LRIT Training for SAR Operators

Agenda

- **Opening Session**
- The LRIT system
  - Remarks on the current use of the LRIT system by MRCCs
  - General information on the Regulatory Framework
  - High-level architecture
  - LRIT System and Search and Rescue
  - Q&A
- Break (10 min)
- Live demonstration
  - Demonstration in the production environment
  - Demonstration in the testing environment using simulated ships
- Q&A session with field experts
- Closing remarks

Opening speeches

- Mr Laurent Parenté, Director General, IMSO

- Ms Maja Markovčić Kostelac, Executive Director, EMSA (EU)

- Rear Admiral Pedro Augusto Bittencourt Heine, COMPAAz (Brazil)

Introduction to IMSO

▶ The IMSO convention was adopted in 1976 by the IMO and further amended in 1999 and 2008, setting IMSO's current missions

▶ 110 Member States

▶ Headquartered in London within the IMO building since 2018

▶ Made of the Directorate, the Assembly meeting once per biennium and the Advisory Committee meeting 3 times per biennium as of November 2023

1976 IMSO Convention
44 Member States form the Advisory Committee
110 Member States

IMSO
INTERNATIONAL MOBILE
SATELLITE ORGANIZATION

IMSO's work

▶ **GMDSS Oversight**: Ensures the continuous provision of maritime safety communication services over satellite.

▶ **LRIT Coordination**: Ensures the smooth operation of the LRIT system.

KEMILINKS

and other national DC operators…

The LRIT system

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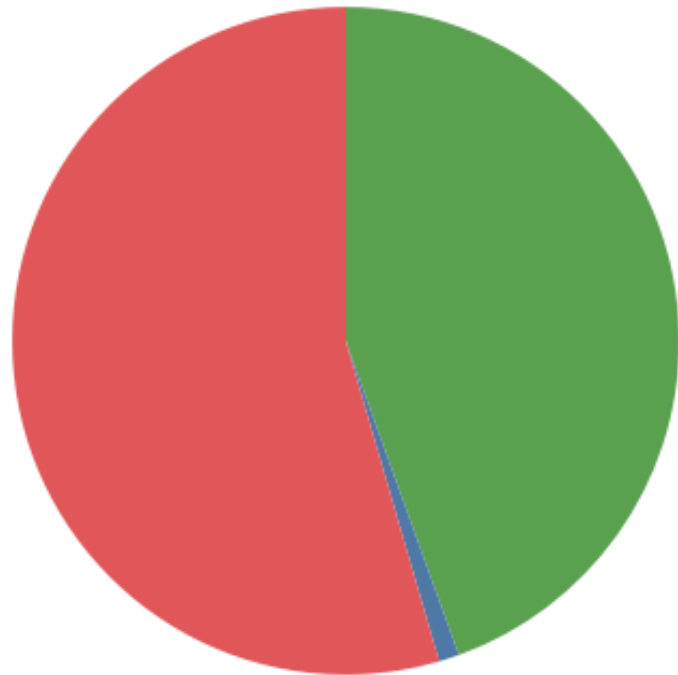
Remarks on the current use of the LRIT system by MRCCs
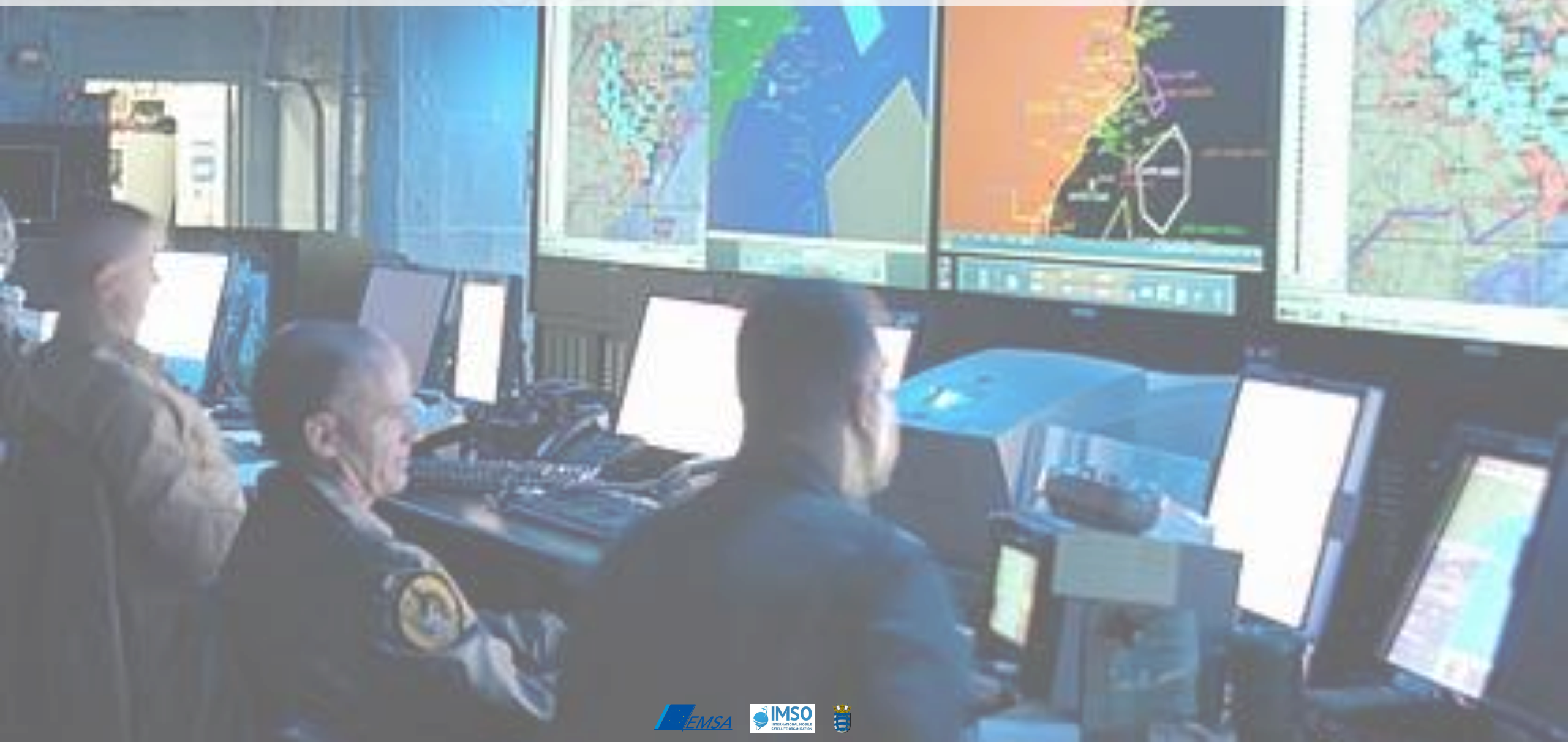
The LRIT system implementation status

▶ The LRIT system is a global system established by IMO to identify and track SOLAS ships in an automated manner

