Galileo SAR Service

Europe’s Contribution to Global Rescue Operations

ICAO EUR SAR TF
Joint ICAO EUR/NAT ACAO SAR workshop
Paris November 2025

AGENDA

1. SAR Galileo State of Play
2. SAR Galileo new Services

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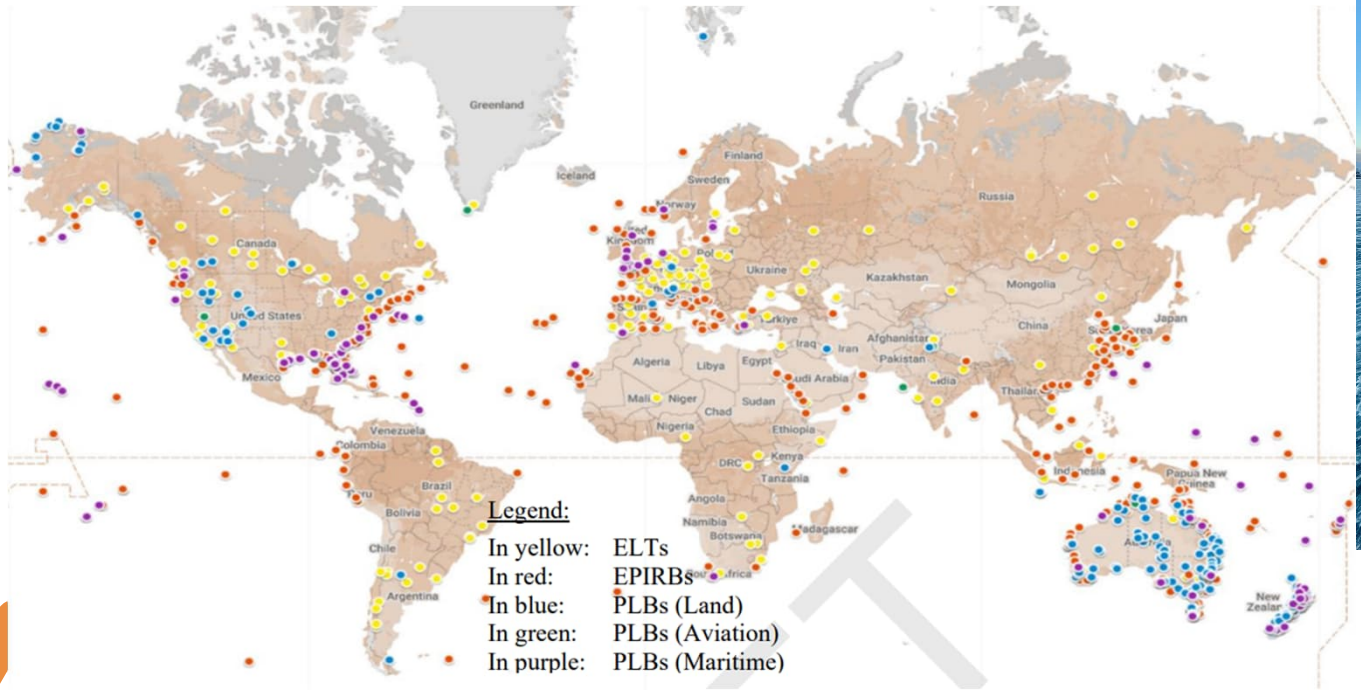
SAR figures Worldwide in 2024

- SAR Events: **1,171**
- People Rescued: **3,211 (8 every day)**
- 42% Maritime, 17% Air, 41% Land
- More than **66,956** since 1982



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SAR Galileo - Contribution to the worldwide SAR effort in Cospas-Sarsat

1. SAR payloads aboard Galileo satellites
2. Forward Link Ground Segment
3. Return Link Ground Segment

+ Galileo Contribution

- **the largest** Space Segment (L-band) contributor
- **the largest** Ground Segment contributor (4 MEOLUTS)
- **the only** Return Link Service Provider

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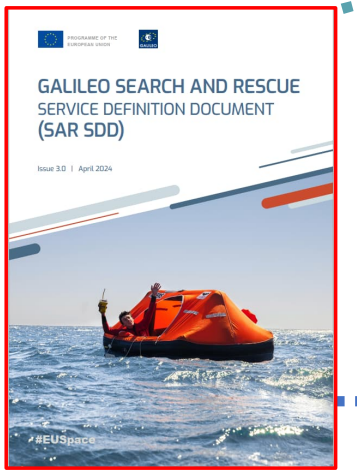
SAR/Galileo - From Design to Full Operational Capability

2004

SAR Galileo was an EU Council decision in 2004



1

The **SAR/Galileo Forward Link Service is a regional contribution to Cospas-Sarsat MEOSAR System** providing **fast and accurate** detection and location data over the European and Indian Ocean Areas.

How fast ? Watch the live Sea Demo “Operation Shark Bait” https://youtu.be/z4KVWTxmOaQ?si=EM8q2Y8czOp3mSe0

In Service 12/2016

2

The **SAR/Galileo Return Link Service is a worldwide service** enabling a communication link back to the originating emergency beacon through the Galileo Navigation Signal in Space (I/NAV E1), sending a confirmation message (RLM) to the user that the distress signal has been localized by the System.

