



European Maritime Safety Agency

# **Quarterly Report**

## **Q4 – 2020**

### **EU LRIT CDC**

**and**

### **EU LRIT Ship DB**

### DOCUMENT HISTORY

Version	Date	Comments
1.0	11/01/2021	First Issue

### APPROVAL

	Name	Date	Signature
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### DISTRIBUTION LIST: ACCESS ON-LINE (USER WEB INTERFACE)

EMSA, Commission, LRIT NCA, LRIT end-users

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## 1. SCOPE OF THE DOCUMENT

This document provides information on the performance of the European Union LRIT Cooperative Data Centre (EU LRIT CDC or EU CDC) and the European Union LRIT Ship Database (EU LRIT Ship DB), and events related to the EU CDC activities and operations during the 4<sup>th</sup> Quarter of 2020. The report is made available to all LRIT users of the EU CDC via its User Web Interface (UWI).

To avoid overloading the report with figures, some graphs show data only for one month. The results of the quarter are presented and summarized in tables.

This document is divided into two parts:

- **EU CDC Main figures** gives a general overview of the status of the EU CDC, its main issues and Key Performance Indicators (KPIs);
- **Annexes** show detailed graphs and figures of the EU CDC which are referred to in the first part.

## 2. EU CDC MAIN FIGURES

### 2.1. EU CDC HIGHLIGHTS

The following are the highlights for the 4<sup>th</sup> Quarter of 2020:

- **Quality of Service (QoS):** All the performance indicators are above the targets during this quarter.
- **EU LRIT CDC v3.4:** A new release of the EU LRIT CDC was deployed on 24 November 2020. It includes:
  - The second set of corrections following IMSO audit n°11;
  - Some bug corrections.
- **Future EU LRIT CDC releases:** Another release of the EU LRIT CDC is under development and two others are planned for the first semester 2021. They will include:
  - The necessary developments to replace the current EU LRIT CDC User Web Interface with the SEG;
  - Several bug corrections.

## 2.2. KEY PERFORMANCE INDICATORS

Table 1 presents the KPIs used for measuring the EU CDC performance (most of the KPIs are based on the IMO requirements - time format is hh:min):

Activity/Service	Performance Indicator	October	November	December	Quarter	Target
EU LRIT CDC System operational	Availability of the system over the period	99.87%	99.93%	99.87%	99.89%	≥ 99.00%
	Maximum continuous downtime of the EU LRIT CDC	00:11	00:04	00:04	00:11	< 12:00
EU LRIT CDC Reporting performance	Percentage position reports delivered according to IMO requirement	99.66%	99.32%	99.69%	99.56%	≥ 99.00%
EU LRIT CDC user web interface	Availability of the User Web Interface	99.53%	100.00%	100%	99.84%	≥ 99.00%

**Table 1 – Key Performance Indicators**

The availability of the User Web Interface of the EU CDC was above the target during the period.

The availability of the Web Interface of the EU LRIT Ship DB (not presented in the Table 1) was 99.95% in this quarter.

## 2.3. SYSTEM PERFORMANCE

This section refers to messages delivered by the EU CDC. The Quality of Service (QoS) measures if messages were properly delivered.

According to MSC Res. 263(84) §13 document, the IMO definition of QoS is:

$$\text{QoS} = \frac{\text{Number of delivered LRIT reports meeting latency requirements}}{\text{Total number of LRIT information requests}} \times 100\%$$

The QoS refers to Periodic (Type 1), Poll (Type 2) and SAR (Type 3) position reports which were delivered by the EU LRIT CDC as per IMO requirements.

The target QoS is:

- 95% over any 24-hour period (24h QoS).
- 99% over any 1 month (30d QoS).

Table 2 presents the monthly QoS covering both the periodic and polled messages:

	October	November	December
<b>Monthly IMO-30d QoS (target 99%)</b>	99.66%	99.32%	99.69%
<b>Number of delivered reports that did not meet the IMO requirements</b>	2,830	5,387	2,515
<b>Percentage of delivered reports that did not meet the IMO requirements</b>	0.34%	0.68%	0.31%
<b>Total number of reports sent by EU CDC</b>	827,818	796,084	823,415

**Table 2 – Monthly 30d QoS**

The 30d QoS was above the IMO requirement this quarter.

Further detailed information on the 24h and 30d QoS as well as the QoS for periodic reports or for polled reports can be found in § 3: Annexes, in § 3.3 System Performance.

## 2.4. SHIP INTEGRATION AND REPORTING

Table 3 presents a snapshot of the ship integration and ship reporting during the first week of each month:

	October	November	December
<b>Total of ships in the EU LRIT CDC</b>	8,219	8,212	8,215
<b>Ships integrated in the EU LRIT CDC</b> <b>(*=% of total of ships)</b>	7,998 97.3% *	7,997 97.4% *	7,983 97.2% *
<b>Ships that have reported in the last 3 days</b> <b>(**=% of ships integrated)</b>	6,914 84.1% **	6,944 84.6% **	6,905 84.1% **

**Table 3 – Integration and reporting statuses**

The formula used for the ship reporting calculation is:

$$\% \text{ ship reporting} = \frac{\text{ships statuses normal, under and over reporting}}{\text{all ships integrated}} \times 100\%$$

It should be noted that “stopped ships” are also included in the number of the integrated ships.

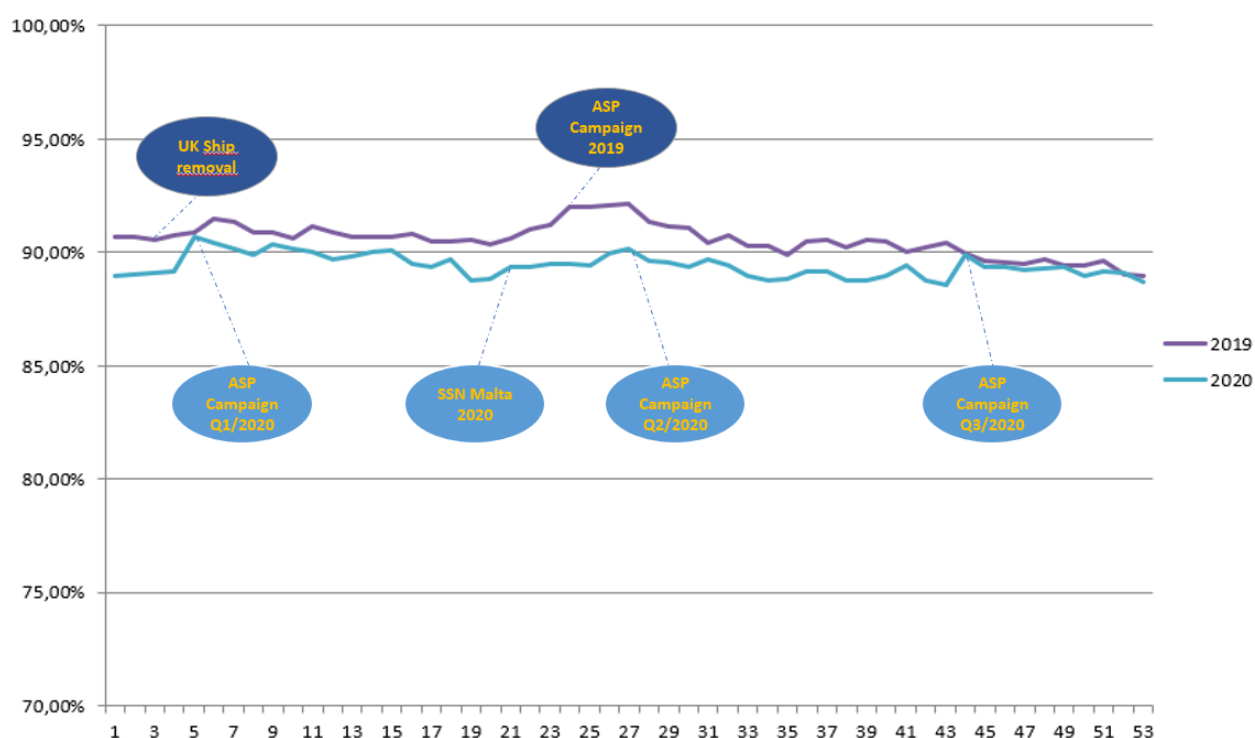
Table 4 presents a summary of the actions taken, mainly to improve the reporting, during the quarter:

