



European Maritime Safety Agency

Quarterly Report

Q1 – 2021

EU LRIT CDC

and

EU LRIT Ship DB

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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), European Union LRIT Ship Database (EU LRIT Ship DB), and events related to the EU CDC activities and operations during the 1st Quarter of 2021. The report is made available to all 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 (KPI);
- **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 1st Quarter of 2021:

- **Quality of Service (QoS):** All the performance indicators are above the targets during this quarter.
- **New EU LRIT CDC:** A new release of the EU LRIT CDC is planned to be deployed on June 2021.
- **New EU LRIT Ship DB:** A new release of the EU LRIT Ship DB is under development.

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):

Table 1 – Key Performance Indicators

| Activity/Service | Performance Indicator | January | February | March | Quarter | Target |
|--|--|---------|----------|--------|---------|----------|
| EU LRIT CDC System operational | Availability of the system over the period | 99.46% | 99.93% | 99.73% | 99.70% | ≥ 99.00% |
| | Maximum continuous downtime of the EU LRIT CDC | 00:43 | 00:26 | 00:05 | 00:43 | < 12:00 |
| EU LRIT CDC Reporting performance | Percentage position reports delivered according to IMO requirement | 99.80% | 99.81% | 99.73% | 99.78% | ≥ 99.00% |
| EU LRIT CDC user web interface | Availability of the User Web Interface | 100% | 99.78.% | 99.94% | 99.91% | ≥ 99.00% |

The availability of the User Web Interface of the EU CDC was very high.

The availability of the Web Interface of the EU LRIT Ship DB (not presented in the Table 1) was also high at 99.69% 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:

Table 2 – Monthly 30d QoS

| | January | February | March |
|---|---------|----------|---------|
| Monthly IMO-30d QoS (target 99%) | 99.80% | 99.81% | 99.73% |
| Number of delivered reports that did not meet the IMO requirements | 1,672 | 1,418 | 2,238 |
| Percentage of delivered reports that did not meet the IMO requirements | 0.20% | 0.19% | 0.27% |
| Total number of reports sent by EU CDC | 829,644 | 756,218 | 841,730 |

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, § 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:

Table 3 – Integration and reporting statuses

| | January | February | March |
|---|-------------------|-------------------|-------------------|
| Total of ships in the EU LRIT CDC | 8,243 | 8,283 | 8,297 |
| Ships integrated in the EU LRIT CDC (*=% of total of ships) | 7,961 96.6% * | 8,026 96.9% * | 8,077 97.3% * |
| Ships that have reported in the last 3 days (**=% of ships integrated) | 6,890 83.6% ** | 6,943 83.8% ** | 7,041 84.9% ** |

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:

Table 4 – Integration and reporting actions

| | January | February | March |
|----------------------------------|---------|----------|-------|
| Number of 'Stop' | 68 | 63 | 55 |
| Number of 'Restart' | 1404 | 2702 | 1269 |
| Number of 'Continue integration' | 93 | 53 | 100 |
| Number of 'DNID upload' | 174 | 307 | 111 |

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:

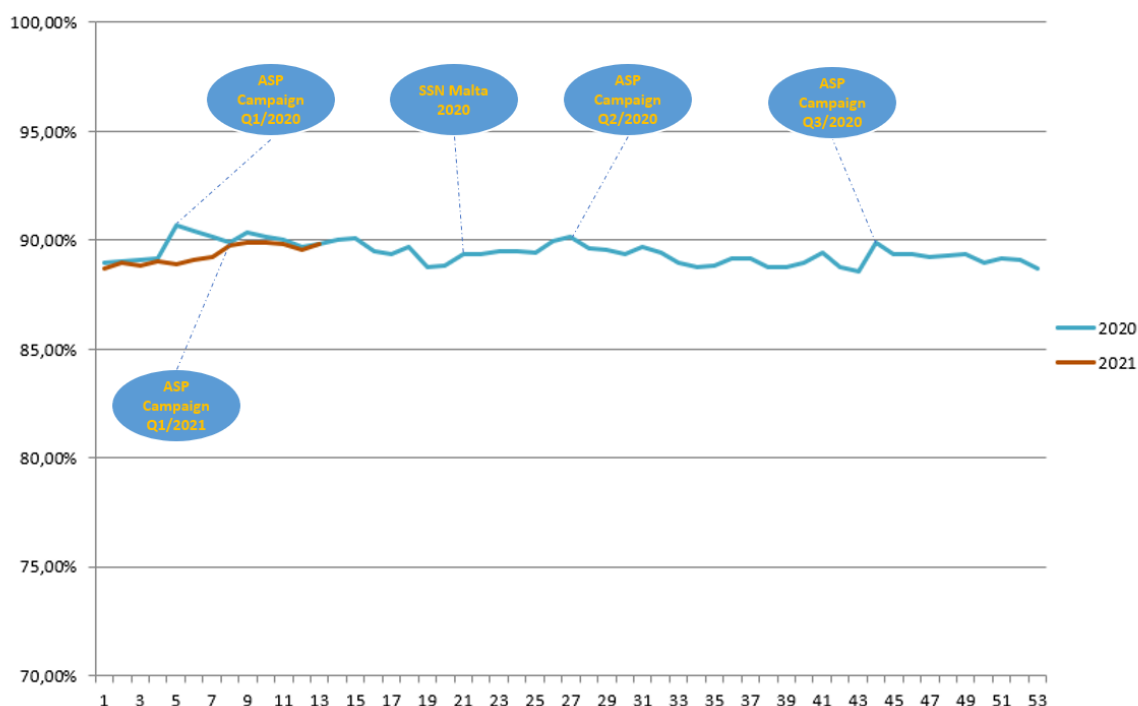


Figure 1 – Evolution of reporting rate

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.

90% 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 10% 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 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 March.

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).

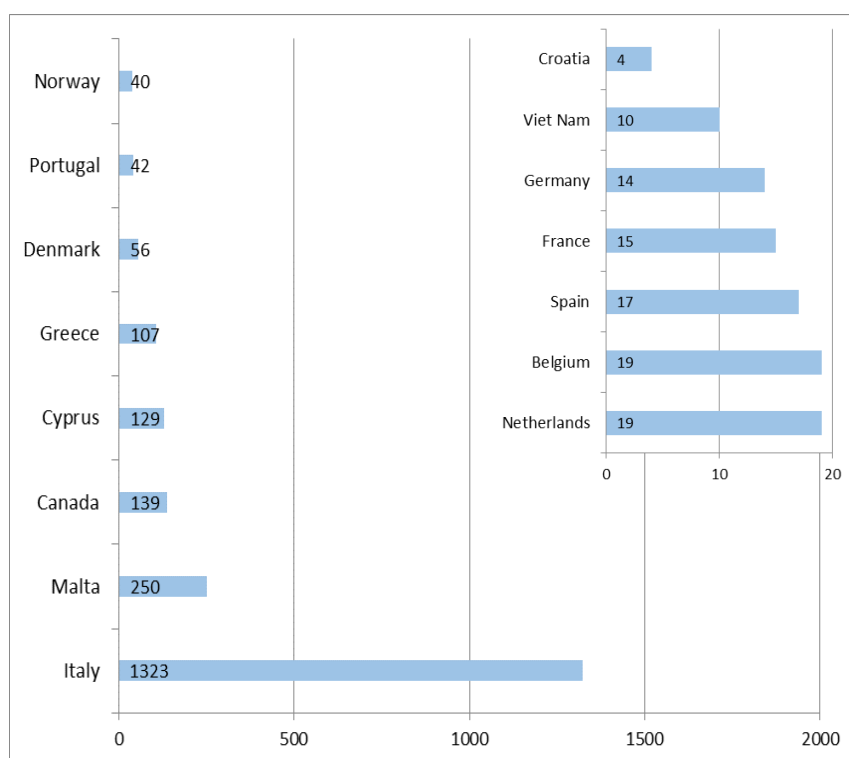


Figure 2 – Number of requests processed by EU CDC (Message Type 4)

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).