In Service 01/2020

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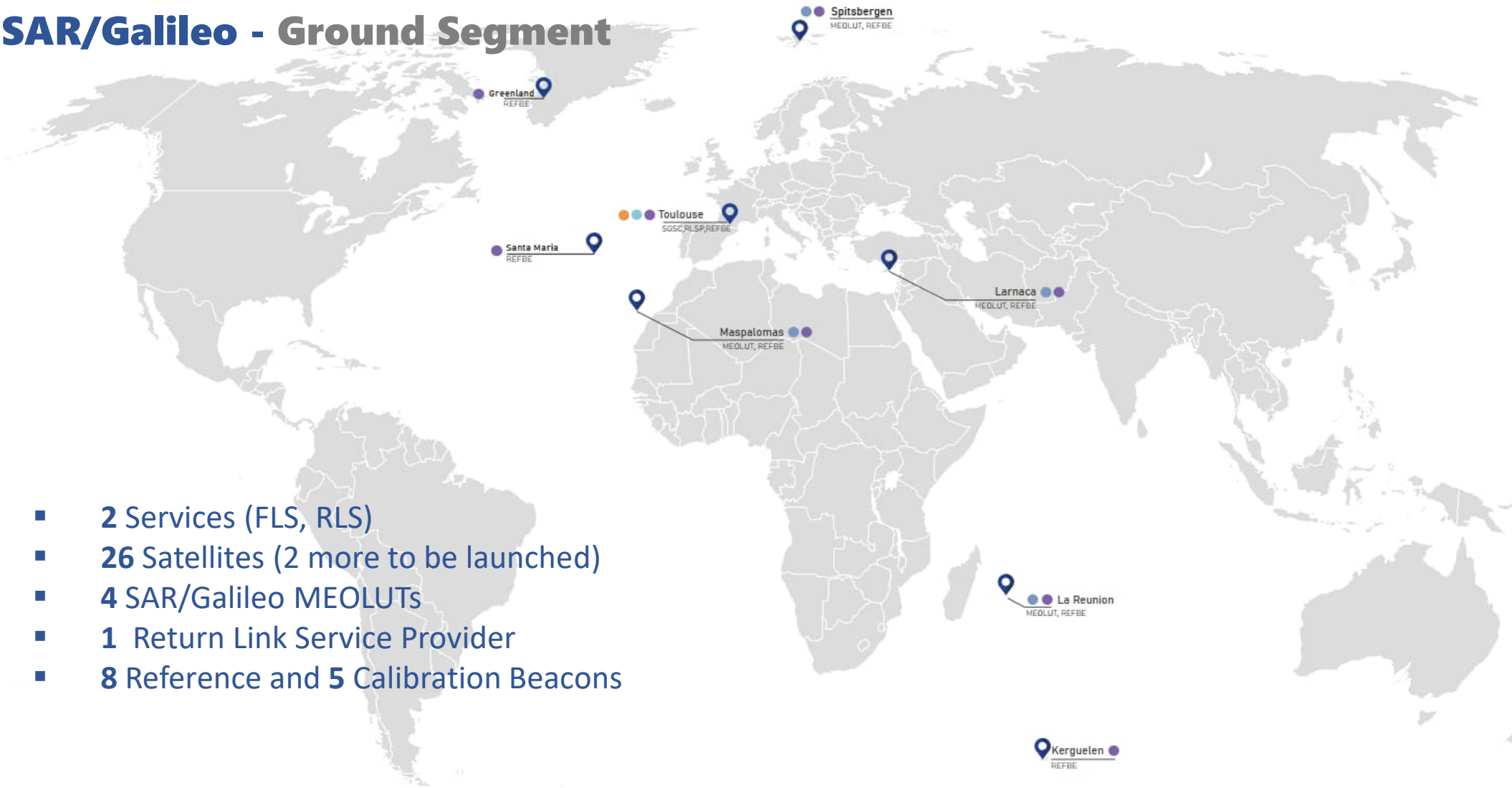
SAR/Galileo - Ground Segment



- **2** Services (FLS, RLS)
- **26** Satellites (2 more to be launched)
- **4** SAR/Galileo MEOLUTs
- **1** Return Link Service Provider
- **8** Reference and **5** Calibration Beacons