	October	November	December
<b>Number of 'Stop'</b>	43	54	47
<b>Number of 'Restart'</b>	3484	2199	1642
<b>Number of 'Continue integration'</b>	129	47	16
<b>Number of 'DNID upload'</b>	148	344	170

**Table 4 – Integration and reporting actions**

The activity of restarting ship terminals not reporting as expected is measurable through the number of restarts and DNID uploads performed by LRIT users (or by the ASP, for countries which delegated the monitoring of their fleet to EMSA).

Figure 1 shows the reporting evolution:



**Figure 1 – Evolution of reporting rate**

It is calculated as follow:

$$\% \text{ ship reporting} = \frac{\text{ships statuses normal, under and over reporting}}{\text{ships statuses normal, under, over and not reporting}} \times 100\%$$

Ships stopped, either by the National Administrations or by the ASP, are not included in this graph.

Currently 12 Contracting Governments (CGs) have delegated the monitoring of their fleet to EMSA. For these flags, the ASP takes the appropriate actions in case of non-reporting ships, or reports to the CGs the actions that remain under the responsibility of the CGs (such as updating the EU LRIT Ship DB or asking the shipowner to correctly log in the terminal to the satellite network).

EMSA, through the ASP, monitors almost 65% of the EU CDC fleet. The good result on the reporting is also due to the fact that some CGs monitor closely their fleet and take the appropriate actions to restart the reporting when needed. A high reporting rate is directly linked to the active monitoring of the fleet.

## **2.5. REQUESTS AND POSITIONS IN THE EU CDC**

This chapter details the number of requests made by the CGs, and the positions processed by the EU CDC. It should be noted that the activity generated by ship integration and reporting (Stop, Restart, DNID upload...) is reported in section 2.4 above.

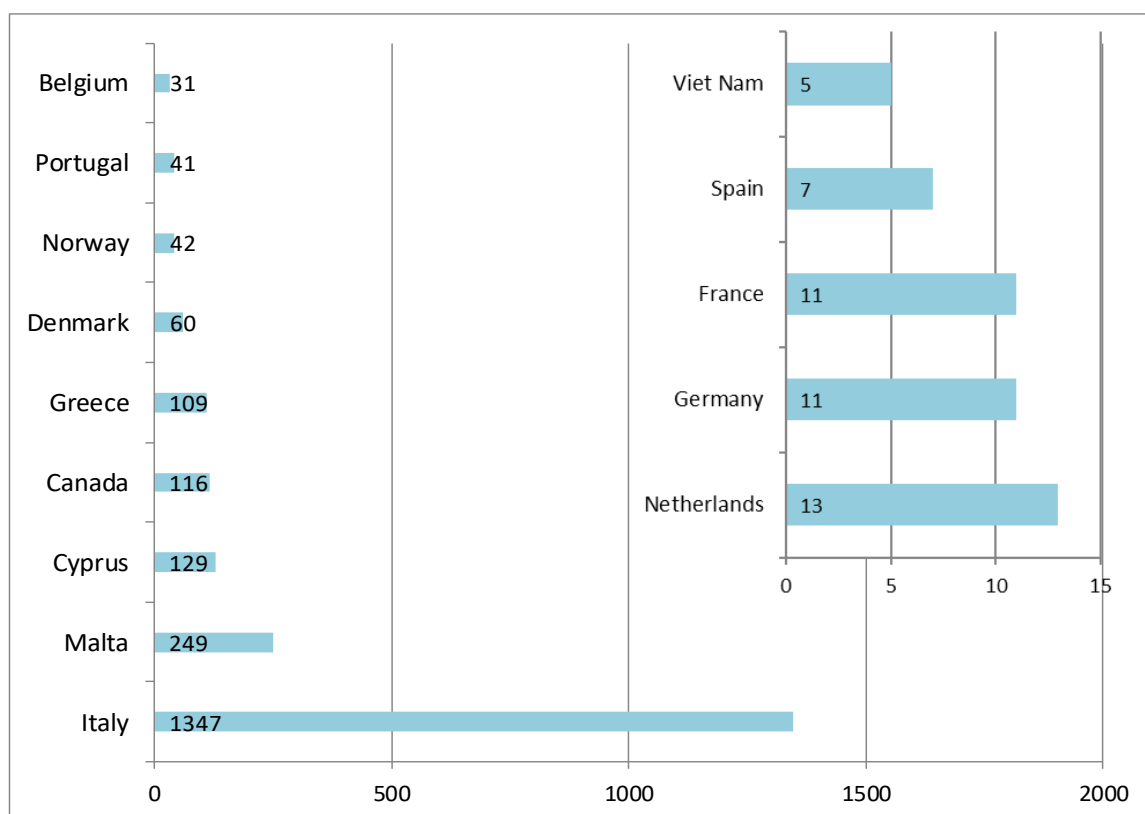
Almost 91% of the position requests are split between requests generated automatically by the SAM anti-piracy tool and requests generated by EU CDC end-users: SAR, Coastal, Flag, and Port. The remaining 9% came from the LRIT IDE. Almost 98% of LRIT position reports came from the ASP (mandatory reporting), the remaining position reports came from the LRIT IDE.

Inmarsat C is the biggest CSP of the ASP, routing around 98% of the ASP reports.

Figures showing these data are in § 3: Annexes § 3.4.1 General.

