PildoLabs
move smart

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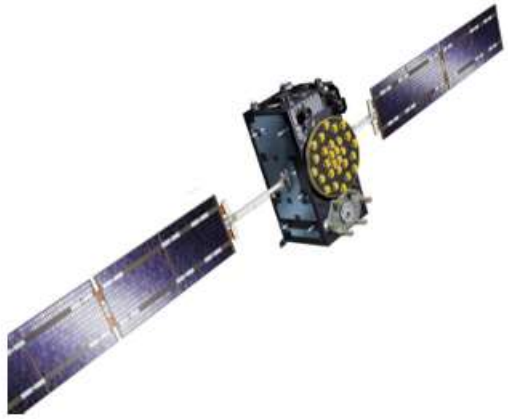
Bringing technology into air and maritime operations

Creating services for the aeronautical and maritime industry through satellite technology

Developing software and hardware to improve navigation and airspace management

Galileo SAR service

- Galileo SAR launched on 15 December 2016 (initial services):
  - Reduces the time it takes to detect emergency distress beacon signals from up to three hours to just ten minutes.
  - Since the locations of the beacons are also determined more accurately, people in distress can be rescued more quickly.
- Galileo RLS declared opeational on 21 January 2020: automatic acknowledgment message
  - Provides the end-user of a distress beacon with a confirmation of the detection of the alert and of the determination of its location by the Cospas-Sarsat system.
- Under development:
  - Remote Link activation
  - Two Way communication
  - Distress Position Sharing
  - Emergency Warning Service
- Beacons:
  - ELT – aviation
  - EPIRB – maritime
  - PLB - terrestrial



Aviation

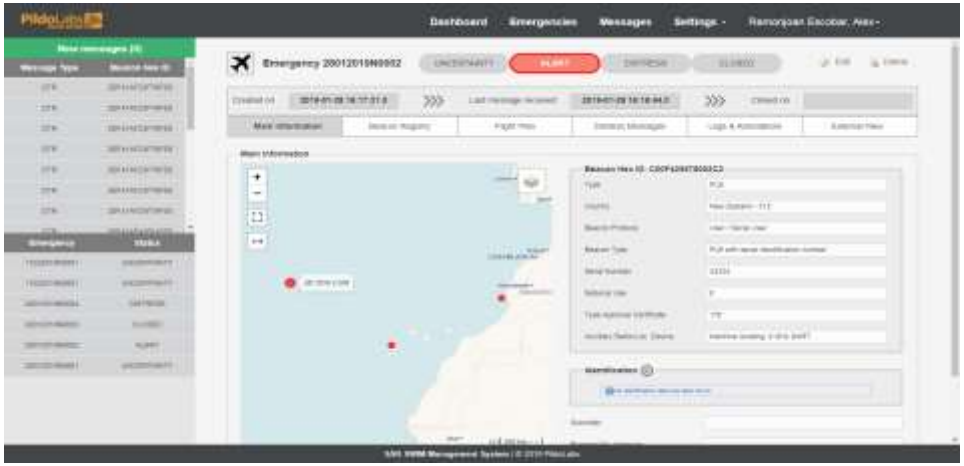
Galileo SAR for aviation

- GADSS (Global Aeronautic Distress and Safety System) was developed by ICAO as a consequence of the tragedies of Air France 447 and Malaysia airlines 370 in order to enhance the effectiveness of the current alerting of search and rescue services.

- High level GADSS objectives:
  - Ensure timely detection of aircraft in distress (to timely initiate SAR actions)
  - Ensure tracking of aircraft in distress and timely and accurate location of end of flight (to accurately direct SAR actions)
  - Enable efficient and effective SAR operations
  - Ensure timely retrieval of Flight Recorder Data

https://insidegnss.com/the-cospas-sarsat-meosar-system/

MERCCURY: Distress management SW



- Distress management software
- Improve communication among SAR actors
- Reduce time of response
- Receives distress alert from MCC (SIT 185) or LADR
- Acoustic alert
- Automatic decodification of beacon ID
- Locates alert signals in a map
- Read pilot's and vehicle information from a beacon registration database
- Automatic download of flight plan of the A/C in distress
- Automatic generation of Cospas/Sarsat report