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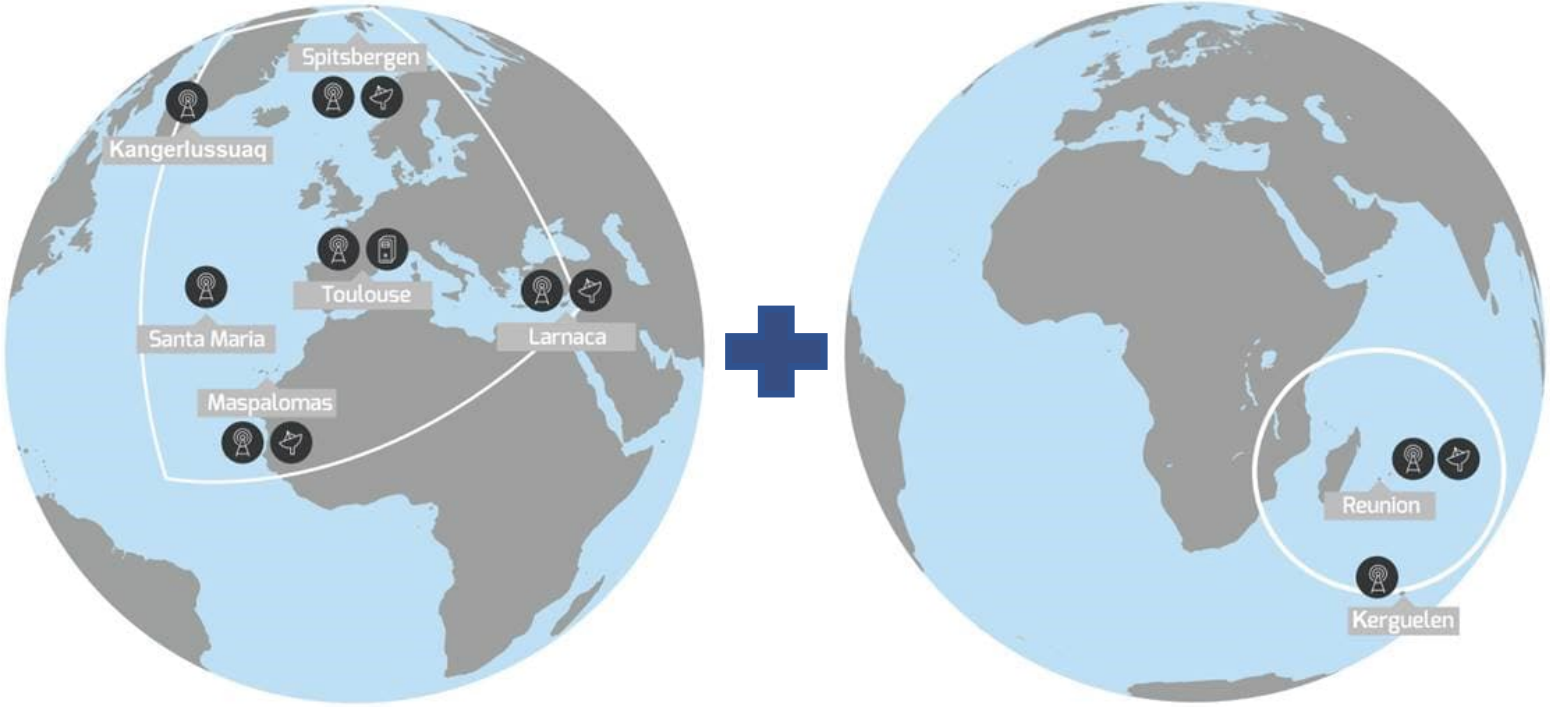
SAR/Galileo Forward Link - Coverage Areas



European Coverage Area

Indian Ocean Area

7 continuously transmitting Reference Beacons are used for Service Monitoring

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SAR/Galileo Return Link - Galileo replying to your SOS

- **A world-wide, USER CENTRIC, free of charge C/S and Galileo Service in operations since January 2020.**
- The RLS uses the Galileo Navigation signal and broadcasting capabilities to deliver an **automatic confirmation** to the beacon that the distress call has been received and located by the SAR forces.
- RLS is a **confidence boost** to anyone in distress.
- **RLS is the backbone for future Galileo and C/S Evolutions**

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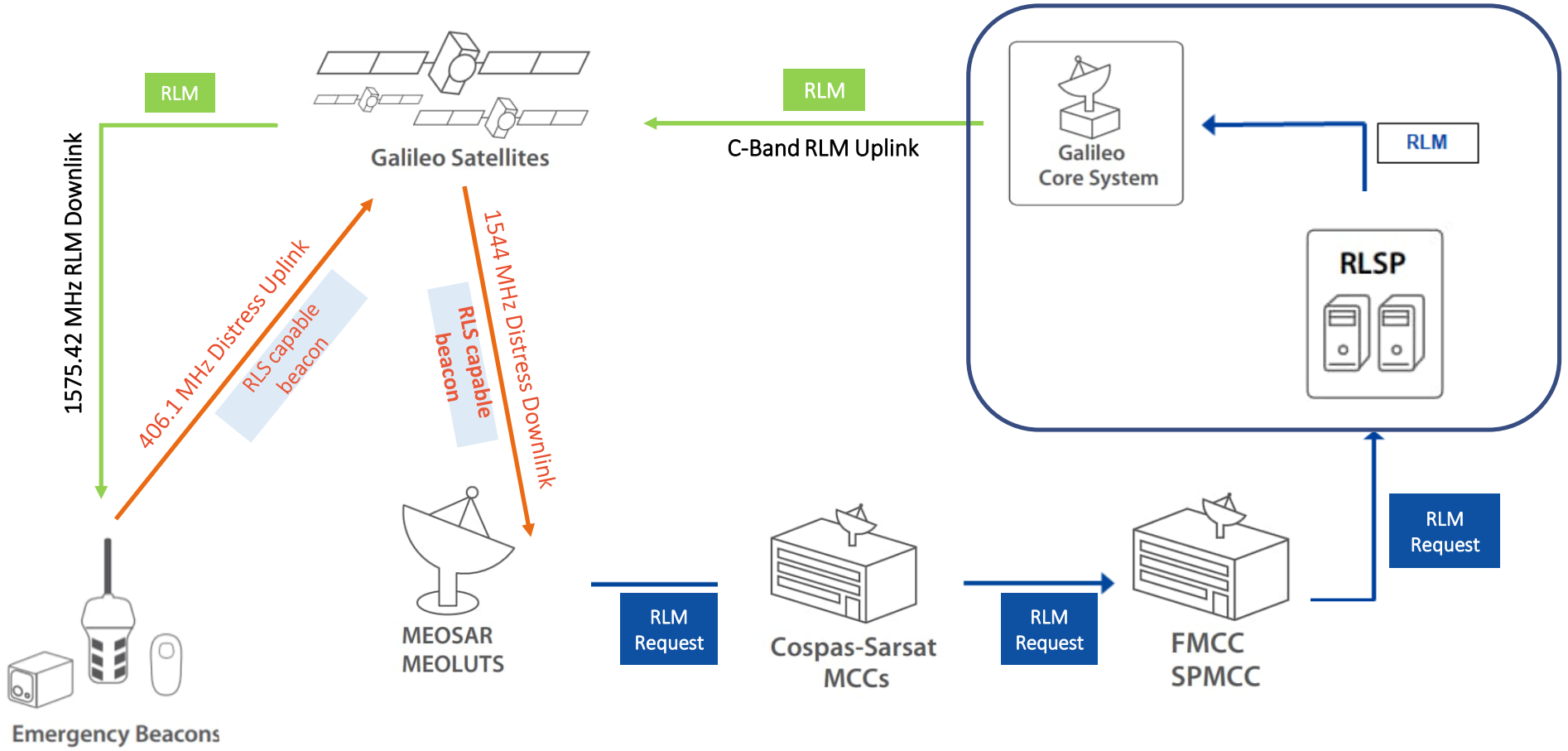
SAR/Galileo Ground Segment - The Return Link Service Provider (RLSP)