### **2.5.1. Standard requests activity per Flag**

This section deals with requests made by LRIT users and position reports, processed by the EU CDC during December. Figure 2 shows the standard requests (Message Type 4: polls, reporting rate changes, requests for most recent and archived positions, stop and restart) made by LRIT Users and the SAM anti-piracy tool, and Figure 3 the position reports (Message Type 1: periodic position reports, and Message Type 2: polled position reports).



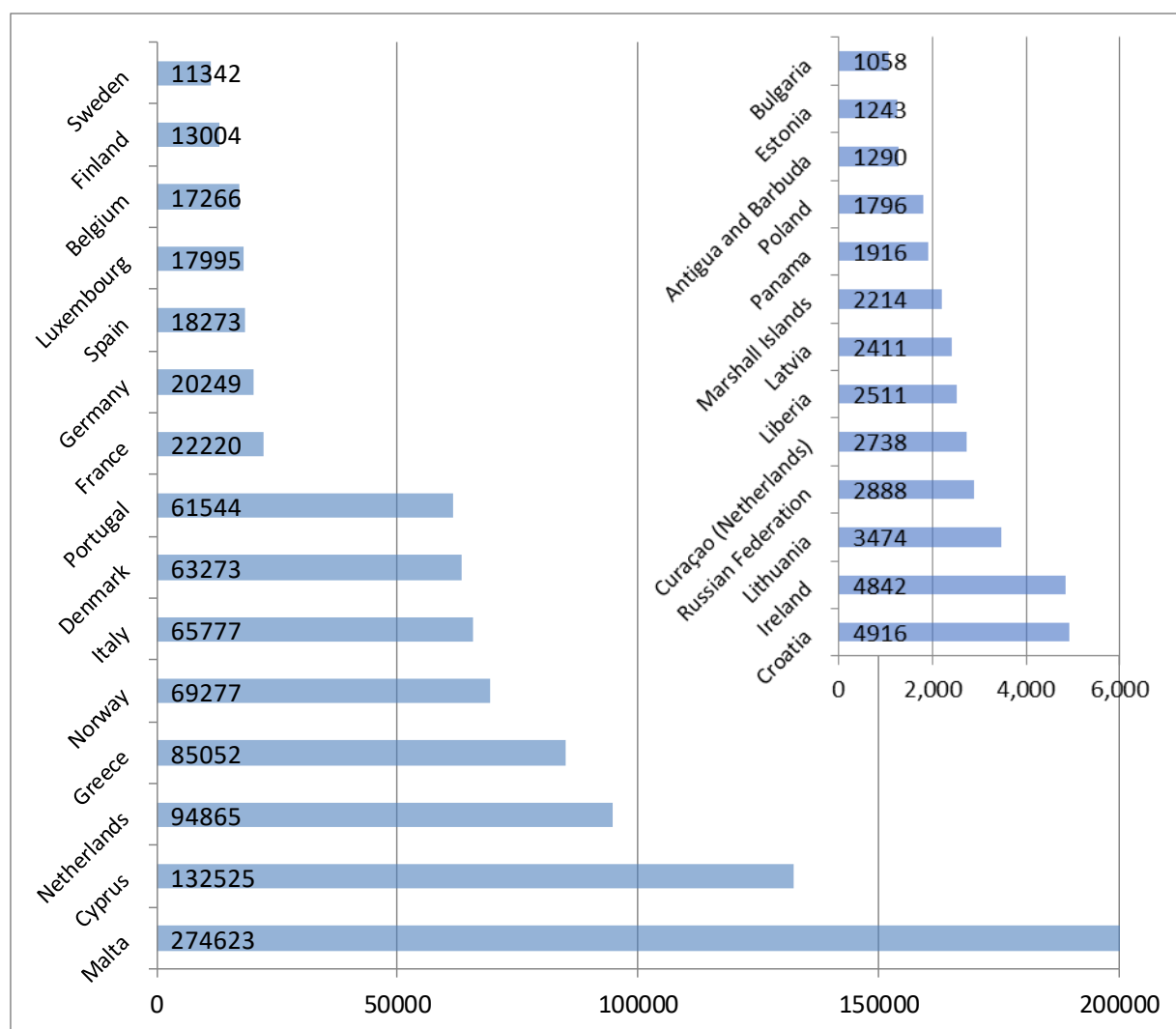
**Figure 2 – Number of requests processed by EU CDC (Message Type 4)**

Countries with less than 4 requests are not included.

Figure 2 shows that Italy is the country making most requests to the EU CDC to get EU LRIT positions. This is mainly due to the Automatic Rate Change tool activated on the Italian standing order off the coasts of Tunisia and Libya.

Figure 3 presents the number of position reports per flag resulting from:

- the requests shown in Figure 2;
- Standing Orders (it includes positions from European ships and non-European ships passing through European waters).



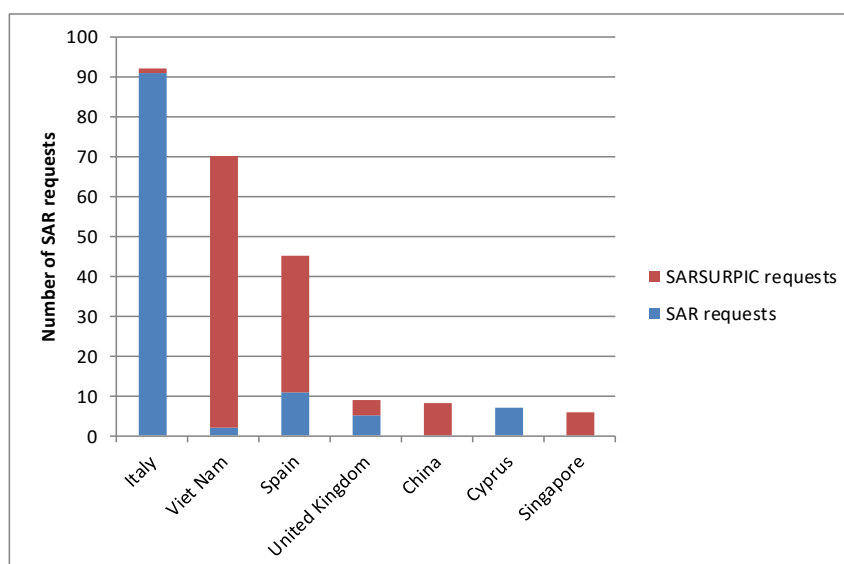
**Figure 3 – Number of reports received by the EU CDC (Messages Type 1 and 2)**

Countries with less than 1,000 position reports are not included. Malta, with 28% of the EU CDC fleet, is the country with the highest number of position reports received.