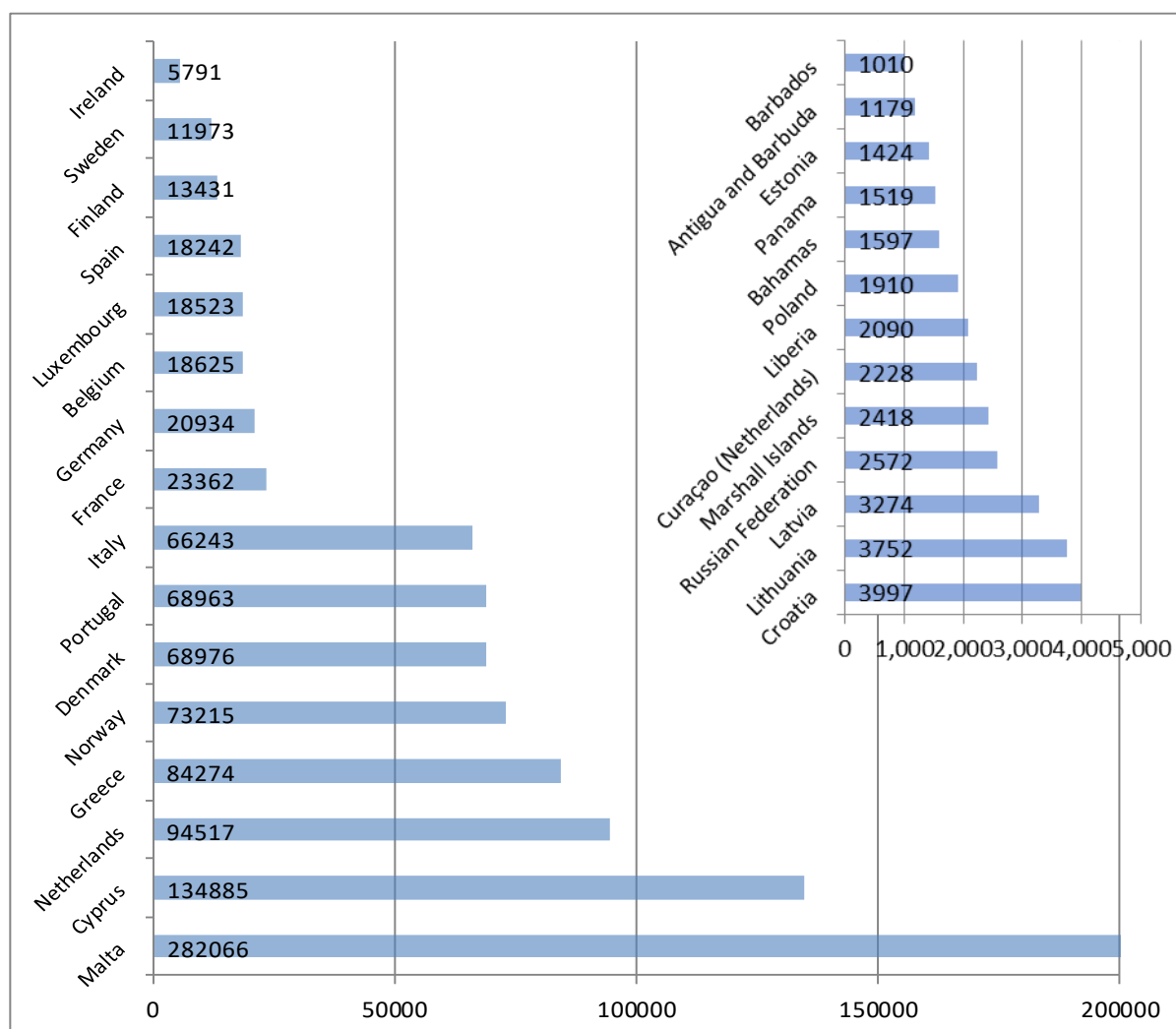


Figure 3 – Number of reports received by the EU CDC (Messages Type 1 and 2)

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 March:

- 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.