   ▶ 135 Flags

   ▶ 71 LRIT Data Centres

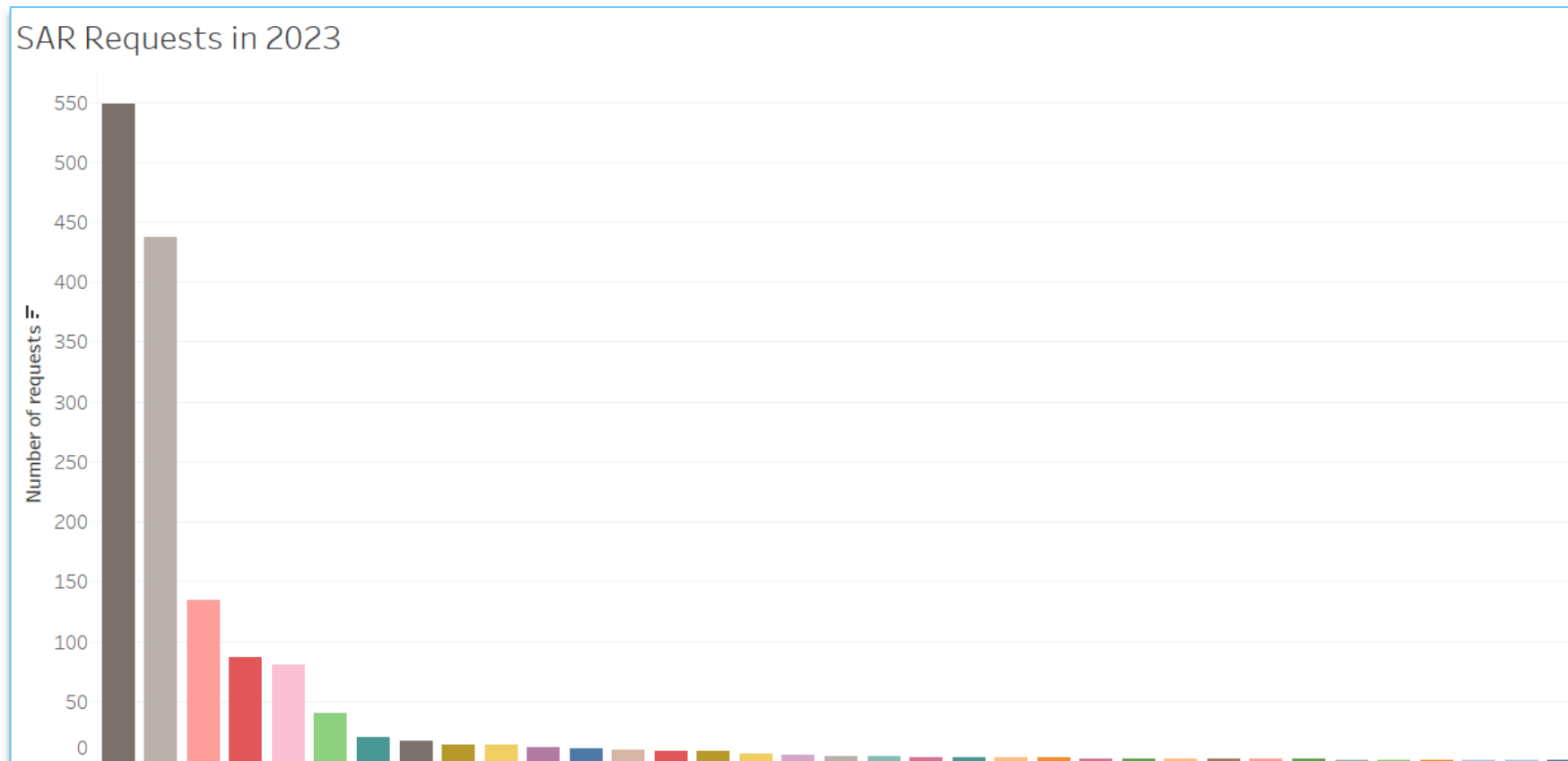   ▶ Around 40,000 ships

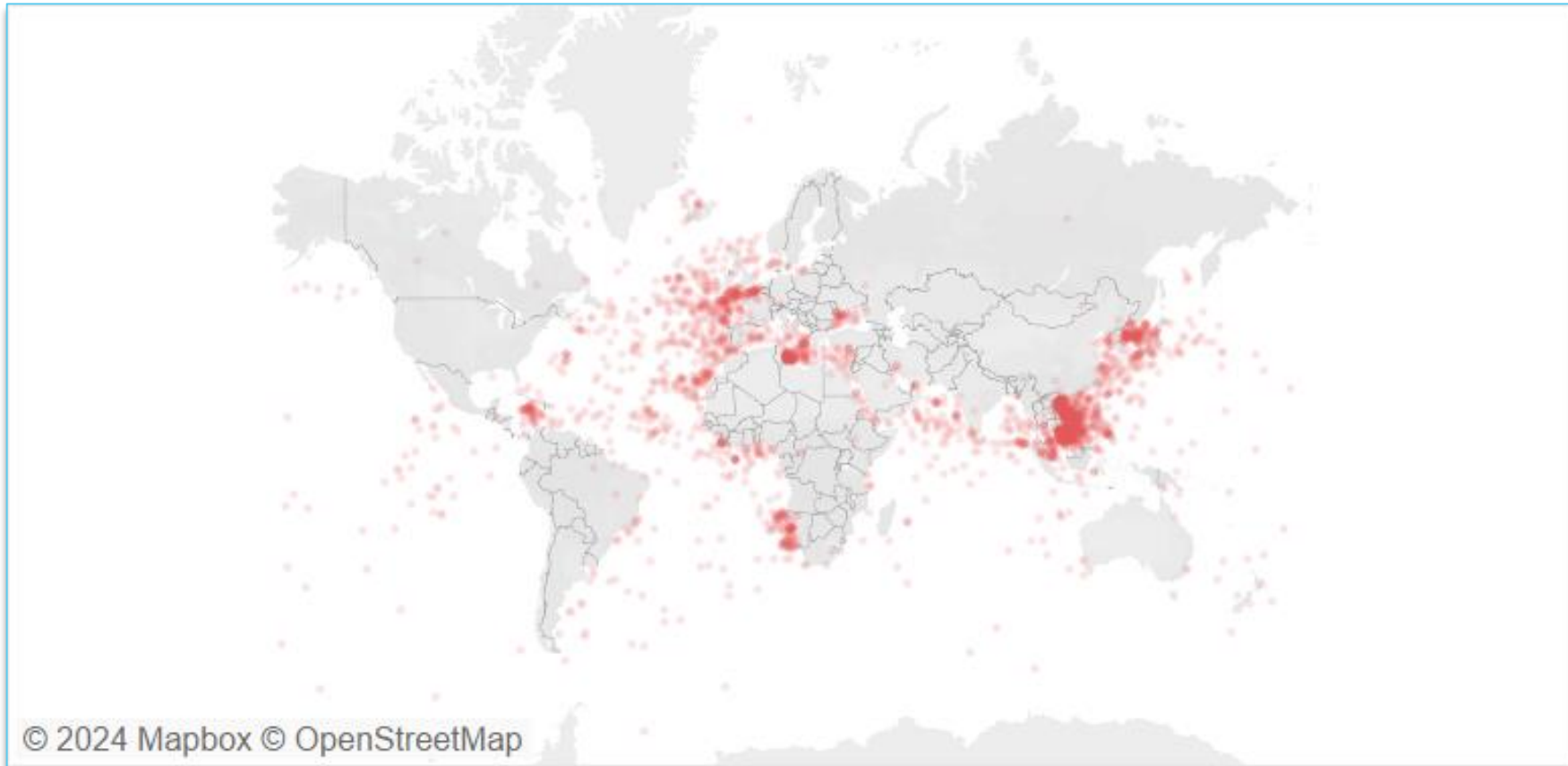# LRIT system usage: SAR

Usage: RCCs, Security forces and Others

Usage
- Other users
- RCCs
- Security forces

- **13 million position reports exchanged in 2023**
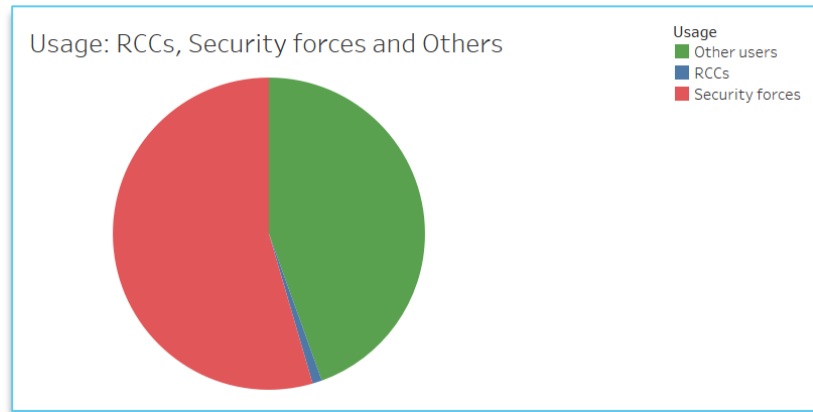
- **Only 1% were received SAR users**

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LRIT system usage: SAR

SAR Requests in 2023

LRIT system usage: SAR

© 2024 Mapbox © OpenStreetMap

LRIT system usage: SAR

In 2023:

Only 1% of the position reports exchanged were used for SAR

Only 6 countries regularly used the LRIT system

LRIT system usage: SAR

IMSO submission to ICAO/IMO JWG on the use of LRIT for SAR

Download a copy from
https://imso.org/lrit-training

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General information on the Regulatory Framework
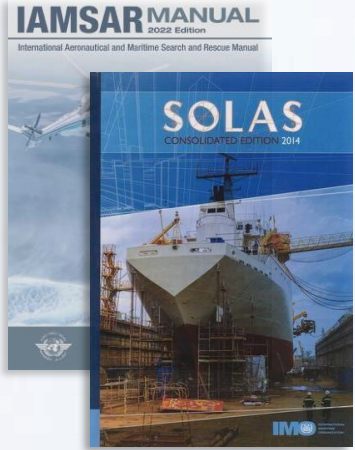
The Regulatory Framework
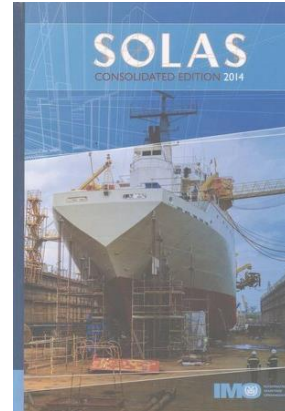
- **SOLAS Chapter V Regulation 19-1:**

  - Establishes provisions to enable SOLAS Contracting Governments to undertake the long-range identification and tracking of ships

  - Applies to:

    - passenger ships, including high-speed passenger craft;

    - cargo ships, including high-speed craft, of 300 gross tonnage and upwards; and

    - mobile offshore drilling units.