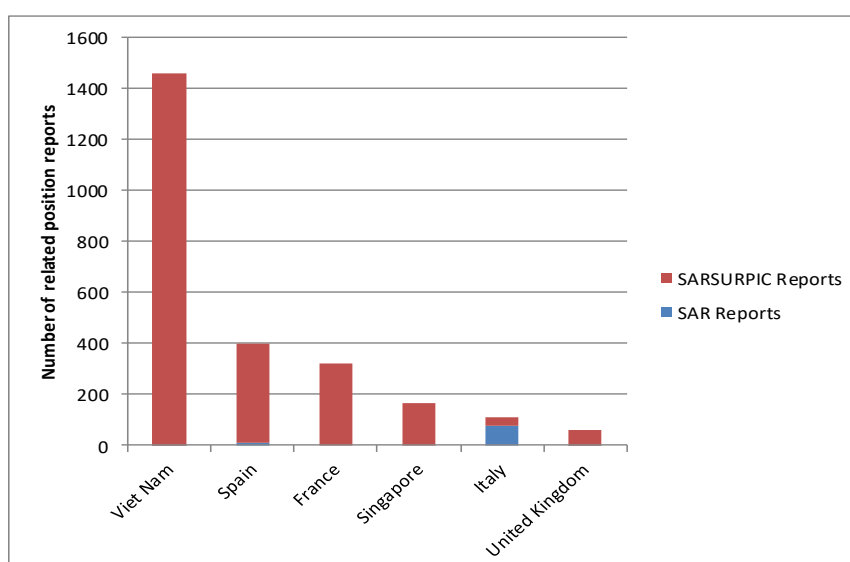
### 2.5.2. SAR requests activity per Flag

For the month of December:

- Figure 4 shows the SAR and SARSURPIC requests made by LRIT Users. Countries with less than 4 requests are not included.
- Figure 5 shows the related position reports (Message Type 3). Countries with less than 20 positions received are not included.



**Figure 4 – Number of SAR Requests per Flag**



**Figure 5 – Number of related position reports received**

The SAR SURPIC is a request used by SAR Operators. In Europe, Italy was the biggest users of SAR and SAR SURPIC requests in December; and Spain received the biggest amount of SAR related positions.

### 2.5.3. Evolution of messages exchanged

Position requests are this quarter around 2,261 per month, which is almost 52% more than Q3 2020.

Position reports are this quarter on average at 1,006,292 per month, which is 0.02% less than Q3 2020.

Figures showing these data are in § 3: Annexes § 3.4.2 Evolution of Messages exchanged.

## 2.6. USER ACTIVITY IN THE EU CDC

This chapter details the user activity in the UWI and through the XML interfaces.

### 2.6.1. User activity in the EU CDC UWI

Table 5 illustrates the user activity in the UWI of the EU CDC during December. An inactive user is a user which has not connected to the EU CDC during this month.

Contracting Governments	Total users	Inactive users	Number of connections
Belgium	51	42	125
Bulgaria	15	12	24
Croatia	15	13	51
Curaçao (Netherlands)	6	6	0
Cyprus	4	2	209
Czech Republic	1	1	0
Denmark	242	234	19
Estonia	5	5	0
Finland	26	22	23
France	20	16	43
Georgia	3	1	22
Germany	27	23	81
Greece	74	69	23
Greenland (Denmark)	8	8	0
Iceland	41	39	2
Ireland	6	5	44
Italy	614	573	963
Latvia	14	12	10
Lithuania	10	5	78
Luxembourg	12	9	10
Malta	14	10	87
Montenegro	19	10	66
Netherlands	12	10	10
Norway	31	29	10
Poland	16	12	108
Portugal	14	11	22
Romania	7	7	0
Slovakia	4	4	0
Slovenia	27	27	0
Spain	66	62	89
Sweden	31	30	72
Tunisia	2	1	2
<b>TOTAL</b>	<b>1437</b>	<b>1310</b>	<b>2193</b>

**Table 5 – User activities per Flag**

Italy is the country making the greatest number of connections to the EU LRIT CDC UWI.

Table 6 summarizes the user activity in the UWI during the quarter:

	October	November	December
<b>Number of users</b>	1437	1425	1437
<b>Number of user connections</b>	2351	2799	2193
<b>Number of inactive users</b>	1260	1284	1310

**Table 6 – User activities**

During Q4 2020 the number of users slightly increased.

### 2.6.2. User activity in the XML interfaces

The EU CDC XML interface is based on Web Services (SOAP v. 1.2) and gives the possibility to External Systems (ES) to request and receive LRIT Information in an automatic way through a system-to-system interface. Currently, eight XML interfaces are implemented with the EU CDC Participating countries:

- LRIT2ES interface allows EU CDC Participating countries ES to receive LRIT information from the EU CDC, typically the 6h mandatory position reports and position reports resulting from a Coastal Standing Order activated;
- ES2LRIT interface allows EU CDC Participating countries ES to receive the above information, but also to request LRIT information, including making specific requests. Belgium, Italy, Montenegro and Poland implemented this type of interface.

Country	Mandatory and polled position reports	Position requests	Ship particulars requests
<b>BELGIUM-ES</b>	41222	0	0
<b>DENMARK-ES</b>	143308	N/A	N/A
<b>GREENLAND-ES</b>	7273	N/A	N/A
<b>IRELAND-ES</b>	44579	N/A	N/A
<b>ITALY-ES</b>	203215	534	0
<b>MONTENEGRO-ES</b>	1255	0	0
<b>NORWAY-ES</b>	195592	N/A	N/A
<b>POLAND-ES</b>	5575	0	0

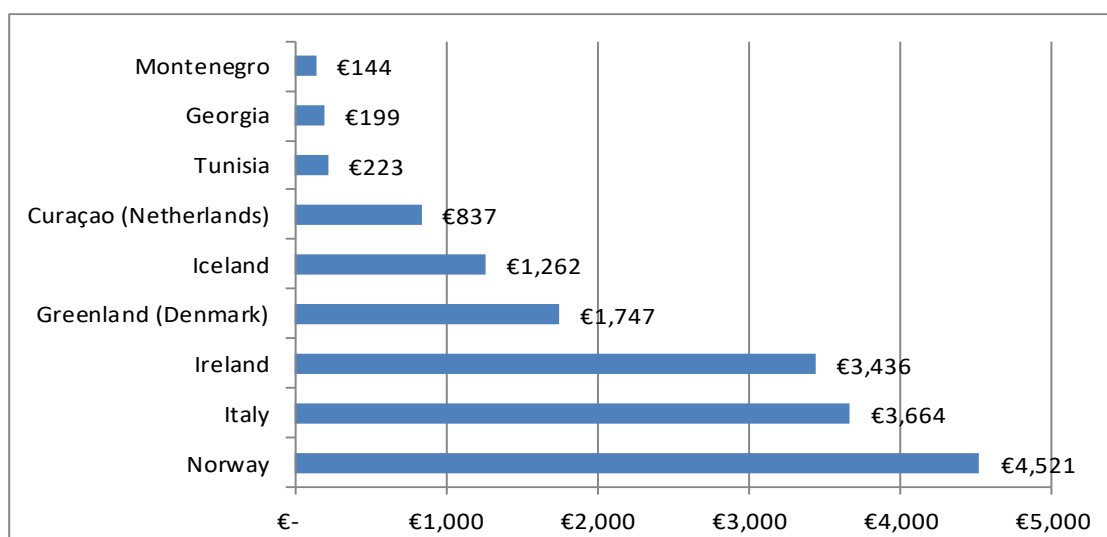
**Table 7 – Information exchanged through XML interfaces**

Table 7 shows the countries using XML interfaces, the information received and the number of requests done through ES2LRIT interfaces during Q4 2020.

