Tracking WGC

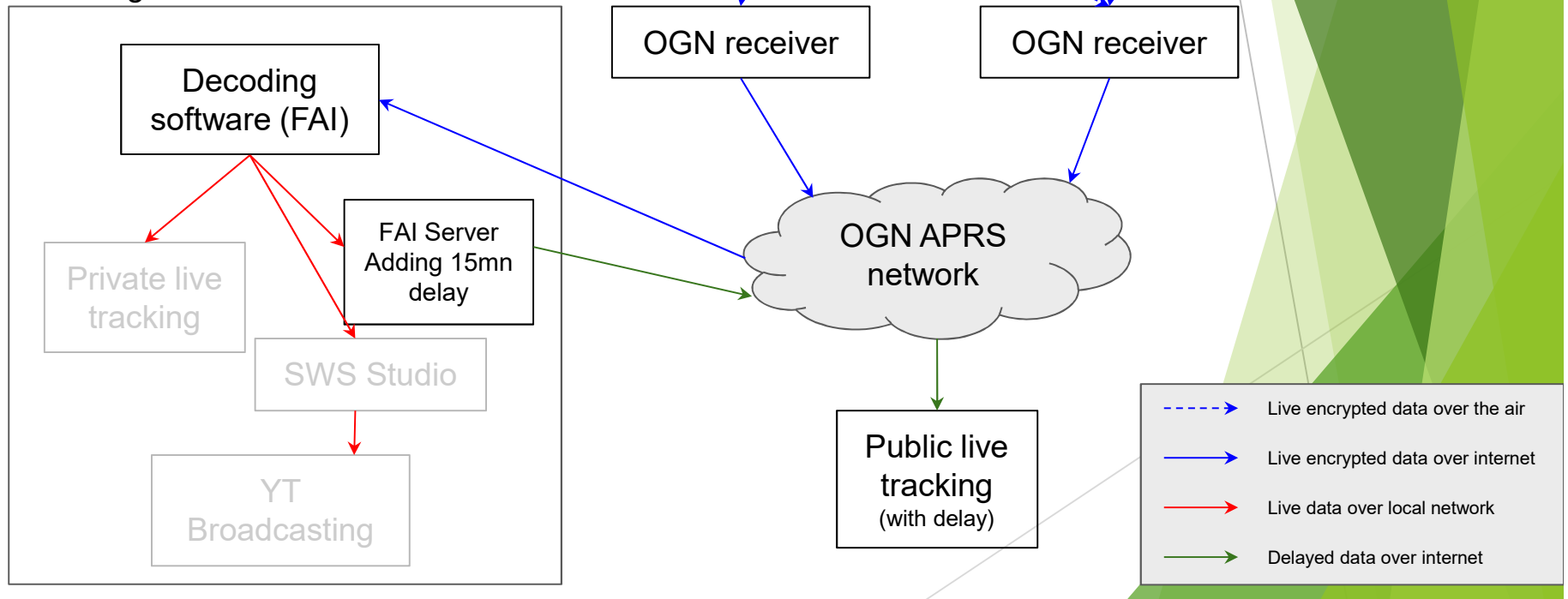Solution to set up for the WGC championships

OGN/IGC trackers

- ▶ IGC will provide **120** OGN/IGC trackers

- ▶ They are OGN trackers could be sending encrypted flow over the air.

- ▶ OGN receivers needs to get this information to transmit it to OGN servers.

- ▶ WGC org will get this still encrypted, need to run a software to decode it.

- ▶ The FAI server will reinject with 15-20 mins delay to OGN APRS network the data.

Flow diagram

WGC org

Decoding software (FAI)

Private live tracking

FAI Server Adding 15mn delay

SWS Studio

YT Broadcasting

IGC tracker

IGC tracker

OGN receiver

OGN receiver

OGN APRS network

Public live tracking
(with delay)

- - → Live encrypted data over the air

——→ Live encrypted data over internet

——→ Live data over local network

——→ Delayed data over internet

IGC trackers setup

To achieve this setup we need to configure each IGC tracker with a specific encryption key. This is done prior to the contest and if we have time can be changed between days of the contest. The IGC Bureau will provide the encryption keys on an encrypted file.

The software is on the FAI server http://glidertracking.fai.org

The source code is on the GitHub repo:

https://github.com/acasadoalonso/OGN-IGC-Trackers-setup

The decoding software

▶ The decoding software runs in the FAI server, gets the encrypted positions, decrypt the data and reinjects the position data with 15-20 minutes delay back to the OGN APRS servers

▶ The source code is at the GitHub repo:

▶ https://github.com/acasadoalonso/SGP-2D-Live-Tracking-data-gathering/blob/master/dlym2ogn.py

Flarm (the setup is up to the pilot option)

Flarm of competitors gliders are going to be setup in **No-Track mode**.

So they can't be used for the tracking.

But they will still be useful for SAR. So knowing each glider Flarm radio ID can be very interesting.

No-Track mode

Enhanced privacy mode. Receiving stations may use the received data for the purposes of flight safety only. If enabled, Search and Rescue (SAR) based on data received by ground stations is not possible.

○ Enable
⦿ **Disable (Default)**

Stealth mode

Hides tactically relevant flight data for usage at competitions. Receiving stations may use the received data for the purposes of flight safety only or with a time delay of 10 minutes. Tactical data like climb rate are omitted or noise is added.

○ Enable
⦿ **Disable (Default)**

OGN/IGC Trackers setup

▶

OGN-IGC-Trackers-setup

OGN/IGC Trackers setup utilities
This is a set of utilities to do the setup of OGN/IGC tracker for WGC.

Install the TRKsetup software

- Get a fresh installation of a RaspberryPi,   https://www.raspberrypi.com/software/
- Raspberry Pi OS Lite
- Release date: January 28th 2022
- System: 32-bit
- Kernel version: 5.10
- Debian version: 11 (bullseye)
- Size: 482MB
- we suggest to call the server as TRKsetup, user pi, password OGNOGN but any choice will work. Also you can use the ARM64 version or do it in a UBUNTU64 version

Installation procedure

- **Once that the RPi is installed it do the following LINUX commands:**

- ssh pi@TRKsetup.local   # ssh into the RPi

- mkdir OGN   # make the working directory

- cd OGN   # go to the new directory

- wget glidertracking.fai.org/dist/V1.0/TRKtools.tgz   # get the software from FAI server

- wget glidertracking.fai.org/dist/V1.0/esp32-ogn-tracker-bin.tgz

- tar xvfz esp32-ogn-tracker-bin.tgz   # extract the tracker firmware

- **Connect the tracker with the USB cable to one of the 4 USB ports of the RPi**

- **type command:**

- dmesg   # display the console messages

- **and check on which port the tracker has been connected, normally ttyUSB0, if not update the flash_USB0 script accordingly.**

Installation procedure

- bash flash_USB0.sh   # flash the new firmware in the tracker

- tar xvzf TRKtools.tgz   # extract the TRKtools

- cd dist   # go to the dist directory

- cp TRKSconfig.ini.template TRKSconfig.ini   # and review the settings

- ./TRKsetup.Linuxarmv7l -h   # check that works

- **# the name of the program is TRKsetup.xxxyyy where xxx is the opsys and yyy is the architecture of the server**

- ./TRKsetup.Linuxarmv7l --setup ON --reg ON   # do the setup with registration on the FAI server

More details at:

- https://github.com/acasadoalonso/OGN-IGC-Trackers-setup