  - Clause 12 relates to SAR: *"Notwithstanding the provisions of paragraph 8.1, the search and rescue services of Contracting Governments shall be entitled to receive, free of any charges, long-range identification and tracking information in relation to the search and rescue of persons in distress at sea"*.

The Regulatory Framework
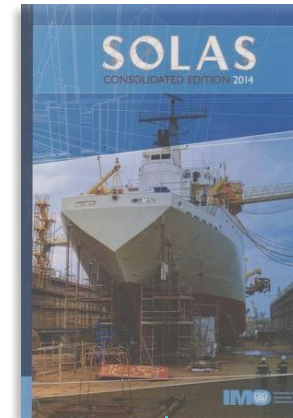
Performance standards
(Resolution MSC.263(84))
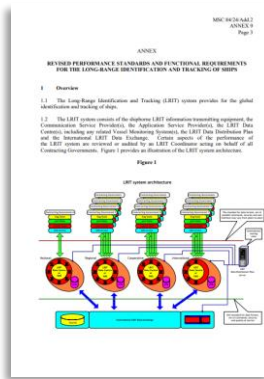
Appointment of the LRIT Coordinator
(Resolution MSC.275(85))
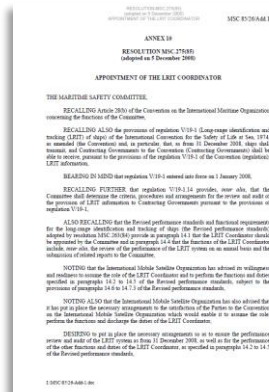
Technical documentation (Parts I & II)
(MSC.1/Circ.1259/Rev.8 & MSC.1/Circ.1294/Rev.6)

Guidance to SAR services
(MSC.1/Circ.1338/Rev.1)
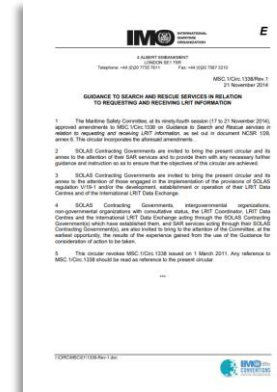
Amendments to the IAMSAR Manual
(MSC.1/Circ.1367)

The Regulatory Framework
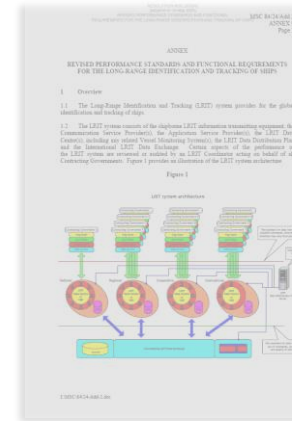
▶ **IMO resolution MSC.263(84)** on *Revised performance standards and functional requirements for the long-range identification and tracking of ships*

  ▶ *adopted 16 May 2008*

  ▶ *Sets out the functional requirements of the Shipborne equipment, Data Centres and International Data Exchange*

The Regulatory Framework
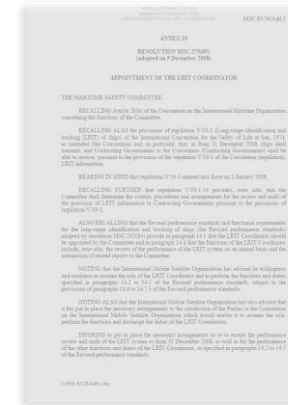
- **IMO resolution MSC.275(85)** on *Appointment of the LRIT Coordinator*

  - *adopted on 5 December 2008*

  - *appoints the International Mobile Satellite Organization as the LRIT Coordinator as from 31 December 2008*

The Regulatory Framework
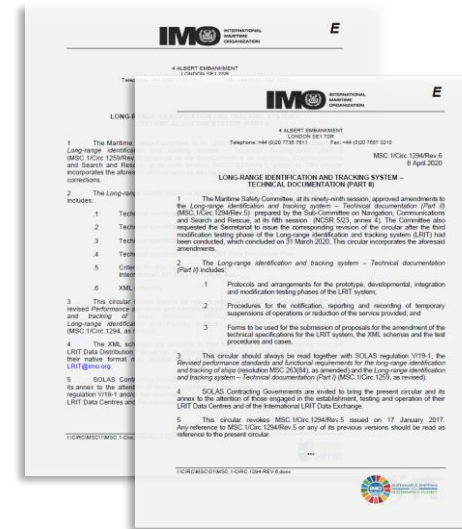
▶ *Long-Range Identification and Tracking System – technical documentation (parts I & II)*