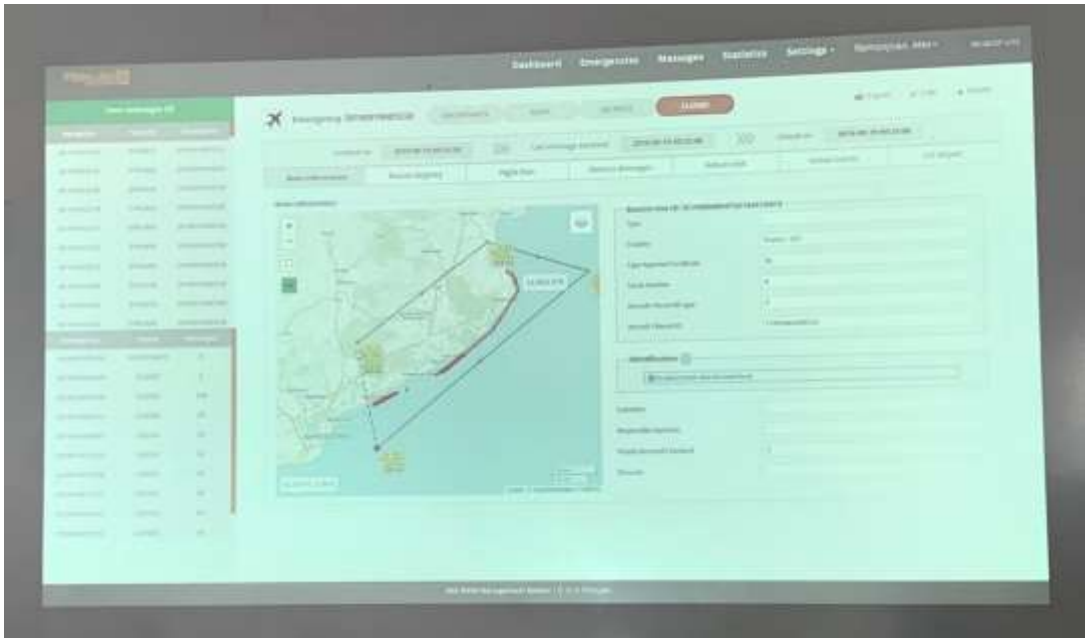
MERCCURY was developed in close collaboration with Spanish Air Forces (Spanish RCC) and with Spanish Maritime rescue center (SASEMAR)

Galileo SAR flight tests

September 2019 - Simulation of flight accidents with a Cessna and a Robinson44 helicopter to test:

- Automatic trigger of the SGB due to violent shock in the air
- Abnormal descent rate due to, e.g. pilot faints
- Automatic acknowledgment message reception
- Remote activation of the beacon from ground (RLM)
- Merccury alerts and flight plans reception for every distress

Live demonstrations conclusions



- Good alert signal reception onground
- Rescue entities attending the campaign were glad to see such new solutions
- Rescue entities remarked the importance of:
  - improving the management of the distress alerts
  - reducing their workload in distress events
  - Improving the access to data from the aircraft in distress