## 2.7. FINANCIAL FIGURES

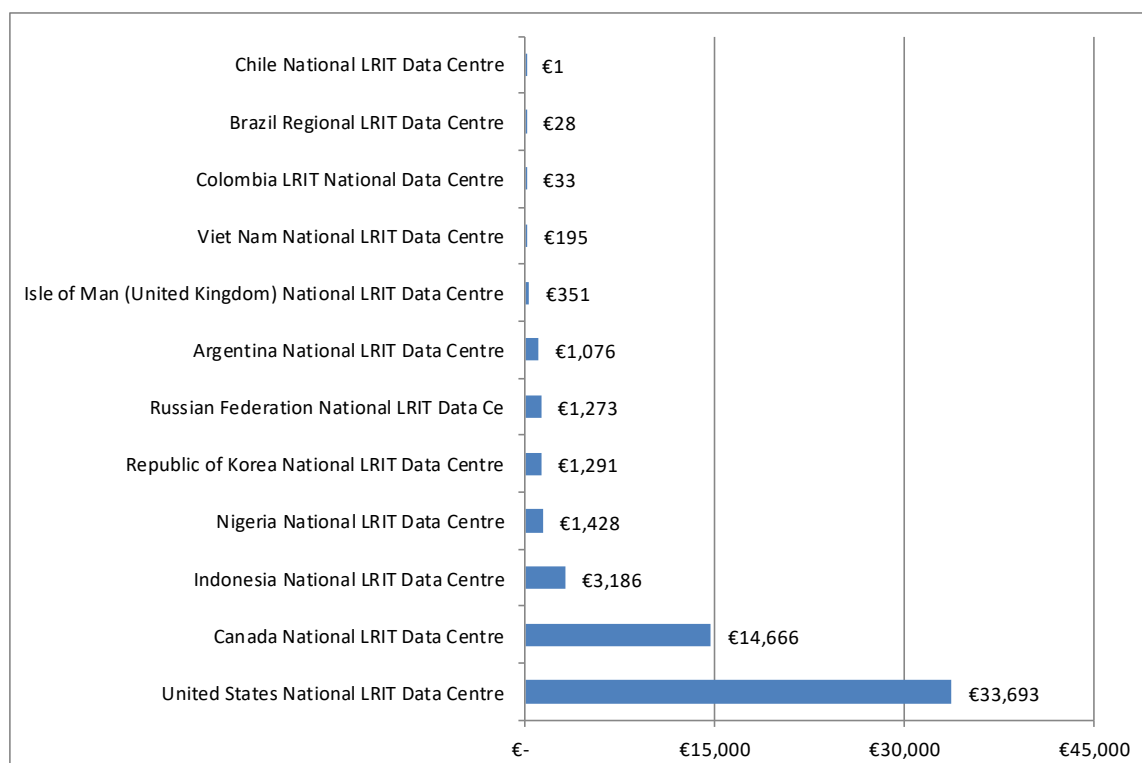
Figures 6 to 8 highlight the EU CDC Participants' Paid Consumption, the messages provided and sold by the EU CDC per buying Data Centre and the overall business financial balance, during Q4 2020.

This quarter, EMSA covered more than €309K of consumption costs. The remaining costs paid by the EU CDC Participants amount to almost €16K. The few relevant buyers of non-mandatory messages were Italy and Norway (Figure 6).



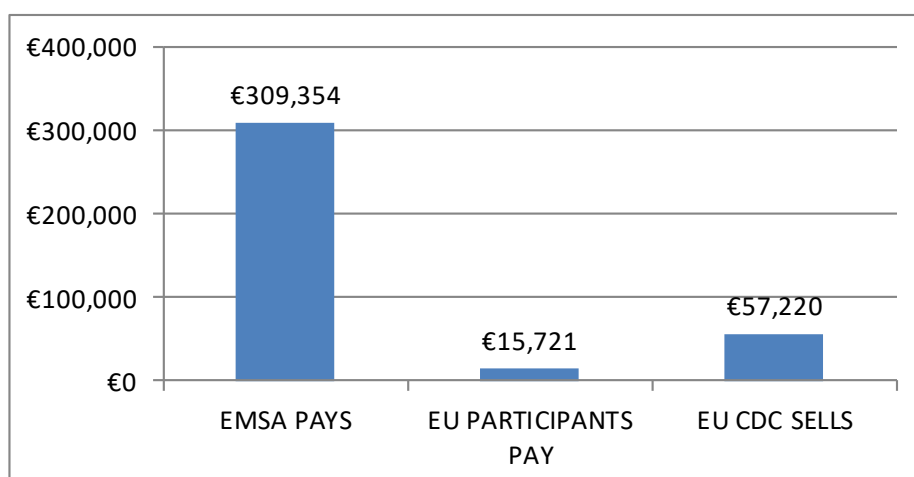
**Figure 6 – EU CDC Participants' Paid Consumption**

The biggest buyer of EU CDC data was the US NDC which bought 59% of the amount sold, followed by the Canada NDC (Figure 7):



**Figure 7 – Messages Sold by the EU CDC per Buying Data Centre**

The EU LRIT CDC provided (EU CDC sells) more than €57K of LRIT messages to other DCs (Figure 8):



**Figure 8 – Overall LRIT Business Financial Monthly Balance**

Legend:

- *EMSA pays for all costs of mandatory periodic reports (periodic 6-hour reporting from EU ships), SAR messages, and ship integration for Member States and EFTA countries.*
- *EU CDC participants pay for ship integration and LRIT messages for OCTs and third countries, and for all non-mandatory messages (on-demand), including reports from standing orders. This includes messages from other Data Centres through the LRIT IDE and from the ASP (detail in Figure 6).*
- *EU CDC sells all messages concerning ships belonging to the EU LRIT CDC that are requested by other DCs (detail in Figure 7).*

## 2.8. CONCLUSION

- All the performance indicators are above the targets during this quarter.
- A release of the EU LRIT CDC was deployed on 24 November 2020. It included corrections following IMSO audit n°11, and bug corrections.
- Three new EU LRIT CDC releases are planned for the first semester 2021. They will include the necessary developments to replace the current EU LRIT CDC User Web Interface with the SEG and several bug corrections.