> ▶ set out in IMO Circulars:

> > ▶ MSC.1/Circ.1259/Rev.9 &

> > ▶ MSC.1/Circ.1294/Rev.6

> ▶ issued 29 November 2022 & 8 April 2020 respectively

The Regulatory Framework
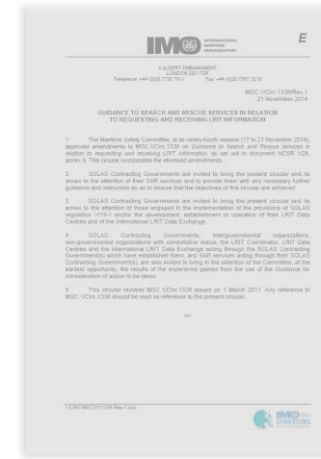
▶ **IMO Circular MSC.1/Circ.1338/Rev.1** on *Guidance to Search and Rescue Services in Relation to requesting and receiving LRIT information*

  ▶ *issued 21 November 2014*

  ▶ *provides guidance to Search and Rescue services of Contracting Governments in relation to requesting and receiving LRIT information transmitted by ships*

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The Regulatory Framework

▶ **IAMSAR Volume I (Organization and Management),**

 ▶ Chapter 4:

"As well as ship reporting systems, other vessel tracking systems and services are valuable for search and rescue. AIS, LRIT, VMS and Vessel Traffic Services (VTS) are all valuable sources of vessel position data and can be displayed to provide a surface picture (SURPIC). The surface picture can assist in the identification and location of suitable rescue vessels and be used to locate potential rescue vessels. <u>In accordance with SOLAS regulation V/19-1, Contracting Governments should make provision to receive LRIT vessel position data for SAR in accordance with applicable IMO guidance</u>."

The Regulatory Framework

▶ **IAMSAR Volume II (Mission Coordination),**

  ▶ Chapter 1:

"As well as ship reporting systems (SRS), RCCs can use vessel position data from various vessel tracking systems to support SAR operations. These may include the Long-range Identification and Tracking (LRIT) system, the Automatic Identification System (AIS) system, fisheries and other Vessel Monitoring Systems (VMS) and Vessel Traffic Services (VTS) established to monitor port operations or to cover focal areas or sensitive areas. Data from each of these systems can be displayed by RCCs using Geographic Information Systems (GIS) to produce a surface picture (SURPIC). SURPICS can be used to identify and locate potential rescue vessels as well as improve maritime domain awareness (MDA). In accordance with SOLAS regulation V/19-1, Contracting Governments should make provision to receive LRIT vessel position data for SAR. In accordance with IMO guidance material, RCCs can request LRIT data for SAR operations within their own SRR and for SAR coordination requirements outside it as appropriate. ==Data on all vessels can be requested within a circular or rectangular area at no charge to the RCC==."

The LRIT system

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High-level architecture

The LRIT system architecture
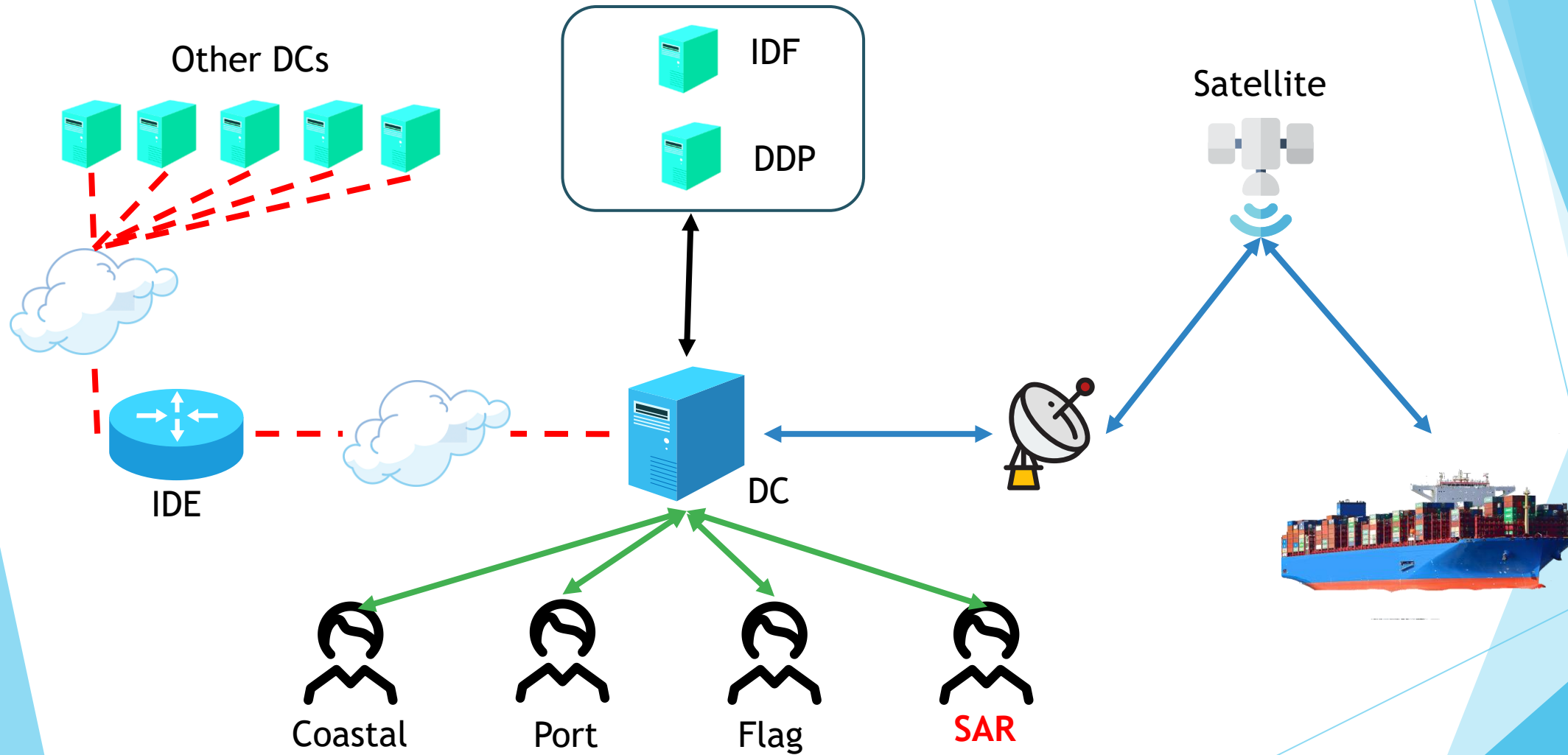
The LRIT system architecture

▶ The LRIT system architecture assumes that the SOLAS Contracting Governments must indicate its Data Centre.

▶ The LRIT Data Centres collect and make available ship position reports to authorized users.

▶ The LRIT International Data Exchange (IDE) allows the exchanging of LRIT information between LRIT Data Centres.

