



The Global Aeronautical Distress and Safety System (GADSS)

for NAM/CAR/SAM SAR Implementation Meeting
(based on ICAO/IMO JWG-SAR/23
Berlin, 12-16 September 2016)

Need, Overview, Status

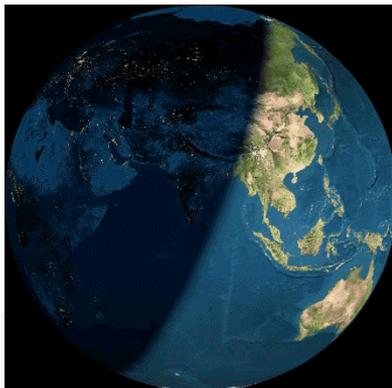
David Edwards modified version based on
Henk J. Hof
Chairman ICAO GADSS-Advisory Group

The Need



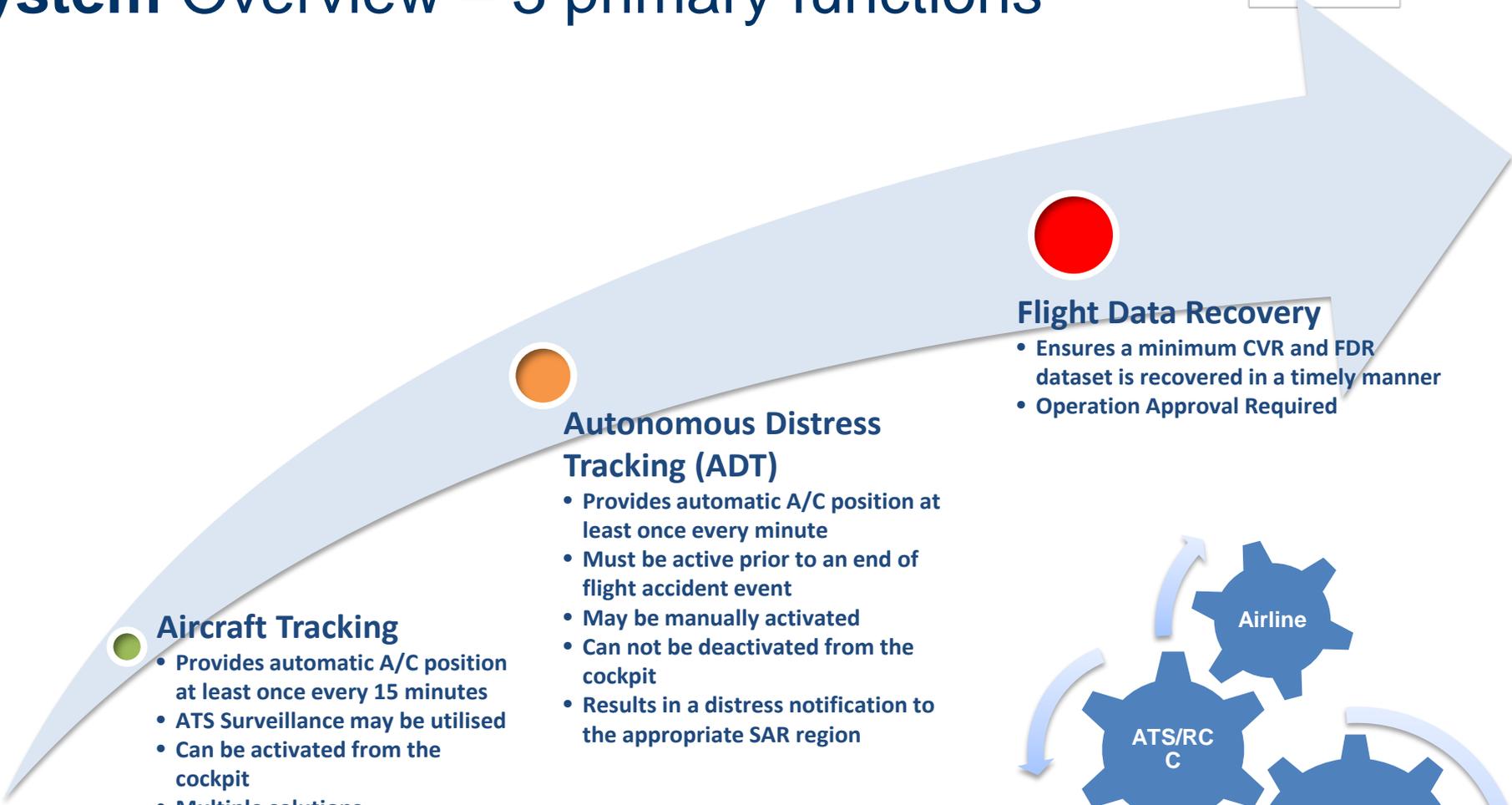
Vulnerability

- Timely identification and location of aircraft in distress
- Availability and sharing of valuable information
- Effective and regularly trained procedures



