Proposal

Involve Galileo/ESA in an ESA colleagues **Panda-Raid project** taking place in an **uncommon area of interest** (route through North to South of Europe and African Sahara Desert) in which the **Galileo services** (Search and Rescue, Receiver, Mobile apps) can be **utilized onboard** (e.g. to assess and verify signal, to cross-compare signal and position, to retrieve dynamic data, etc.)

Panda Raid Definition

Neither a holidays time nor a guided trip, it is an unique rally experience, an adventure and an **un-comfortable trip!**
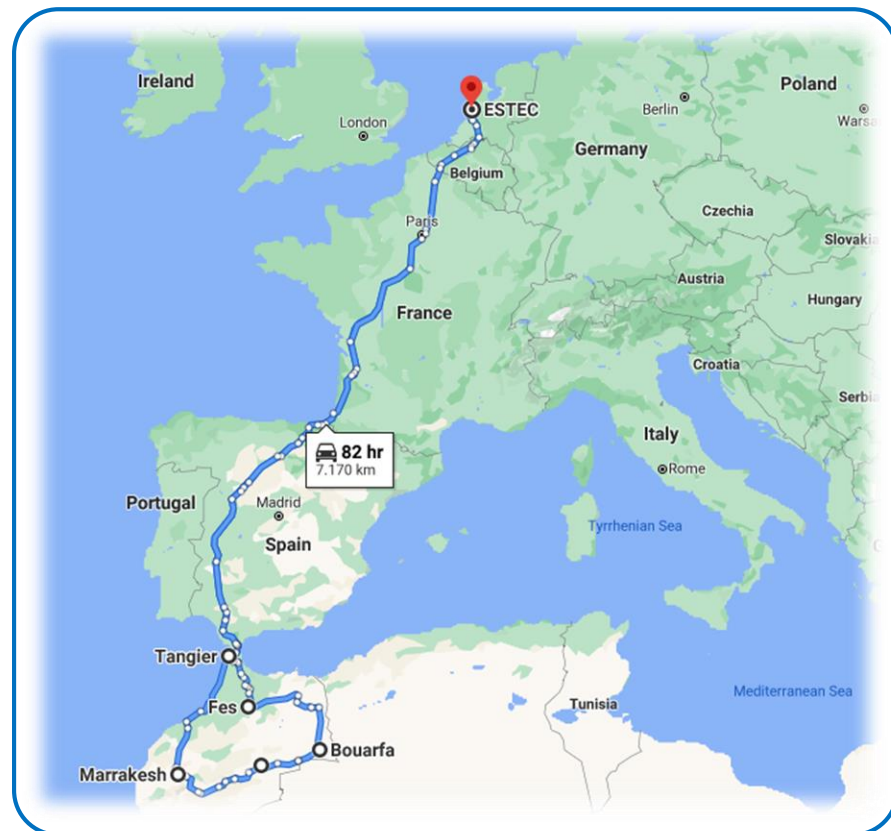
The **challenge is to make** it until the end, velocity and time are not the objectives!

Panda Raid in numbers and Route

Panda-Raid in numbers:

- **7** stages

- **8000** km in total (50°N-30°N and 5°E-10°W)

- **3000** km along Sahara Desert

- **350** teams

- Driving classic **20** years old Fiat Panda

ESA Space-To-Ground Team

- Team-name: **Space-To-Ground**

- **2x ESTEC** adventurer and enthusiastic **engineers**:
  - Cesar Bernal TEC-SPS
  - Javier Fernandez TEC-SWF

- Return Trip ESTEC-Morocco Rally-ESTEC (**8000km**)

- Use of **Space related technologies** on board

- 2000 Fiat Panda, 900cc

Galileo Applications

- **Unconventional use case for Galileo Verification:**

  - Isolated area (Sahara desert/Morocco)
  - Lower latitude (constellation configuration and observability., different atmospheric effect)
  - Dynamic time acquisition (days span)
  - Dynamic space (8000km) ESTEC (50°N) to Morocco (30°N)

- Use of **Galileo Search and Rescue** with personal beacon for real and simulated events.

- Comparison between **Galileo receiver** vs. **mobile apps**

- Comparison between **Galileo** vs. **pre-established route**

- Comparison between **Galileo** vs. **other constellations**

Other Applications

- **IoT** (Internet of the Things) **CubeSat Constellation** use for transference of telemetry data

- On board space technology in the extreme earth conditions, & using new future techniques research by ESA (MDE/CBSE/AI).
  - Software frames in order to speed up the development process (i.e TASTE).
  - RTOS prequalified in the space, RTEMS 5.1 SMP
  - Space hardware based on evaluation boards

Outreach and Advertisement

- Galileo/ESA logo large **stickers** on the car

- **Website** with real time information including Galileo/ESA logo

- Team **Shirts** and **caps** with Galileo/ESA logo

- **Posters** and **presentation/paper** after the activity to present results

Coming Next

- **Mongol Rally 2022** (Same car, team & approach)

- **16.000 km** during **6-8 weeks**

- Crossing **Europe and Asia** from London to Mongolia (0-55°E)

- https://www.theadventurists.com/adventures/mongol-rally