The LRIT system architecture

▶ Secure and standard communication protocol

▶ message exchange and response do not require human intervention

▶ A LRIT DC can provide service for more than one Administration

▶ LRIT National DC / LRIT Cooperative / LRIT Regional DC

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The LRIT system architecture

▶ MRCCs use the Administration LRIT DC to communicate with the other LRIT DC

▶ The system allows SAR operators to query on SOLAS ships of any flag

The LRIT system architecture
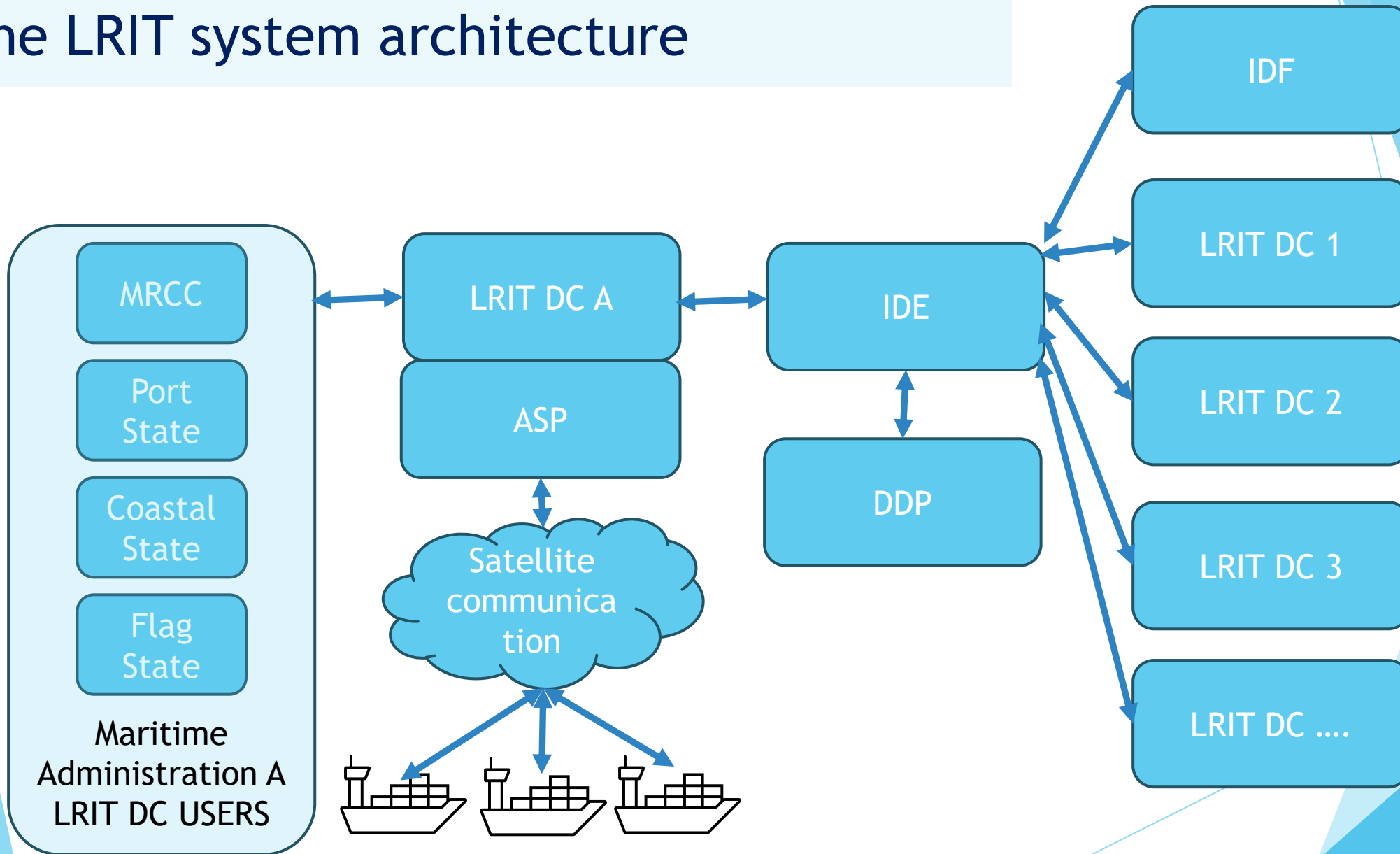
The LRIT system architecture

LRIT Production Environment (the real one)

- MRCC
- Port State
- Coastal State
- Flag State
- LRIT DC A
- ASP
- Satellite communication
- IDE
- DDP
- IDF
- LRIT DC 1
- LRIT DC 2
- LRIT DC 3
- LRIT DC ….

Real Ships
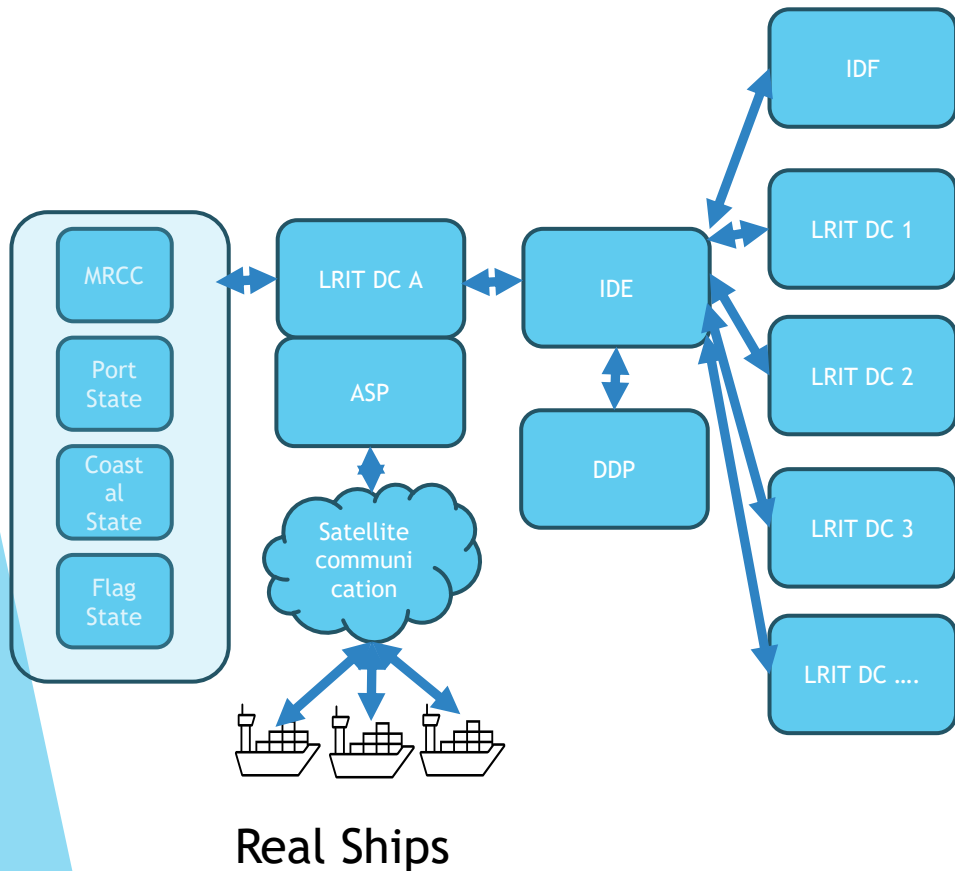
LRIT Developing and Testing Environment (only simulated data)
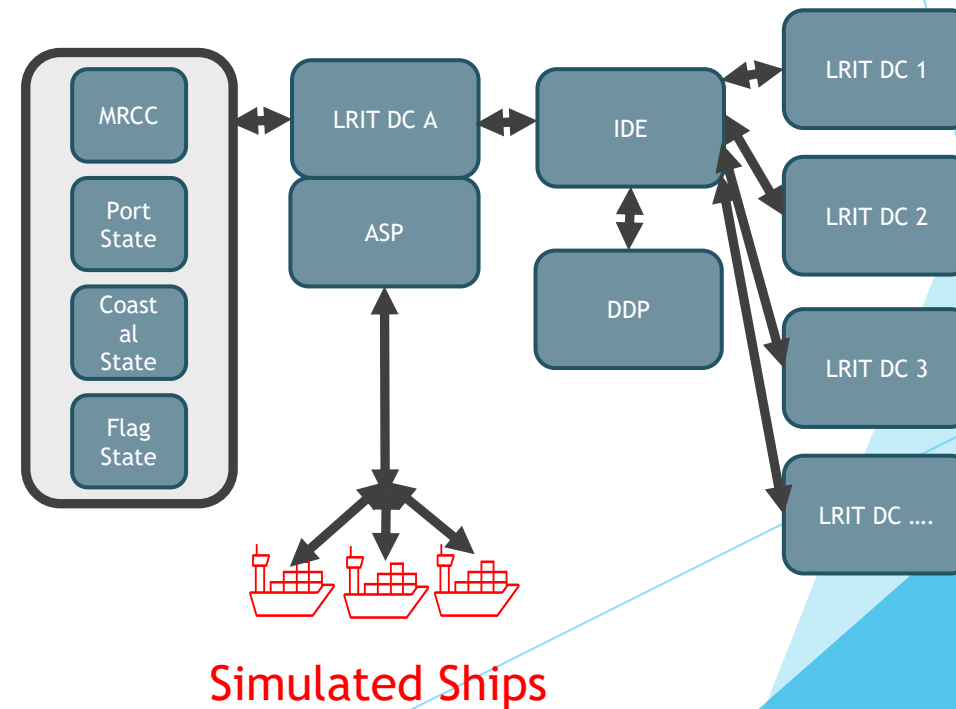
- MRCC
- Port State
- Coastal State
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- ASP
- IDE
- DDP
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Simulated Ships