### 3. ANNEXES

#### 3.1. List of acronyms and abbreviations

<b>Acronyms or abbreviations</b>	<b>Description</b>
ASP	Application Service Provider
CG	Contracting Government
CSP	Communication Service Provider
EMSA	European Maritime Safety Agency
EU LRIT CDC	European Union LRIT Cooperative Data Centre
IDE	International Data Exchange
IMO	International Maritime Organization
LRIT	Long Range Identification and Tracking (of ships)
NCA	National Competent Authority
OCTs	Overseas Countries and Territories
QoS	Quality of Service
SAR	Search and Rescue
EU LRIT Ship DB	European Union LRIT Ship Database
UWI	User Web Interface
N/A	Not Applicable

**Table 8 – List of acronyms and abbreviations**

### 3.2. Definitions

According to IMO MSC.1/Circ.1259/Rev.7, the definitions of internal routing and message Types 1 to 6 are:

Type	Name	Description/Purpose
N/A	Internal Routing	Regional or Cooperative LRIT Data Centres internally route LRIT information transmitted by ships entitled to fly the flag of the Contracting Governments establishing or participating such centres (LRIT information does not go through the IDE)
1	Periodic position Report	Regular periodic position reports
2	Polled position report	Position report as a result of a one-time poll request
3	SAR position report	Position report as a result of a SAR request
4	Position request	Request by an LRIT user to poll, change the rate of transmission, or request for most recent and archived positions, for a given ship
5	SAR position request	Request by a SAR user to poll or request for most recent and archived positions, for a given ship
6	SAR SURPIC request	Request by a SAR user to get the most recent position in a specific geographical area, broadcast via the IDE to all DCs

**Table 9 – Definitions**

### 3.3. System performance

This section refers to messages delivered by the EU LRIT CDC and gives further details on the QoS for the quarter.

#### 3.3.1. Global QoS

Figure 9 illustrates the IMO-QoS for the quarter, showing that no major incident happened this quarter.

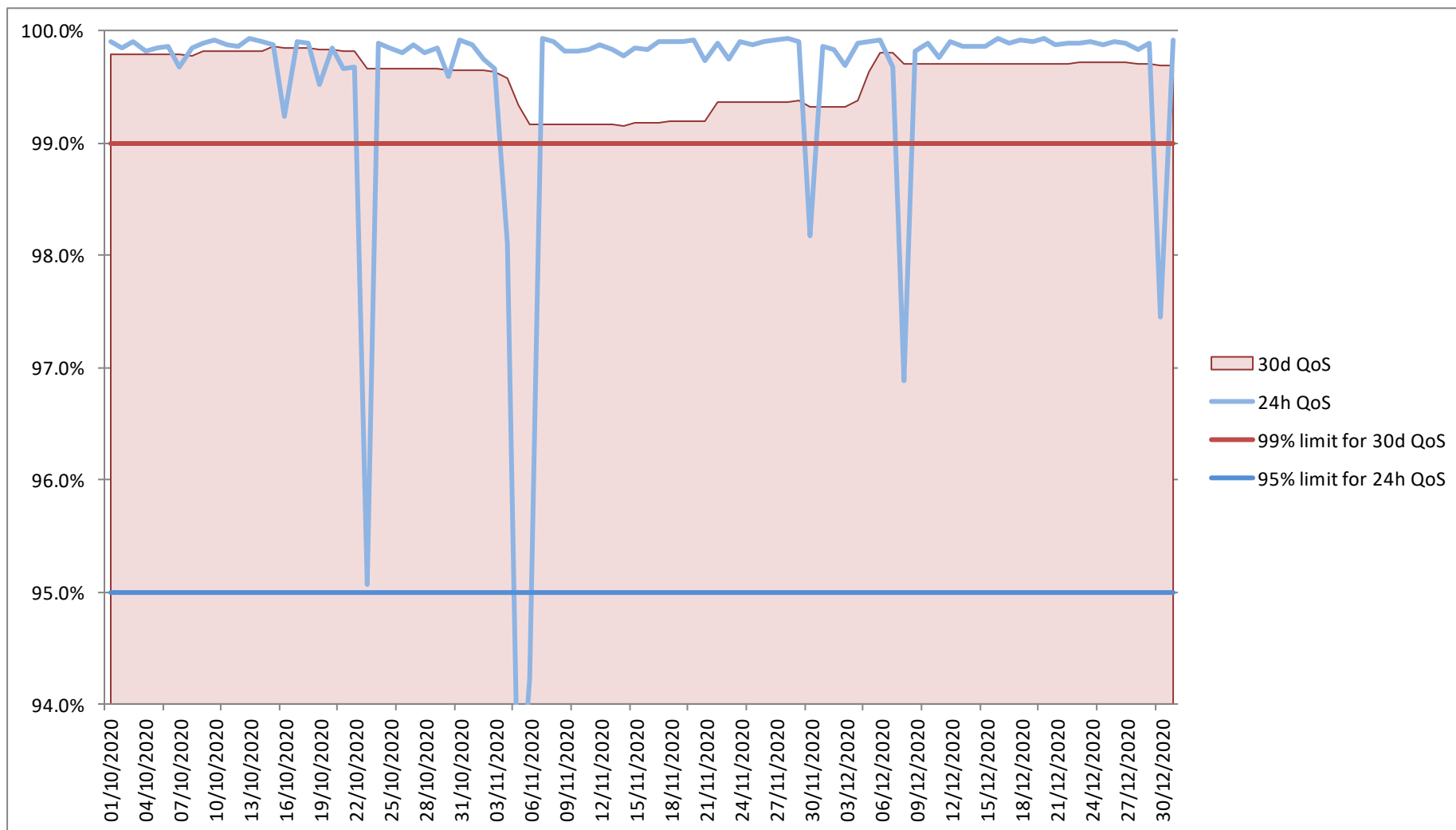


Figure 9 – IMO-24h and 30d QoS

### 3.3.2. Delivered periodic position reports QoS (Type 1)

	October	November	December
Monthly IMO-30d QoS (target 99%)	99.66%	99.32%	99.69%
Number of Reports that did not meet the 15 min limit	2,830	5,386	2,512
Percentage of Reports out of the 15 min limit	0.34%	0.68%	0.31%
Total number of Reports	827,749	796,000	823,320
Average Latency in minutes	3.17	2.81	2.88

**Table 10 – Delivered periodic position reports QoS figures**

These are mainly the mandatory position reports, sent every 6 hours.

### 3.3.3. Delivered on-demand position reports QoS (Type 2 and Type 3)

A poll is the action of sending a position request to a shipborne equipment and waiting for a ship position report or a receipt message. IMO defined that this action should not last more than 30mins to receive a position report.

The table below lists only the polls made to EU LRIT CDC ships, in order to measure the EU LRIT CDC QoS on requests. Reports as a result of polls originated by other DCs are not listed here, to avoid measuring the QoS of other DCs. This quarter, 30d Poll QoS was above the target.