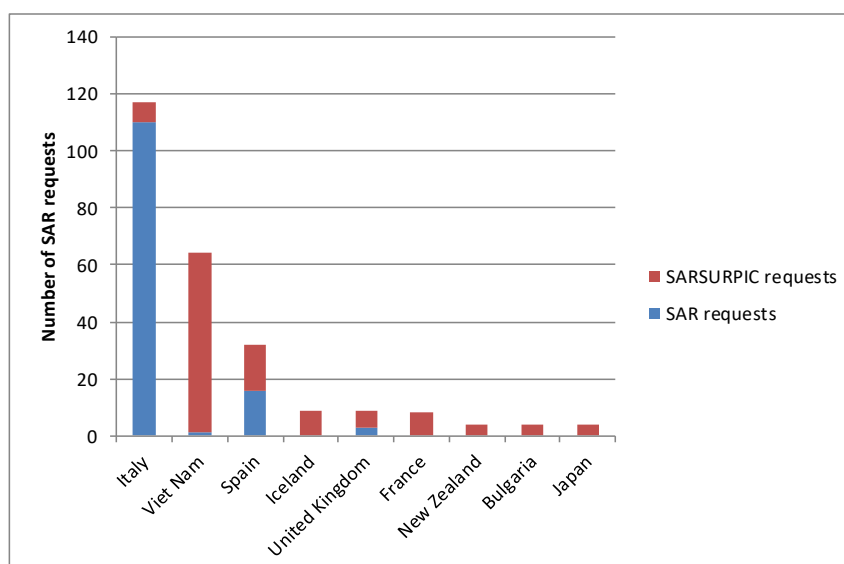


Figure 4 – Number of SAR Requests per Flag

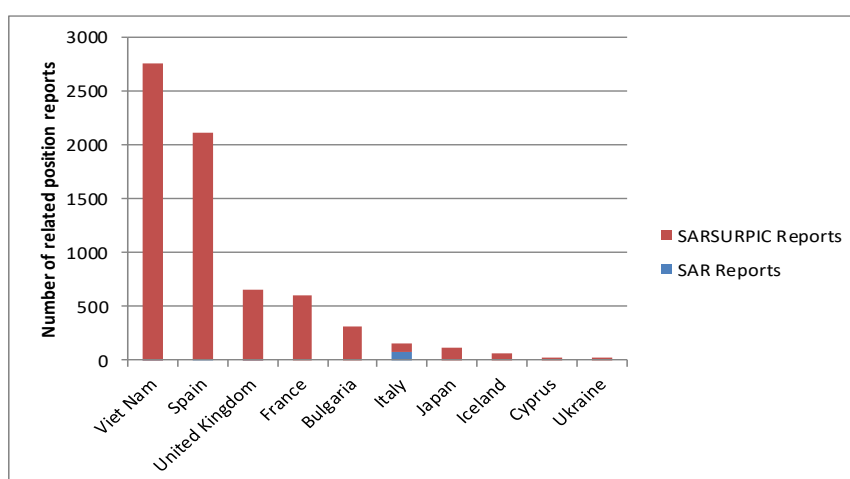


Figure 5 – Number of related position reports received

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

2.5.3. Evolution of messages exchanged

Position requests are this quarter around 2,150 per month, which is almost 5% less than Q4 2020.

Position reports are this quarter on average at 1,004,210 per month, which is 0.2% less than Q4 2020.

Figures showing these data are in 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 March. An inactive user is a user which has not connected to the EU CDC during this month.

Table 5 – User activities per flag

| Contracting Governments | Total users | Inactive users | Number of connections |
|-------------------------|-------------|----------------|-----------------------|
| Belgium | 51 | 45 | 80 |
| Bulgaria | 16 | 11 | 60 |
| Croatia | 13 | 11 | 61 |
| Curaçao (Netherlands) | 6 | 5 | 2 |
| Cyprus | 8 | 4 | 163 |
| Czech Republic | 1 | 1 | 0 |
| Denmark | 253 | 240 | 45 |
| Estonia | 5 | 4 | 2 |
| Finland | 26 | 22 | 16 |
| France | 20 | 16 | 69 |
| Georgia | 3 | | 66 |
| Germany | 27 | 23 | 108 |
| Greece | 75 | 64 | 34 |
| Greenland (Denmark) | 8 | 8 | 0 |
| Iceland | 40 | 39 | 1 |
| Ireland | 6 | 4 | 2 |
| Italy | 614 | 580 | 942 |
| Latvia | 14 | 10 | 32 |
| Lithuania | 8 | 4 | 52 |
| Luxembourg | 13 | 7 | 43 |
| Malta | 14 | 11 | 71 |
| Montenegro | 19 | 10 | 99 |
| Netherlands | 12 | 10 | 13 |
| Norway | 30 | 28 | 35 |
| Poland | 16 | 11 | 95 |
| Portugal | 13 | 10 | 48 |
| Romania | 7 | 7 | 0 |
| Slovakia | 4 | 4 | 0 |
| Slovenia | 27 | 27 | 0 |
| Spain | 66 | 60 | 124 |
| Sweden | 31 | 30 | 53 |
| Tunisia | 3 | 3 | 0 |
| TOTAL | 1449 | 1309 | 2316 |

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:

Table 6 – User activities

| | January | February | March |
|----------------------------------|---------|----------|-------|
| Number of users | 1444 | 1445 | 1449 |
| Number of user connection | 2489 | 1972 | 2316 |
| Number of inactive users | 1312 | 1322 | 2316 |

During Q1 2021 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.