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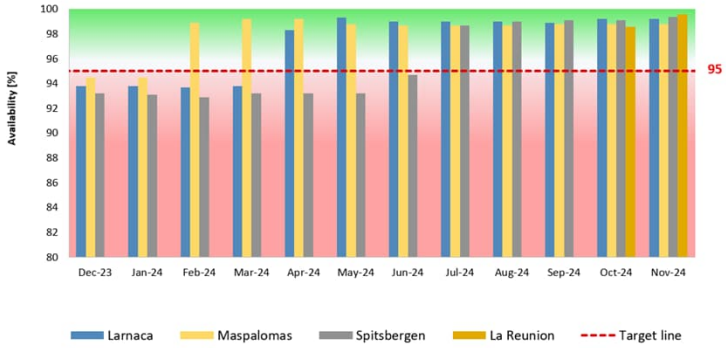
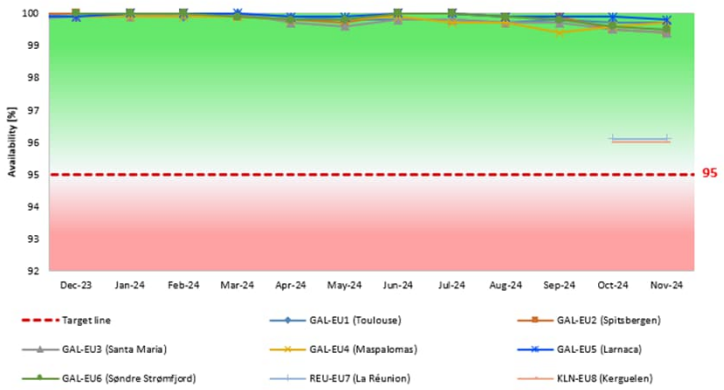
SAR/Galileo - Minimum Performance Levels

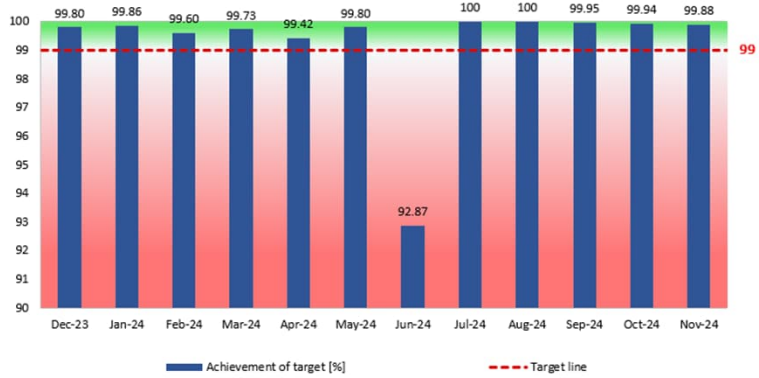
MEOLUTs Availability - Nominal Status



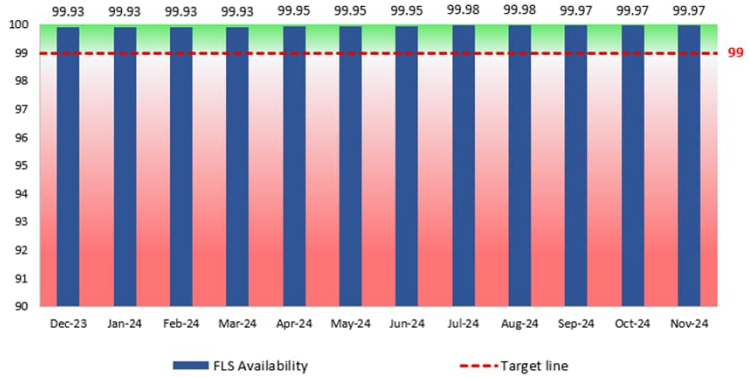
Availability of Successful Location within 5 [km] - From 1 to 12 bursts



SAR/Galileo RLM Delivery Latency < 15 [min]