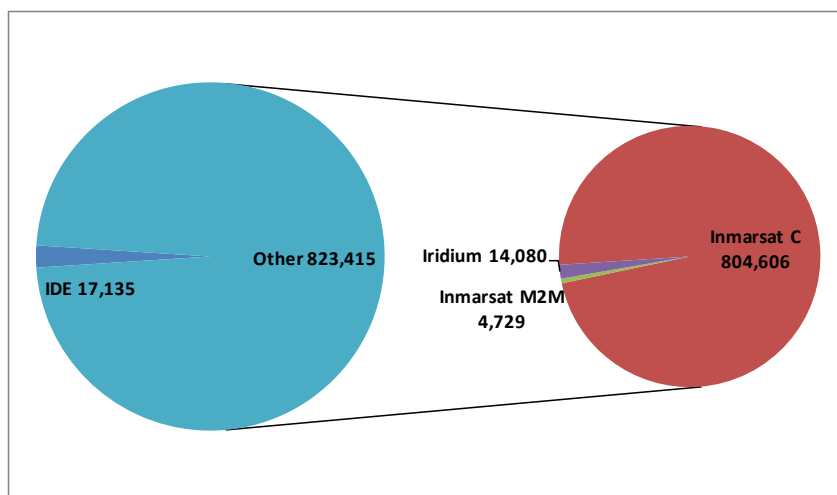
	October	November	December
Monthly IMO-30d Poll QoS (target 99%)	100.00%	98.81%	96.84%
Number of Reports that did not meet the 30 min limit	0	1	3
Percentage of Reports out of the 30 min limit	0.00%	1.19%	3.16%
Total Number of Reports	69	84	95
Average Latency in minutes	2.51	4.79	5.50

**Table 11 – Delivered on-demand reports QoS figures**

### 3.4. Messages by source

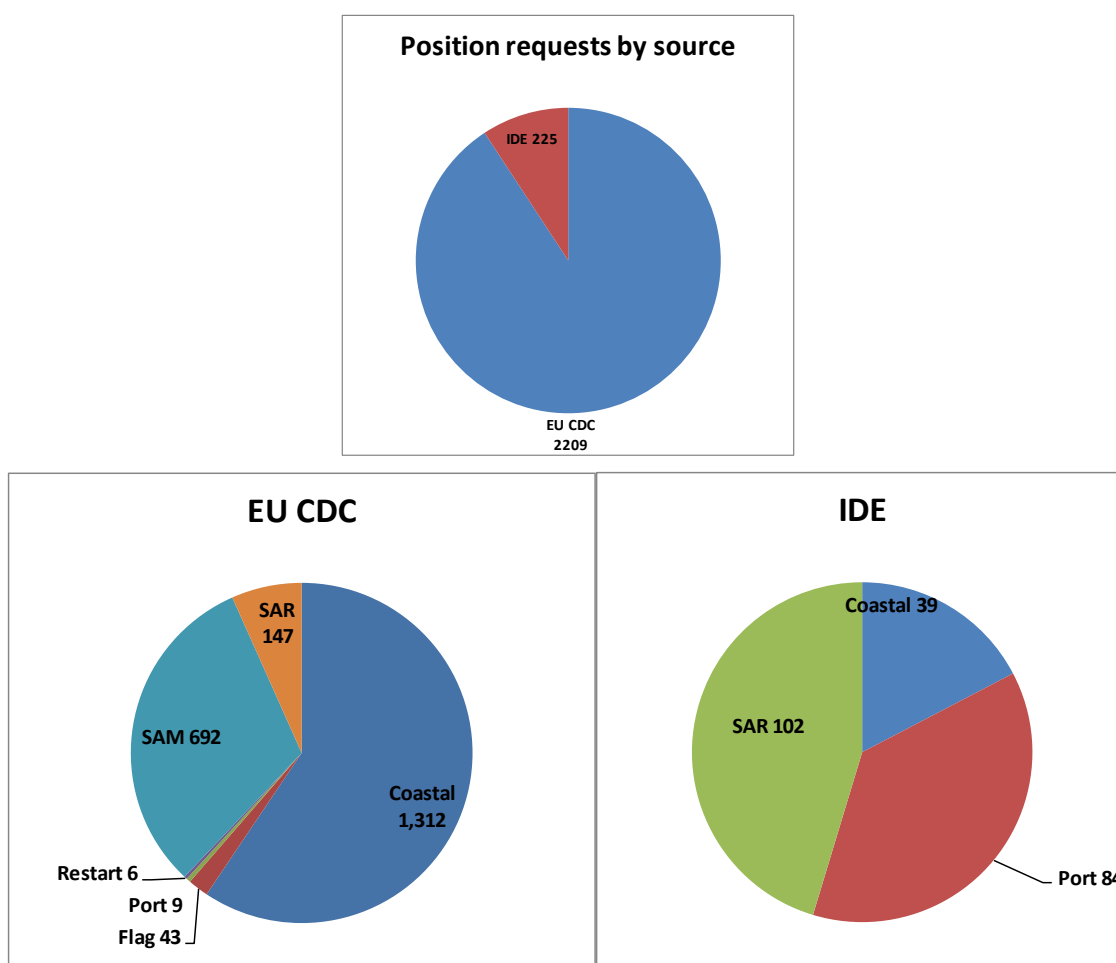
#### 3.4.1. General

The figure below shows the analysis of position reports by source, for December.



**Figure 10 – Position reports by network (Message Type 1, 2 and 3)**

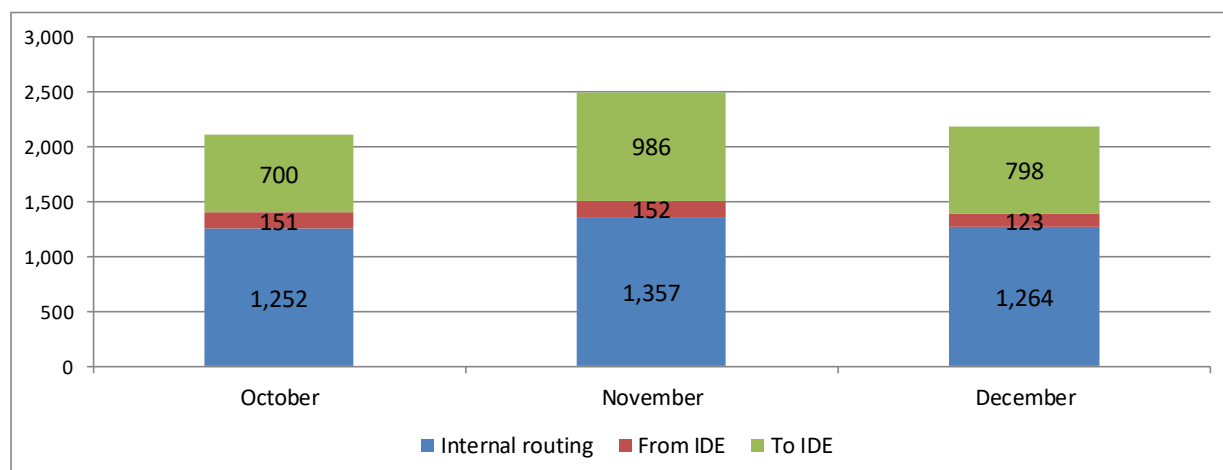
The 3 pie charts below show the position requests by source, for December.