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LRIT System and Search and Rescue
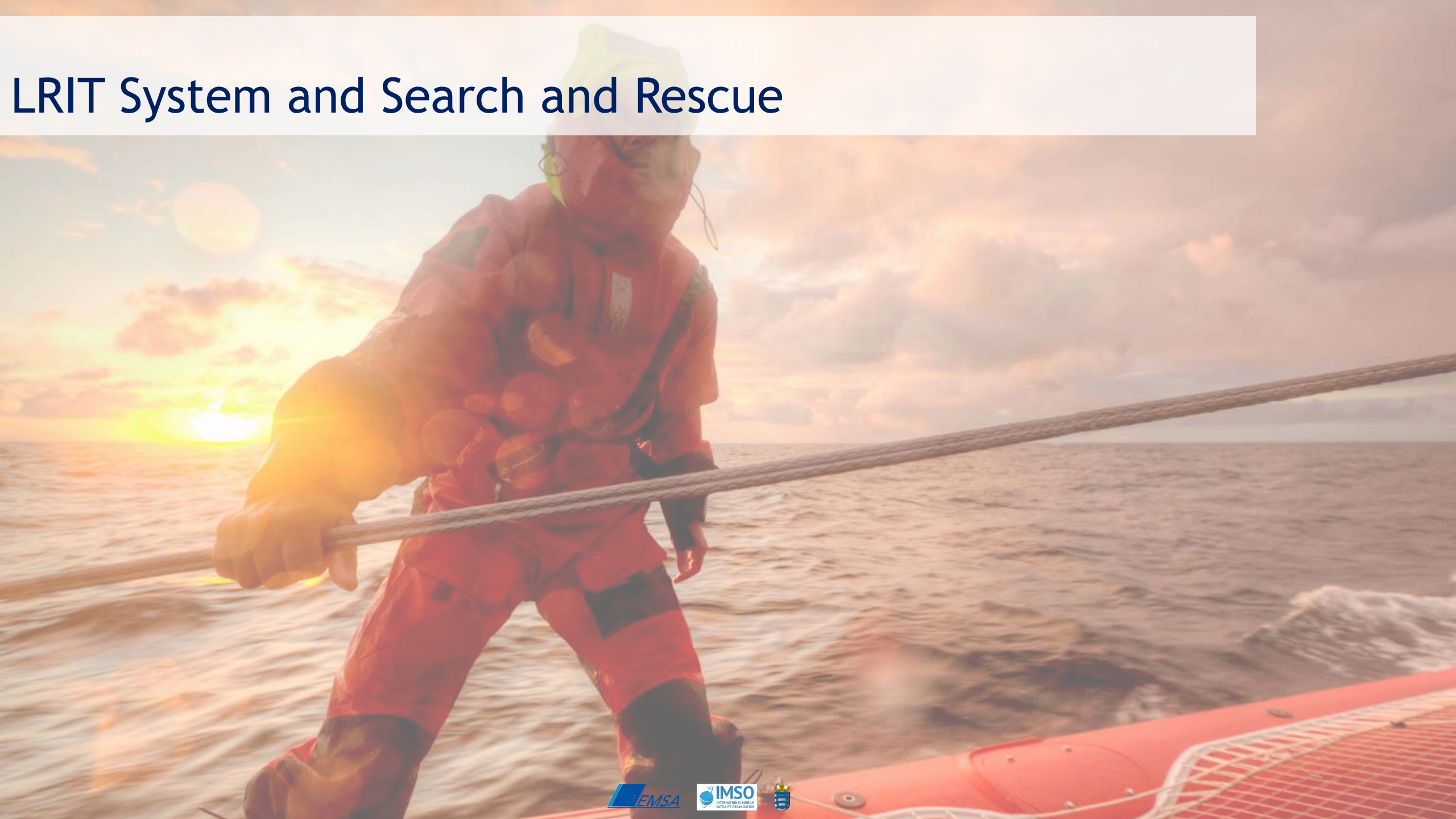
The LRIT system and Search and Rescue

- ▶ The LRIT is a system for administrations to share information about ships' position and identification.

- ▶ To access this information, MRCCs use standard requests in the system.

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The LRIT system and Search and Rescue

► LRIT requests available to SAR users

   ► Position request (requests on an individual ship)

   ► SAR SURPIC request (request over an area for the last 24 hours)

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The LRIT system and Search and Rescue

- ► Timing requirements for responding to a LRIT Request

  - ► 15 min - Archived information (already in the responding DC database)

  - ► 30 min – Immediate position (information pooled from the ship terminal in real-time)

The LRIT system and Search and Rescue

▶ Position request (requests on an individual ship)

