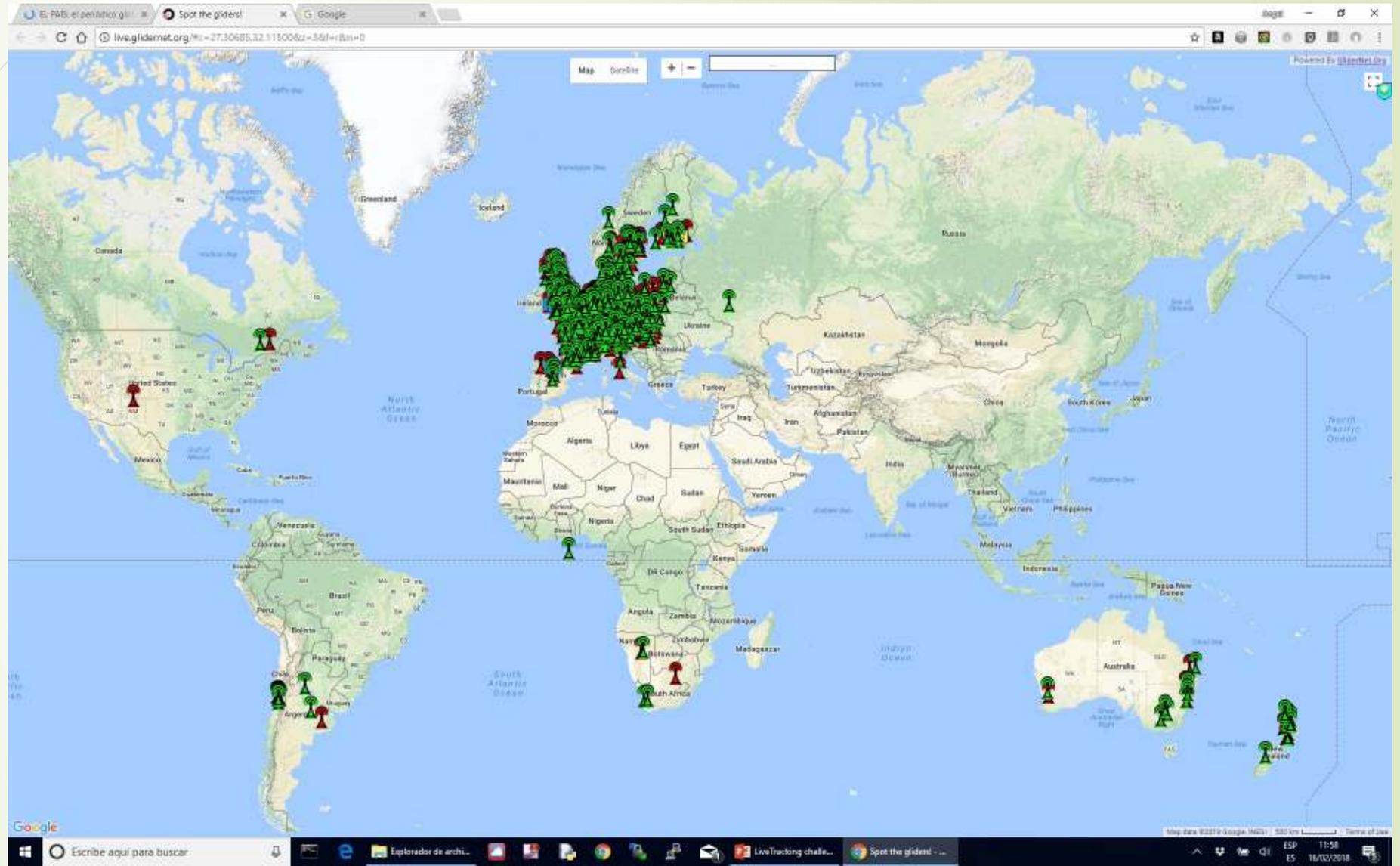
Glider Live tracking technologies:

- A plethora of new tracking technologies:
 - Flarm *
 - OGN trackers*
 - ADS-B
 - SPOT/SPIDER/INREACH *
 - LT24/Skylines *
 - Capture/SigFox *
 - Oudie/LX... *
 - Fanet
 - PilotAware
 - MAVlink
- An effort of combine all (*) the positions into a single presentation
 - Great success at the SGP Final in Chile

Open Glider Network



More than 1000+ OGN stations





Challenges on gliding competition !!!

- ▢ Those technologies are here and are going to be evolving:
 - ▢ Better
 - ▢ More precise
 - ▢ More affordable
- ▢ A joy for the competition director, knowing where all the gliders are.
- ▢ A good way to make publicity of our sport, to get closer to the public.
- ▢ Gliding fans are requesting that.
- ▢ Most of the world gliding championships provide some kind of live tracking:
 - ▢ 2D tracking via OGN (Map, task and tracking)
 - ▢ 3D tracking via OGN/Silent Wings Studio
 - ▢ At the SGP final in Chile, we have more than 29000+ viewers

OGN/SGP Trackers

- Use the same frequency band than the Flarm, but not in conflict.
- Tracking devices, not anti-collision devices, can carry payload.
- Use more transmitting power, up to the legal limit.
- Latest technological advances ARM32 and/or ESP32 CPUs.
- Can use Bluetooth and WiFi, downloading the flight as ASAP.
- Do relays of other OGN/SGP trackers, improving the coverage.
- We can deploy repeaters stations on microlights/planes.
- Very affordable ~100€.
- Fully compatible with the OGN stations.
- Used on the Chile SGP very successfully.





Challenges in competition

- ▮ My personal experience at the 2nd. PAGC in Gonzales Chaves
- ▮ Now everyone can know the position of each other
 - ▮ Tracks are marked with colors showing the thermals
- ▮ Soon we will see it integrated on the onboard computers
- ▮ **Conflicts between live tracking for the public and current rules/tactics**
- ▮ We need to change the ruling and adapt to the new situation
 - ▮ Real time scoring has to be implemented
 - ▮ Other sports had done it
- ▮ We need to embrace the technology, we can not fight technology
 - ▮ Methods like “stealth mode” does not work.
- ▮ New challenges are coming not too far away, example: **LIDR radars**
- ▮ **Big data** is coming --- Full thermal maps based on flights records, weather, ...



Few thoughts on drones visibility

- Regulation by the aeronautical authorities
 - Civil aviation authorities
 - Solution for see and be seen - aka: TCAS/ADS
 - Flarm as an alternative
 - Drone manufactures
 - MAVlink
- Regulation by the police
 - Interested on know where all the drones are
 - Some efforts with the phone companies