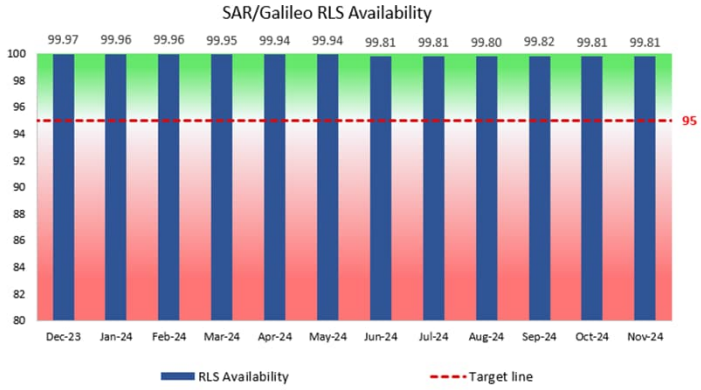


SAR/Galileo ECA FLS Availability



SAR/Galileo IOCA FLS Availability

SAR/Galileo RLS Availability



AGENDA

1. SAR Galileo State of Play
2. SAR Galileo new Services

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Galileo Future Services - Enhancing the Galileo Emergency Solutions Porfolio

1 **Galileo**
Distress Position Sharing

2 **Galileo**
SAR/Remote Beacon Activation

3 **Galileo**
Two Way Communication

The SAR/Galileo Return Link Service (RLS) **enables a communication link** back to compatible devices through the Galileo Signal in Space and is the **the backbone** of the "G1G" implementation of new the following Galileo Services

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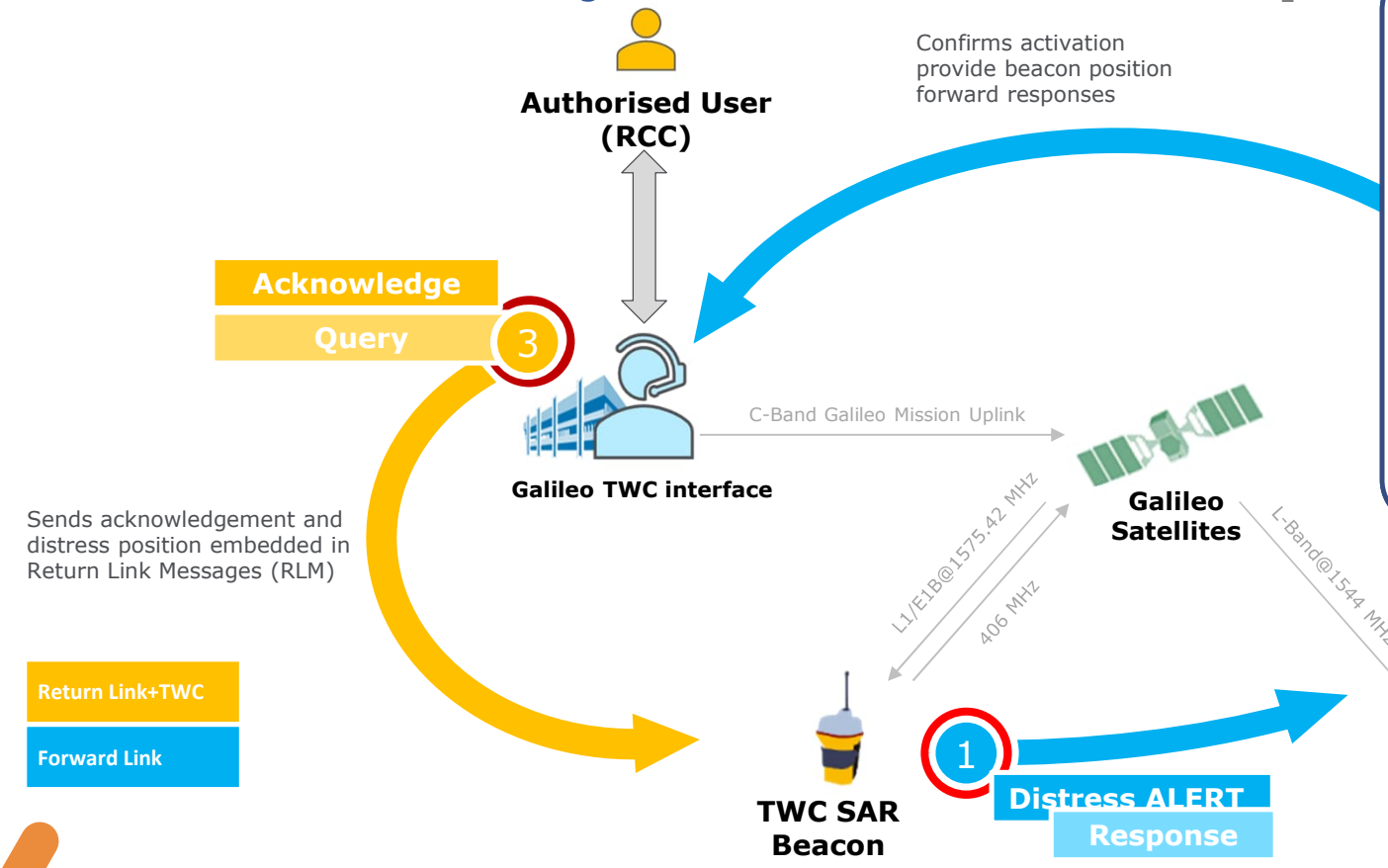
SAR/Galileo Two Way Communications - Concept



The SAR/Galileo **Two Way Communication** (TWC) is a new capability for SGB allowing to establish an effective communication channel between **Rescue Forces** (RCCs) and the Beacon User through a web interface and RLS.

1. Activated beacon sends distress **Alert messages**
2. Messages are detected and the beacon is **located**.
3. **A set of initial automatic questions** prompted to the user allowing SAR forces to increase the SAR operation success.
4. Rescue Services can establish a communication channel through a Web interface enabling them to submit **follow-on questions.**
   - Increased SAR Ops preparation
   - Awareness during SAR operation
   - Early False Alert identification

Applicable to portable ELTs and PLBs and EPIRBs

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TWC – Question/Answer Dataset

Initial Automatic Questions (IAQs) have been defined in close cooperation with SAR and RCC operators. First version applicable to the pilot phase was endorsed at CSC-73.