Table 7 – Information exchanged through XML interfaces

| Country | Mandatory and polled position reports | Position requests | Ship particulars requests |
|----------------------|---------------------------------------|-------------------|---------------------------|
| BELGIUM-ES | 40249 | 0 | 0 |
| DENMARK-ES | 148445 | N/A | N/A |
| GREENLAND-ES | 4360 | N/A | N/A |
| IRELAND-ES | 44553 | N/A | N/A |
| ITALY-ES | 199521 | 441 | 0 |
| MONTENEGRO-ES | 1326 | 0 | 0 |
| NORWAY-ES | 190077 | N/A | N/A |
| POLAND-ES | 5511 | 0 | 0 |

Table 7 shows the countries using XML interfaces, the information received and the number of requests done through ES2LRIT interfaces during Q1 2021.

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 Q1 2021.

This quarter, EMSA covered almost €250K of consumption costs. The remaining costs paid by the EU CDC Participants amount to almost €12K. The EU LRIT CDC provided (EU CDC sells) €61K of LRIT messages to other DCs (Figure 6).

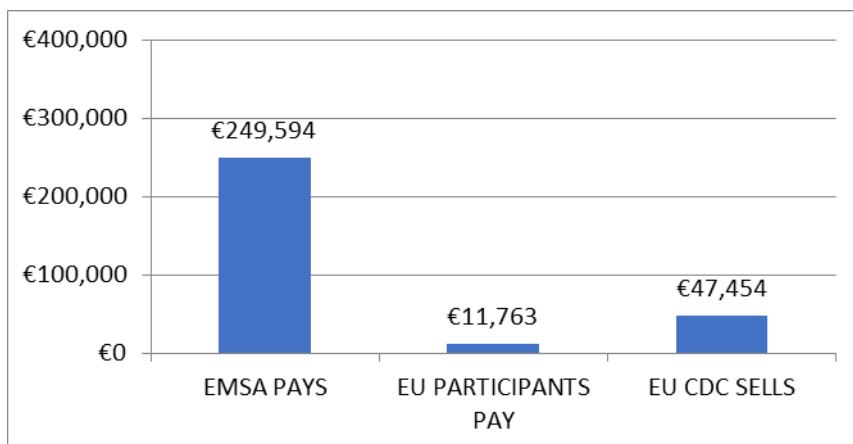


Figure 6 – Overall LRIT Business Financial Monthly Balance

The few relevant buyers of non-mandatory messages were Italy and Norway (Figure 7). To be noted that the increase for Italy is due to the activation of the Automatic Rate Change functionality over their Coastal State Standing Order off the coasts of Tunisia and Libya in June 2019.

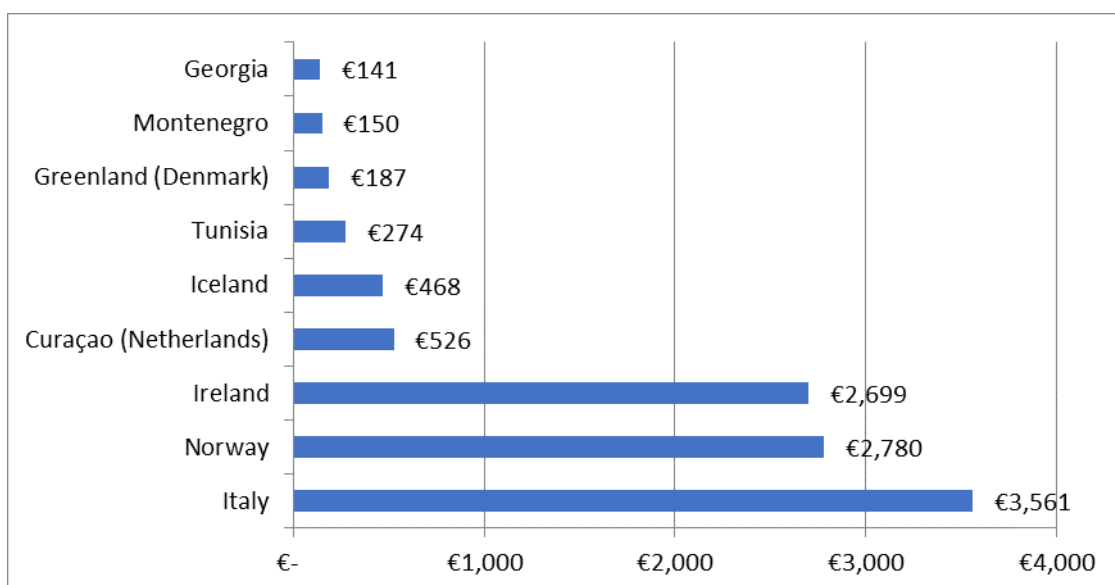


Figure 7 – EU CDC Participants' Paid Consumption

The biggest buyer of EU CDC data was the US NDC which bought 53.7% of the amount sold, followed by the Canada NDC and Brazil RDC (Figure 8).