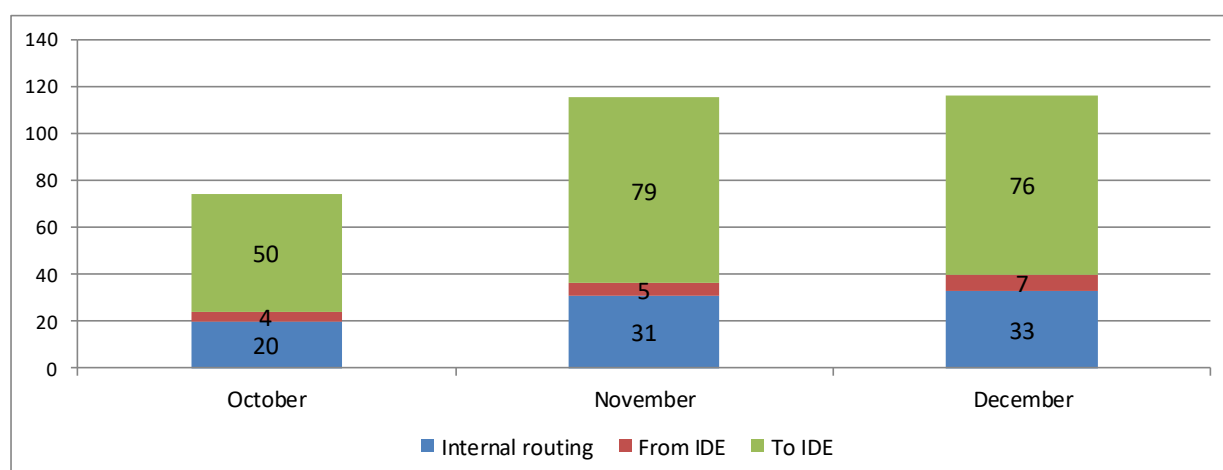
**Figure 11 – Position requests by role (Message Type 4, 5 and 6)**

### 3.4.2. Evolution of messages exchanged

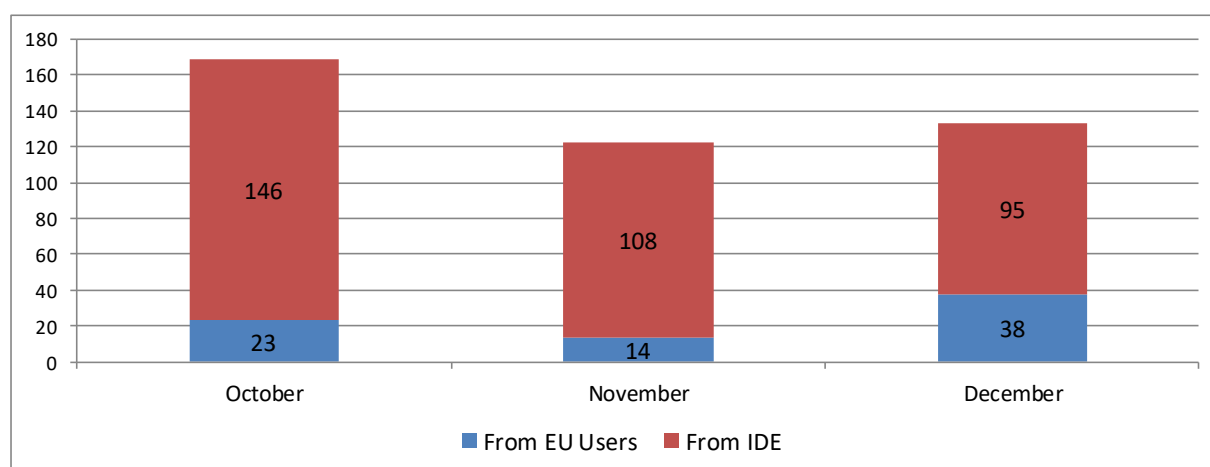
This section illustrates the evolution of the message flow of the EU CDC.



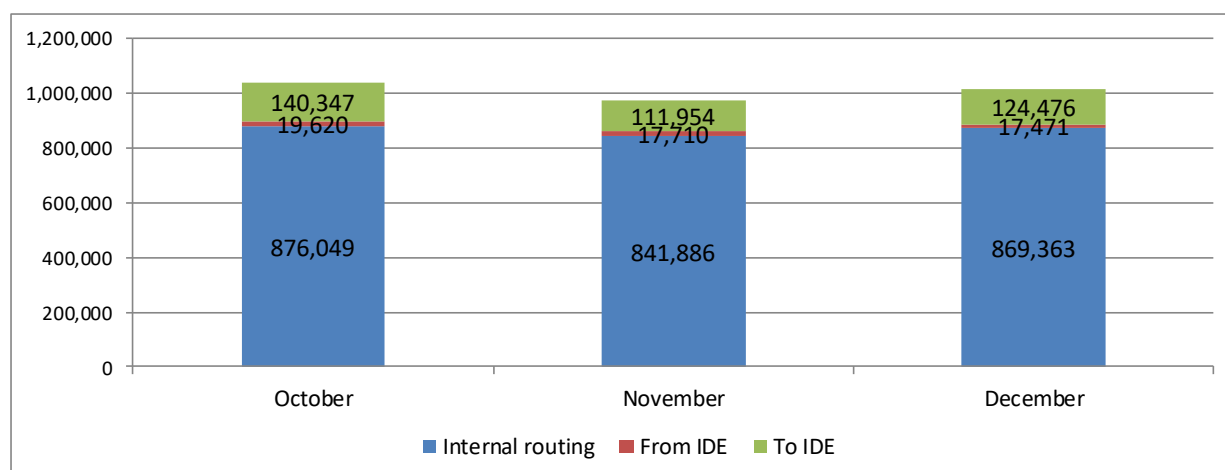
**Figure 12 – Number of position requests (Type 4)**



**Figure 13 – Number of SAR requests (Type 5)**



**Figure 14 – Number of SAR SURPIC requests (Type 6)**



**Figure 15 – Number of position reports (Type 1, 2 & 3)**

### 3.5. Incidents and maintenance of the EU CDC

#### 3.5.1. Incident management overview

Incidents in the EU CDC generate tickets in MSS through a monitoring tool called Task Monitor. Calls and emails from EU CDC Participating countries also generate tickets. For this quarter and the previous one, Table 12 shows the repartition of the tickets handled by the MSS:

	Q3 2020	Q4 2020
Number of LRIT CDC and EU LRIT Ship DB tickets out of total number MSS tickets	343 / 4308 (7.9%)	345 / 4311 (8%)
<u>Ticket per type</u>		
Administration and reporting:	48	22
Helpdesk (CGs, ASP...):	78	93
Monitoring and Incident management (Task Monitor...):	216	230

**Table 12 – Incident management**

This quarter, no major incident happened.