- ***« how many people do need help? » (1, 2-4, 5-8, etc …)***
- ***« do you need medical assistance? »***
- ***« What is the nature of distress? » (Water/Maritime, Land, Air, Lost, etc …)***

Responses trigger supplementary questions to further detail the distress scenario

Follow-on Questions are divided in two main categories:

- **Question common to all cases** (*medical condition, equipment & supplies available, etc..)*
- *Ex: geographical surroundings (In water (river/sea/lake), Down a cliff/ravine, In a hole/rift, In a plain, In desert, In a tree, In forest/jungle, In snow, In mountain, In high mountains) , …)*
- **Questions specific to the nature of** distress (*Water/Maritime, Land, Air, Lost, etc …*),

1. *Ex*: « *Are there Life Rafts available? » (Yes, Yes and donned, No or don't know)*

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TWC – Progress status

Cospas-Sarsat Council 73 approved:

- The first version of **C/S R.025** *"COSPAS-SARSAT TWO-WAY COMMUNICATION OPERATIONAL CONCEPT AND HIGH-LEVEL REQUIREMENTS"*
- The Dataset of Questions/Answers/Instructions to be used for the Pilot phase.

EC's agency EUSPA is preparing the pilot phase (Restricted access):

- Open pilot system – **offline** instance of RCC interface allowing operators to get familiarized and provide feedback by mid-2026
- End-to-End pilot system – **operationally connected** instance allowing RCC operators to interact with beacon simulators or prototypes
- Restricted access for **registered users and assigned slots** for End-to-End system.

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Questions Answers Instructions: Dataset Status

- Dataset v0.6 introduces a comprehensive set of questions defined by the EU, and is fine-tuning the automatic questions, according to the Cospas-Sarsat suggestions:
  - Automatic Questions **are reduced** to a strict minimum.
  - These Automatic Questions are **meant to deliver immediate answers** to the RCC – all Follow-On questions being considered as “nice to have”, but not containing critically important information.
  - **Automatic Questions** will be managed by Cospas-Sarsat.
  - **Multiple-selectable answers possibility** is being worked on.

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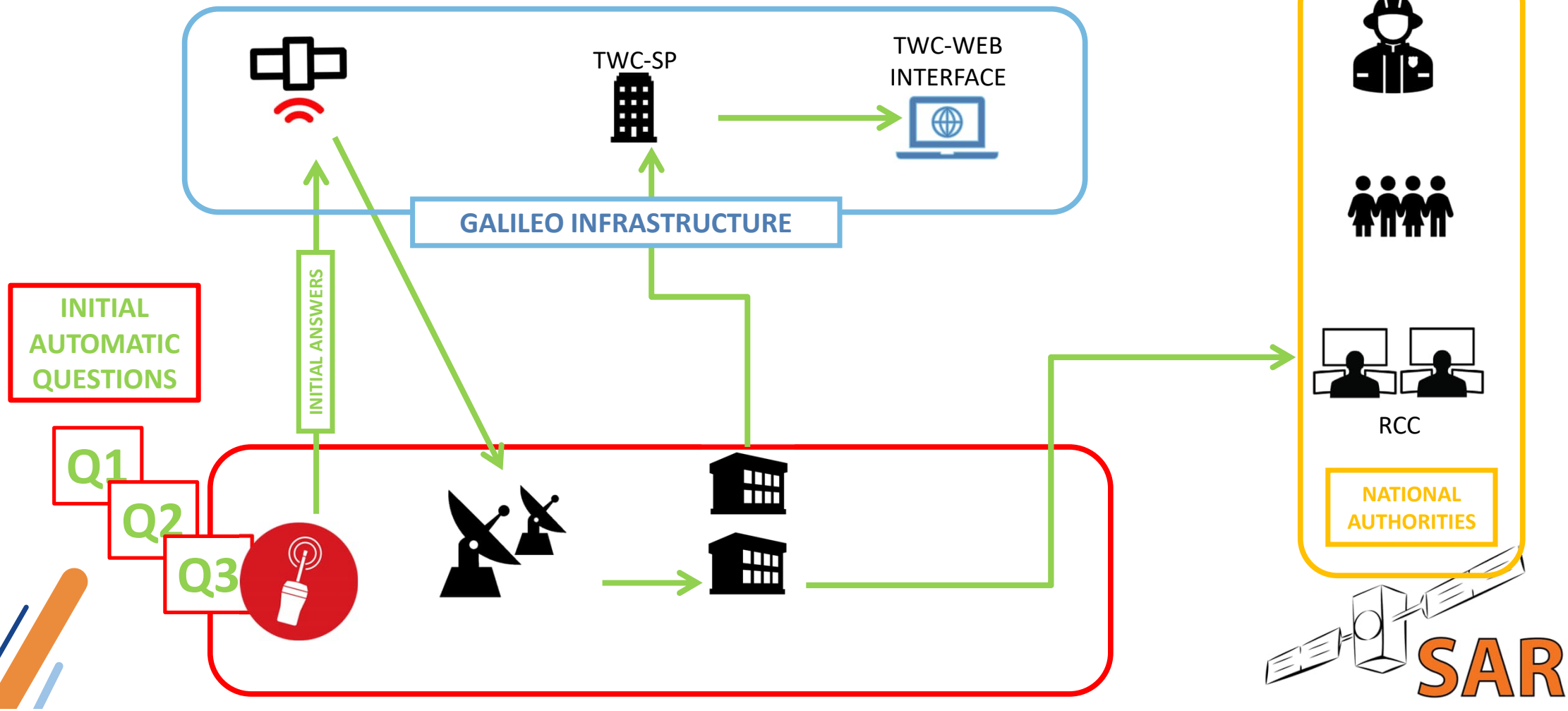
TWC – INITIAL Automatic Questions Flow