- ✈ Know where aircraft fly
- ✈ Know when aircraft are in distress
- ✈ Enhance ability to rescue
- ✈ Enhance ability to recover

Global Aeronautical Distress and Safety System Overview – 3 primary functions



Aircraft Tracking

- Provides automatic A/C position at least once every 15 minutes
- ATS Surveillance may be utilised
- Can be activated from the cockpit
- Multiple solutions
- May have airline defined triggers for abnormal operations with higher reporting rate

Autonomous Distress Tracking (ADT)

- Provides automatic A/C position at least once every minute
- Must be active prior to an end of flight accident event
- May be manually activated
- Can not be deactivated from the cockpit
- Results in a distress notification to the appropriate SAR region

Flight Data Recovery

- Ensures a minimum CVR and FDR dataset is recovered in a timely manner
- Operation Approval Required



Aircraft Tracking (Normal / Abnormal)

“A process, established by the operator that maintains and updates at standardised intervals a ground based record of the four dimensional position of individual aircraft in flight”

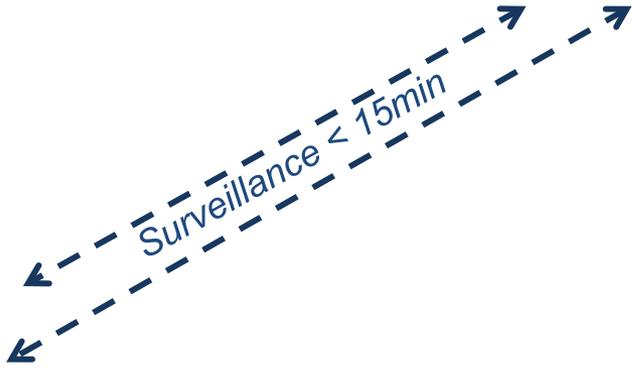


MTOW > 45.500 kg → **Shall**
MTOW > 27.000 kg → **Should**

Maximum take-off weight - MTOW



Aircraft Tracking with Automated Surveillance



Normal



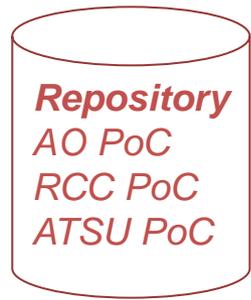
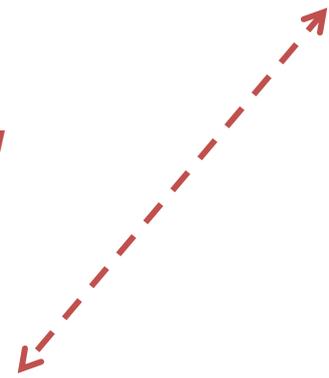
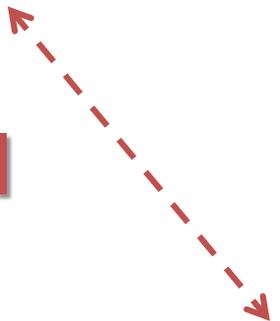
ATSU