Maritime

From aviation to maritime domain

Galileo SAR Return Link Services

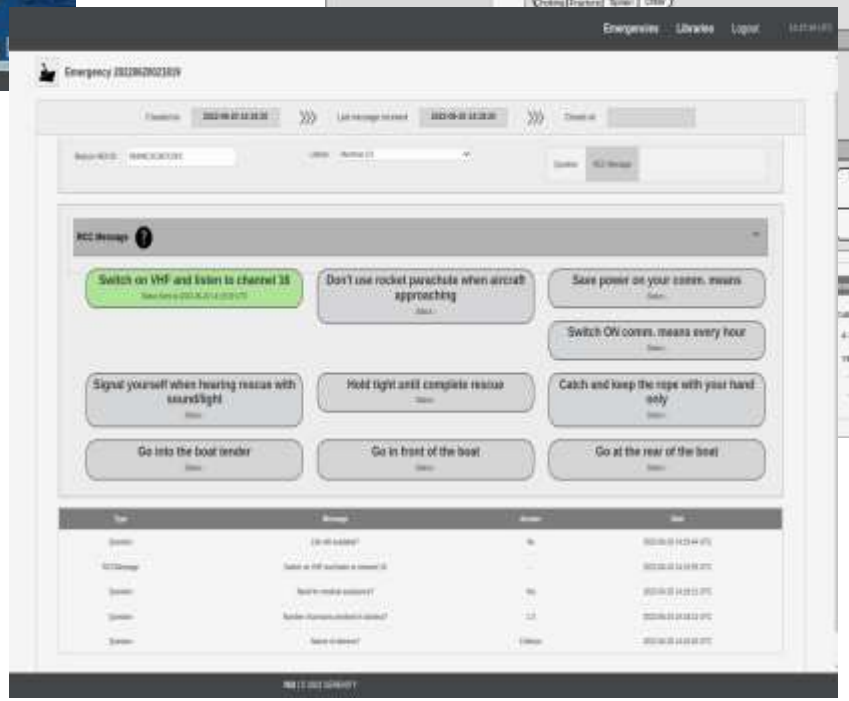
Automatic Acknowledgement – to provide an automatic acknowledgement to the beacon

Two-Way Communication – to allow the SAR forces and the beacon user to exchange messages

Distress Position Sharing – to inform GNSS handheld or manned devices about nearby activated distress beacons

Beacon Command Service – to remotely activate/de-activate activate and deactivate distress beacons

Merccury upgraded with additional Galileo SAR services



- Allows RCC to manage the alerts and interact with the Galileo SAR Services:
  - Reception of TWC answers from the beacon
  - Request TWC questions and guidance messages to the beacon
  - Request Emergency Warning Service messages
  - Request Distress Position Sharing messages

Maritime demonstrations (Gambas project)

Demonstration in Tarragona with SASEMAR

14 November 2023

Scenarios Tested:

- Distress at sea – TWC & DPS
- Emergency Warning Service
- Illegal Activities – Illegal Trade

Route performed:

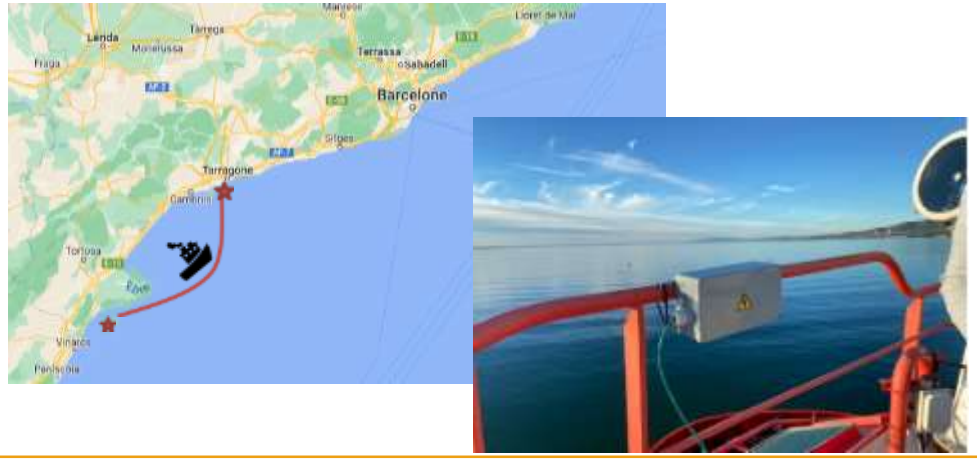
- Sant Carles de la Ràpita to Tarragona (Spain)

Involved actors:

- SASEMAR operators at Tarragona MRCC, operating the Emergency Management Platform
- SASEMAR's SAR MESANA vessel

Feedback:

- Useful feedback coming from real RCC operators from SASEMAR
- TWC service useful, but latency should be as short as possible in a real scenario
- TWC questions and answers should be updated to completely fulfill the RCC operators' real needs



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