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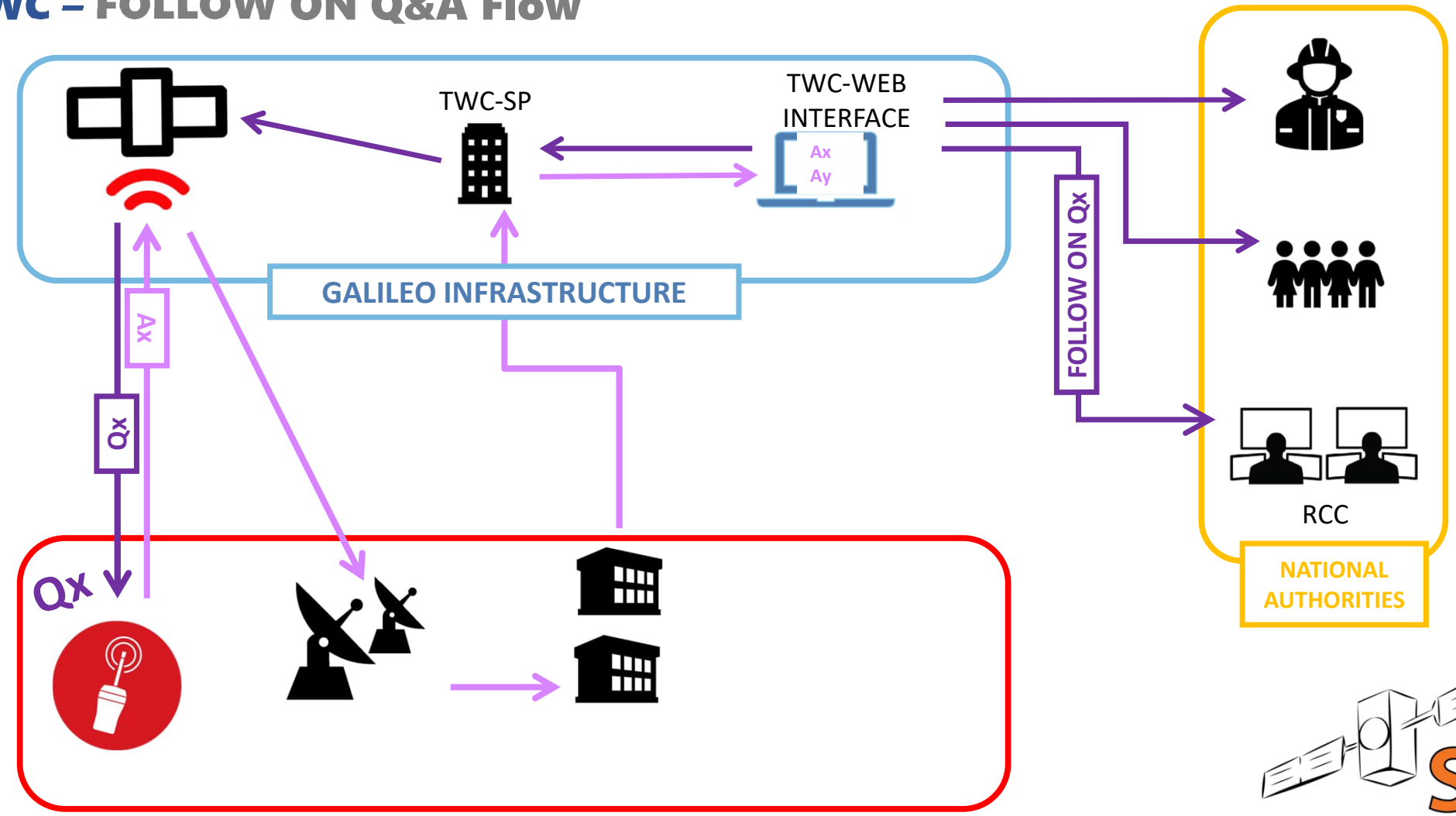
TWC – FOLLOW ON Q&A Flow