   ▶ one-time poll

   ▶ archive request

   ▶ most recent position

The LRIT system and Search and Rescue

▶ One-time Poll Position (same flag)
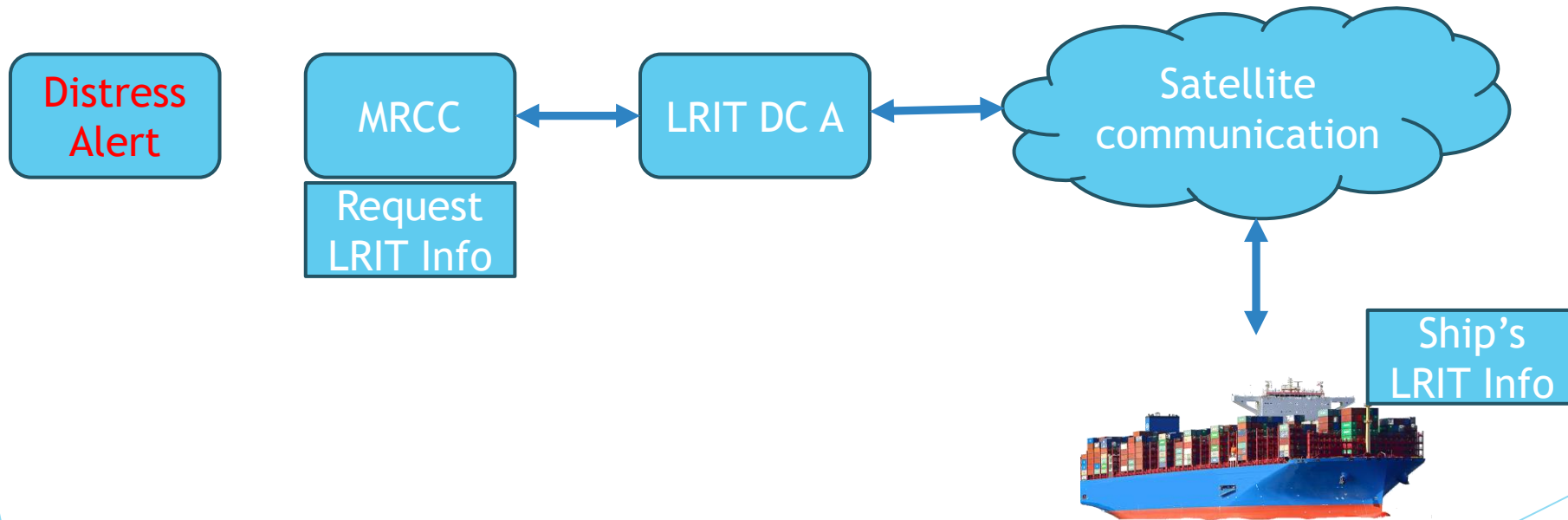
The LRIT system and Search and Rescue

▶ One-time Poll Position (another flag)
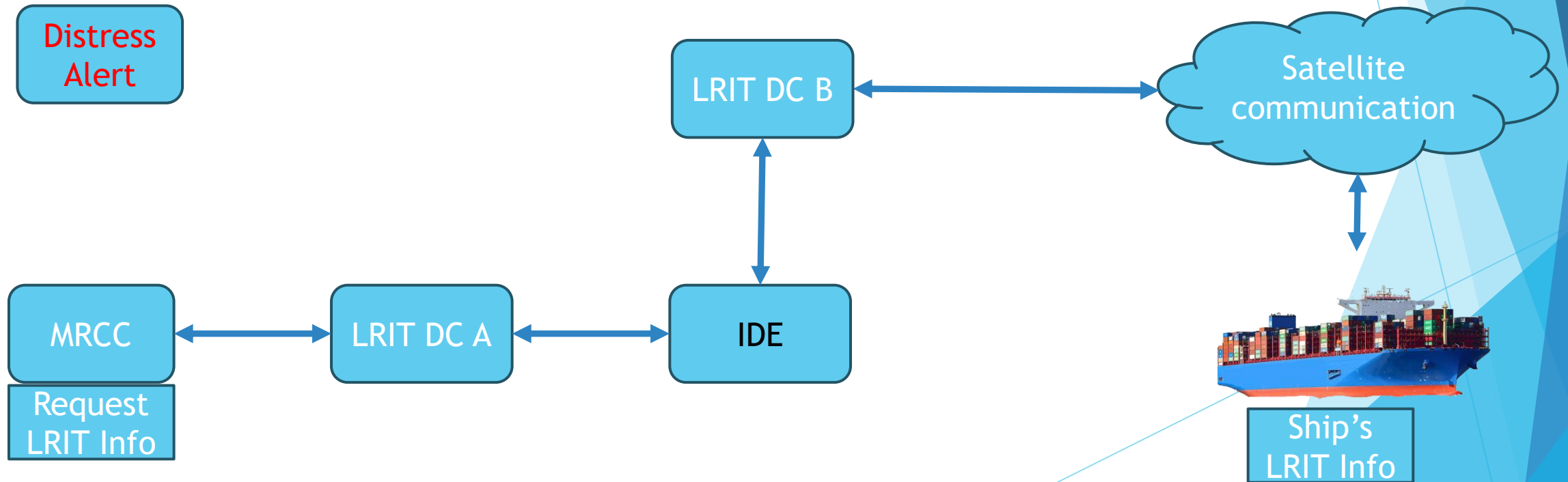
The LRIT system and Search and Rescue

▶ Archived/Most Recent Position Request (same flag)
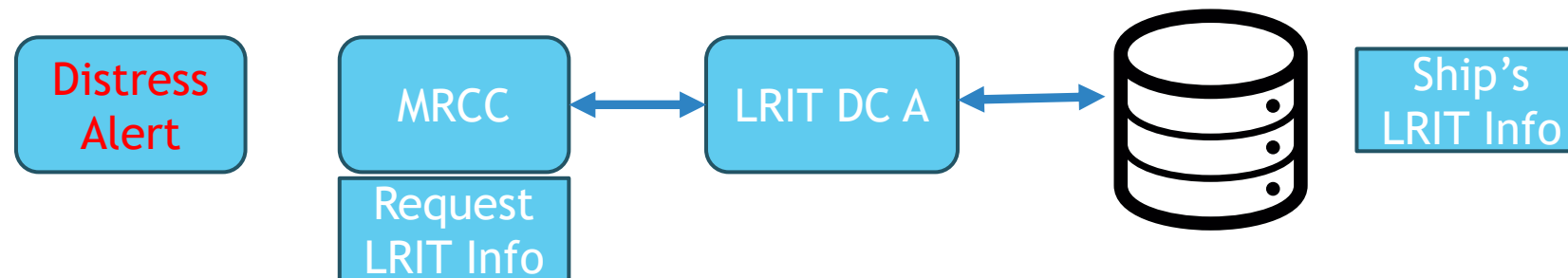
The LRIT system and Search and Rescue