AOC



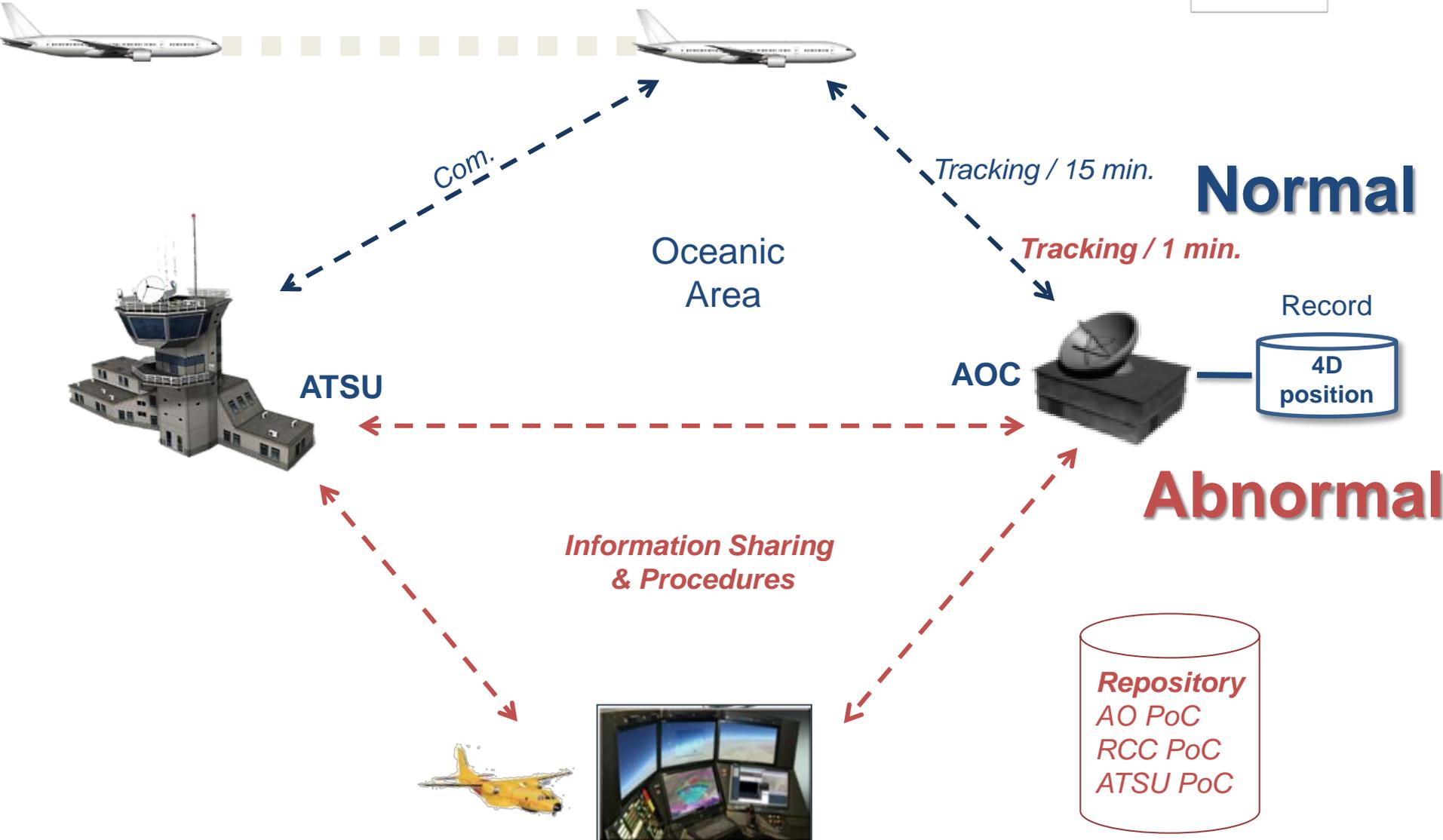
Information Sharing & Procedures

Abnormal



RESCUE COORDINATION CENTER

Aircraft Tracking without Autom. Surveillance



RESCUE COORDINATION CENTER

Information sharing

- Right information
- Right time
- Right place

Information e.g.:

last known position

flight track

flight plan

SAR information

Long term objective: Full System Wide Information Management

Near Term: Information Repositories Services

DISTRESS TRACKING



- Automatic
- Manual

AUTONOMOUS



Local User Terminal



Mission Control Center



Rescue Coordination Center
4D/1 Position information
Rescue Coordination Center

**Distress Tracking Concept
GADSS CONCEPT**



Other Satellites

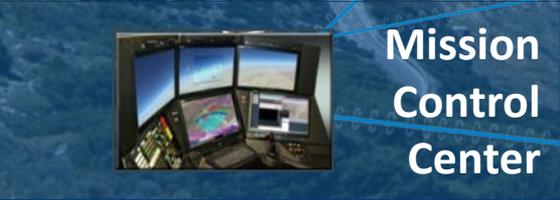


DISTRESS TRACKING



→ Automatic
→ Manual

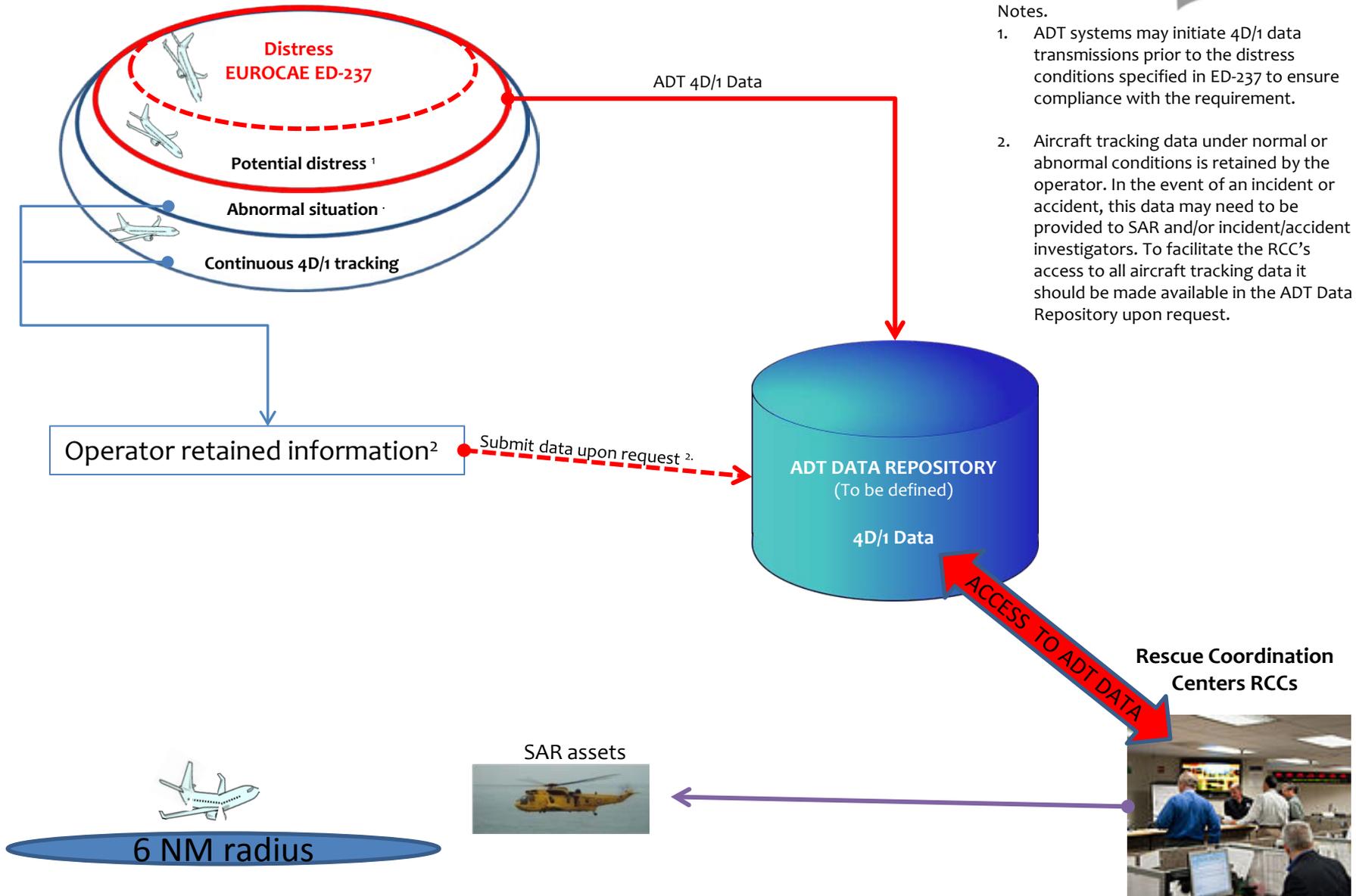
AUTONOMOUS



**Distress Tracking Concept
GADSS CONCEPT**

ADT DATA RETENTION LOCATION AND ACCESS

Work in Progress

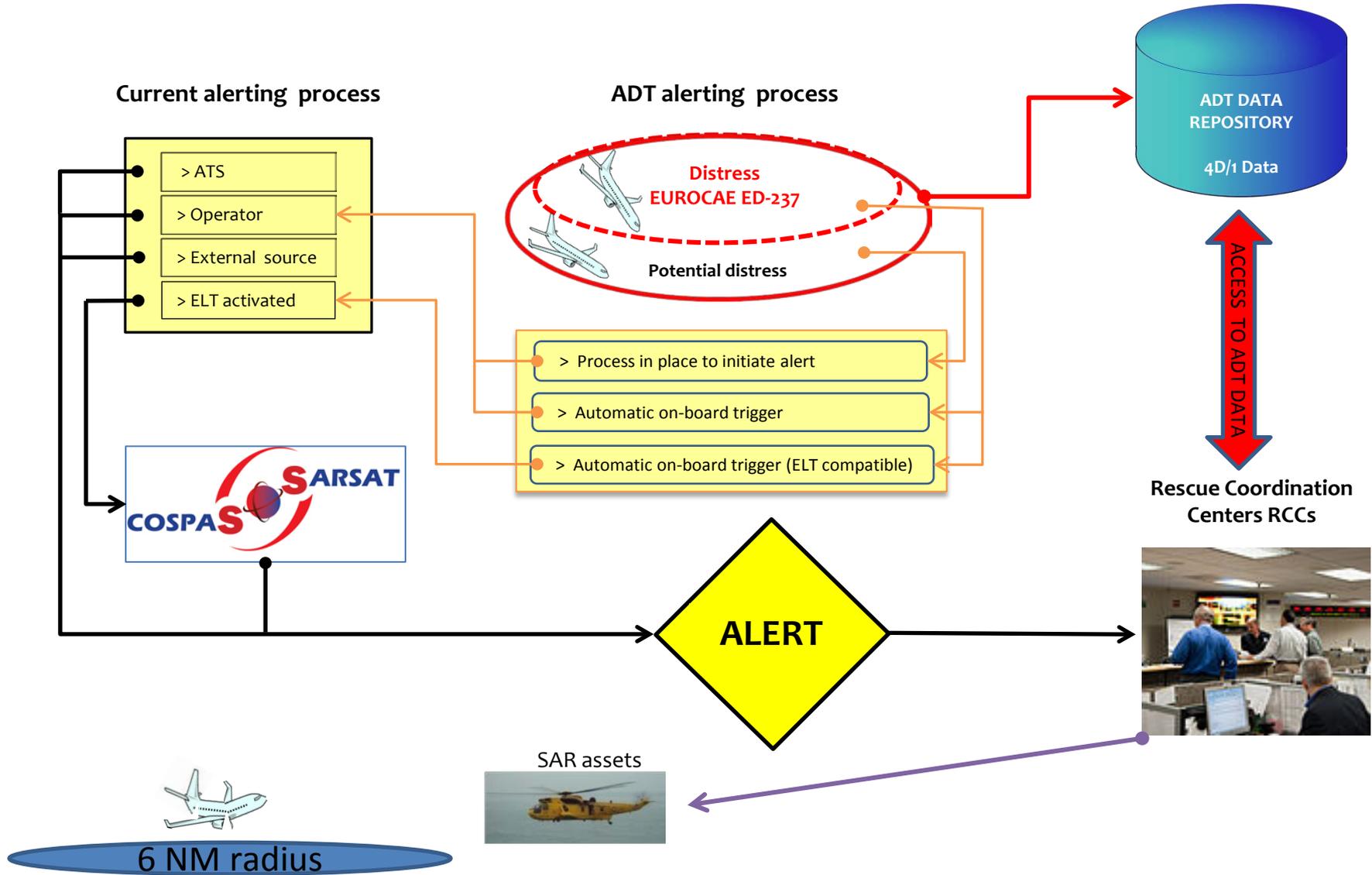


Notes.

1. ADT systems may initiate 4D/1 data transmissions prior to the distress conditions specified in ED-237 to ensure compliance with the requirement.
2. Aircraft tracking data under normal or abnormal conditions is retained by the operator. In the event of an incident or accident, this data may need to be provided to SAR and/or incident/accident investigators. To facilitate the RCC's access to all aircraft tracking data it should be made available in the ADT Data Repository upon request.

ADT DISTRESS ALERTING

Work in Progress



- 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

Global Aeronautical Distress and Safety System GADSS

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- Aircraft Tracking**
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- Autonomous Distress Tracking (ADT)**
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- Flight Recorder Data Recovery**
- Ensures a minimum CVR and FDR dataset is recovered in a timely manner
 - Operation Approval Required



GADSS: more than a system

- Complete SAR support approach including:
 - Assess shortcomings Civil/ Military coordination
 - Assess impact of FIR/SRR coordinates misalignment
 - Assess Annex 12 compliance
 - Review Annex 12, 30 min period
 - Develop guidance for inflight emergency training for ATSU's
 - Review ELT maintenance procedures
- GADSS ConOps includes comprehensive work plan to address full scope

Things for You to Think About to be ready...

- Operator role expanded, Media and Public expectations
- Your gaps in surveillance (radar coverage) - remote land and oceanic areas (beyond territorial sea)
- Automatic Dependent Surveillance-Broadcast (ADS-B) on “Iridium NEXT” satellites being launched starting November 2016.
 - Enables Aireon’s ADS-B satellite-based system to provide global aircraft surveillance in real time. (Operator or ATSU can purchase.)
- 406 MHz ELT-Distress Tracking (ELT-DT) 4D/1 alerts direct to RCC
- Your ATS and RCCs reaction?