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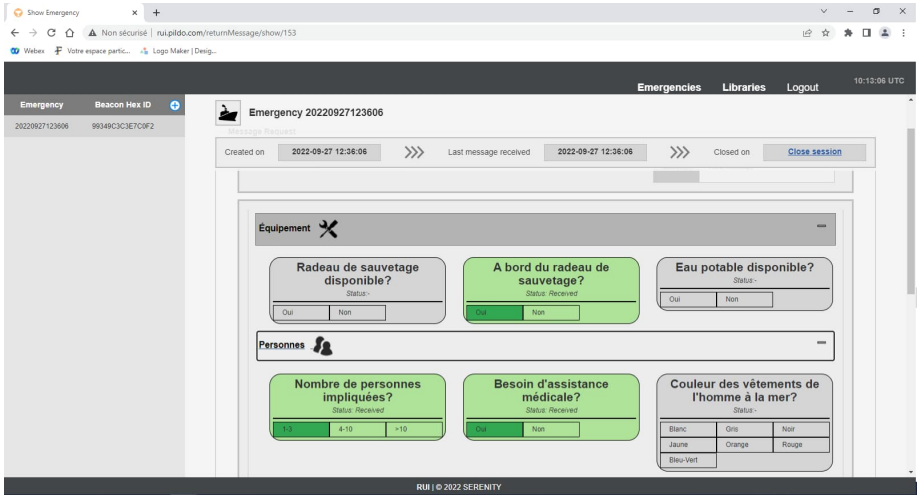
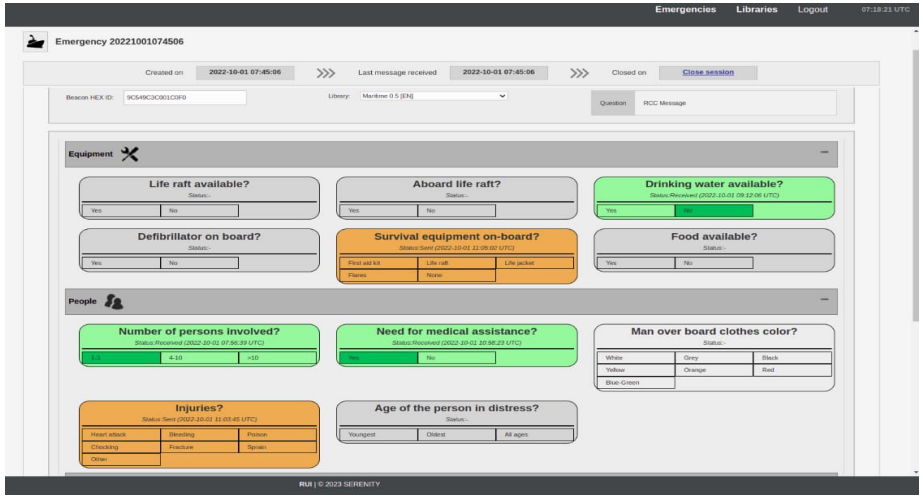
Two Way Communications - Past Demo Phase Results





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TWC – Progress status

Opportunities on TWC service:

- Early testing of RCC interface by operators of your countries
- Participation to live demonstrations with prototypes
- Participation to system test campaign

Expression of interest and accreditation is required

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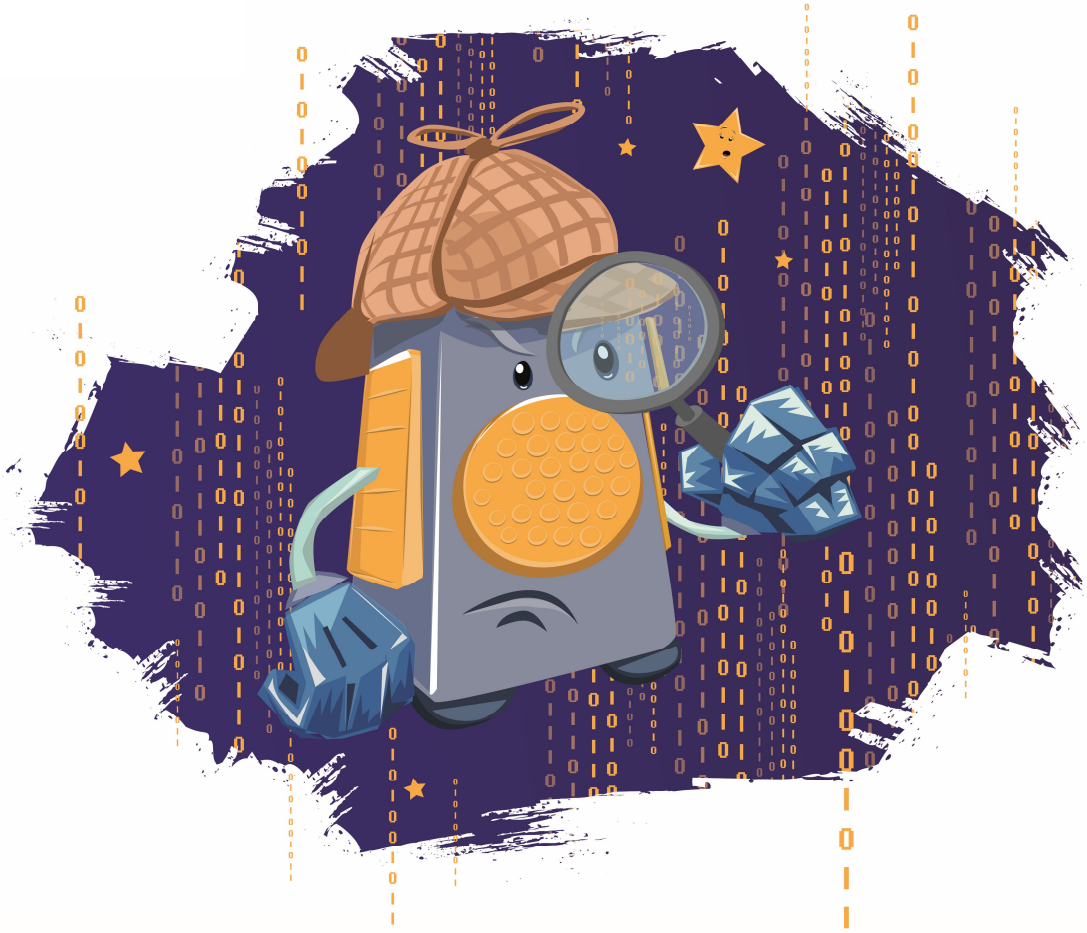
Any question ?



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THANK YOU FOR YOUR ATTENTION

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European Commission

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