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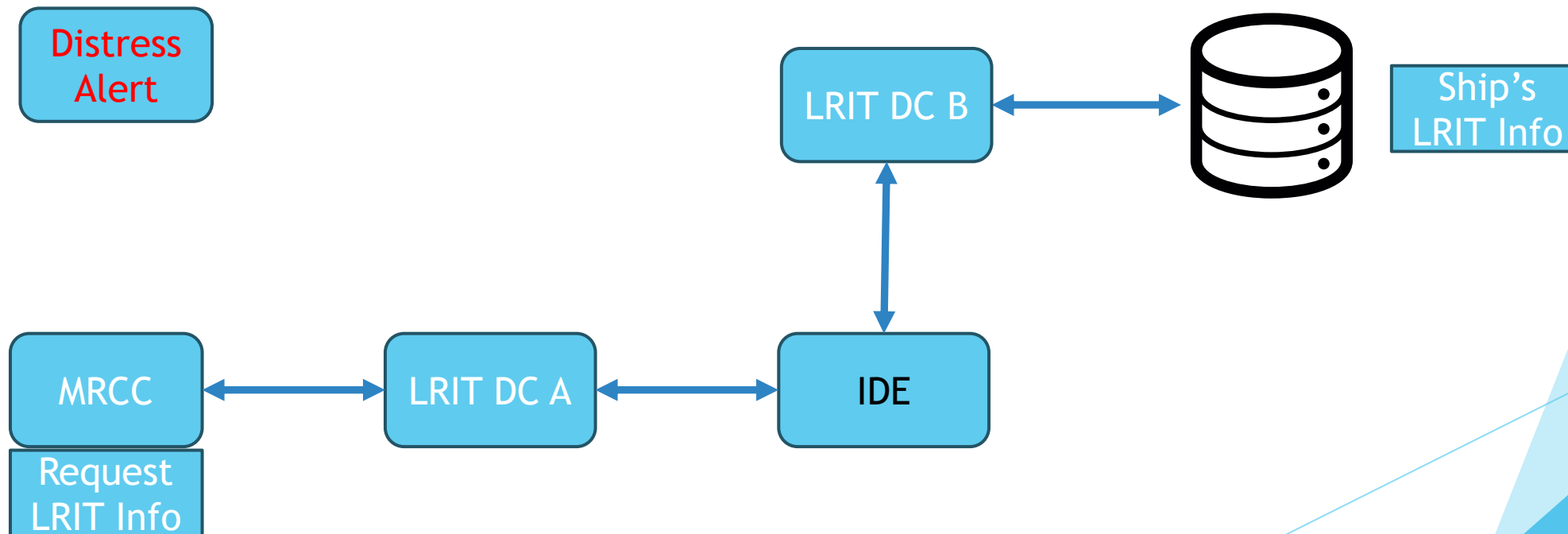
The LRIT system and Search and Rescue

- SAR SURPIC request

  - Time frame – 24 hs

  - number of last positions inside the area for individual ships

    - from 1 to 4

  - Circular – radius up to 999 NM

  - Rectangular – north and west offset up to 2,000 NM

The LRIT system and Search and Rescue

▶ SAR SURPIC request

Distress Alert

MRCC ◄──────► LRIT DC A ◄──────► IDE

SURPIC Request

SURPIC Request ──► LRIT DC B ── Ship's LRIT Info

SURPIC Request ──► LRIT DC B ── Ship's LRIT Info

SURPIC Request ──► LRIT DC B ── Ship's LRIT Info

SURPIC Request ──►   • • • •

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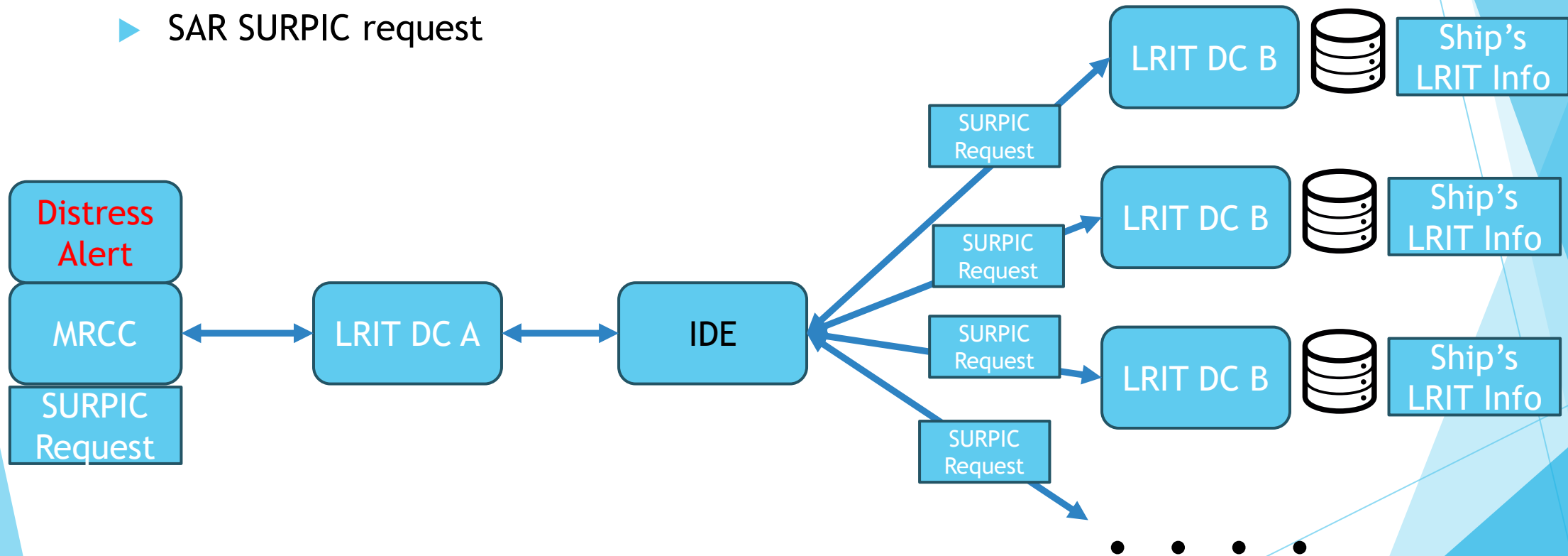
The LRIT system and Search and Rescue

▶ SAR SURPIC considerations

  ▶ The centre of the region should consider the SAR operation area

  ▶ Excessively large areas

    ▶ may negatively affect the LRIT system because of the large number of responses

    ▶ An overhead of responses far from the area may not help the SAR operation; on the contrary, it may distract the involved personnel.

The LRIT system and Search and Rescue

► SAR SURPIC considerations

  ► Small areas may not capture the desired information, for example:

    ► A 20 NM radius provides a diameter of 40 NM.

    ► A merchant ship sailing at 10 knots covers 60 NM between 2 consecutive LRIT reports; and only one will be in the area

    ► Having only one position, SAR operators cannot estimate the course and speed of the merchant ship, nor can they estimate its current position.

    ► Without the information above, it is hard to assess if this ship is a suitable candidate to support the ongoing SAR operation.

The LRIT system and Search and Rescue

▶ Using the system (example)

1. MRCC receives a distress

2. Request One time pool/ Last Position / Historical Position for the ship in distress

3. Execute a SURPIC SAR

4. Receive responses and select ships

5. Request the position for the potential supporting ships individually

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Questions and Answers

▶ Have a question?

  ▶ Use the "Raise Hand" function to request floor

  ▶ Wait until you're invited to take the floor

  ▶ Once invited, activate your camera and microphone
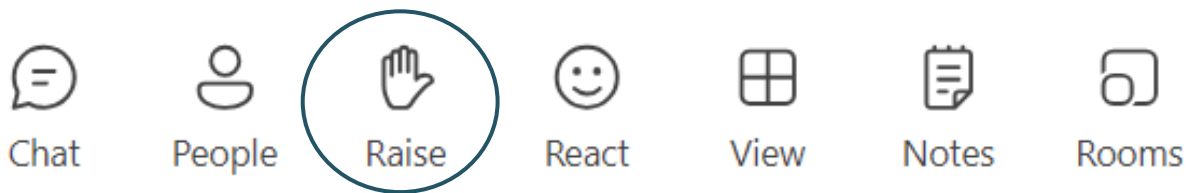
LRIT Training for SAR Operators

The session will resume soon

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Live demonstration

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Questions and Answers

Field experts

▶ Mr Benedetto Doviziani, Italian Coast Guard, Italy

▶ Mr Bruno Hansen Dias, CASNAV, Brazil

▶ Capt Eduardo Lellis Vianna e Silva, MRCC Brazil, Brazil

Closing remarks

- Download training material from
  https://imso.org/lrit-training

- Availability of the simulated ships?