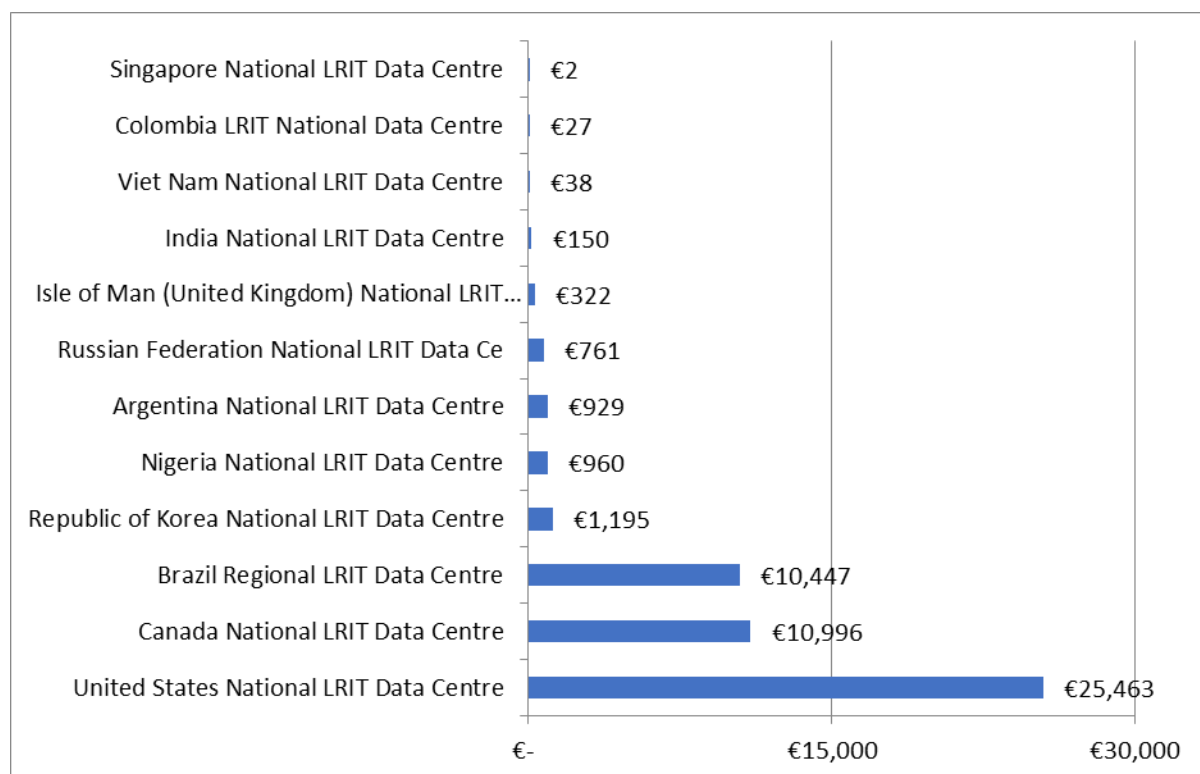


Figure 8 – Messages Sold by the EU CDC per Buying Data Centre

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 (detail in Figure 6).*
- *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 7).*
- *EU CDC sells all messages concerning ships belonging to the EU LRIT CDC that are requested by other DCs (detail in Figure 8).*

2.8. CONCLUSION

- All the performance indicators are above the targets during this quarter.
- The European Commission has accepted Serbia's request to become part of the EU LRIT Cooperative Data Centre. The integration process is on-going.
- New EU LRIT CDC releases are planned for the first semester 2021.

3. ANNEXES

3.1. List of acronyms and abbreviations

| Acronyms or abbreviations | Description |
|----------------------------------|---|
| 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.8, the definitions of internal routing and message Types 1 to 6 are:

Table 9 – Definitions

| 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 |

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.

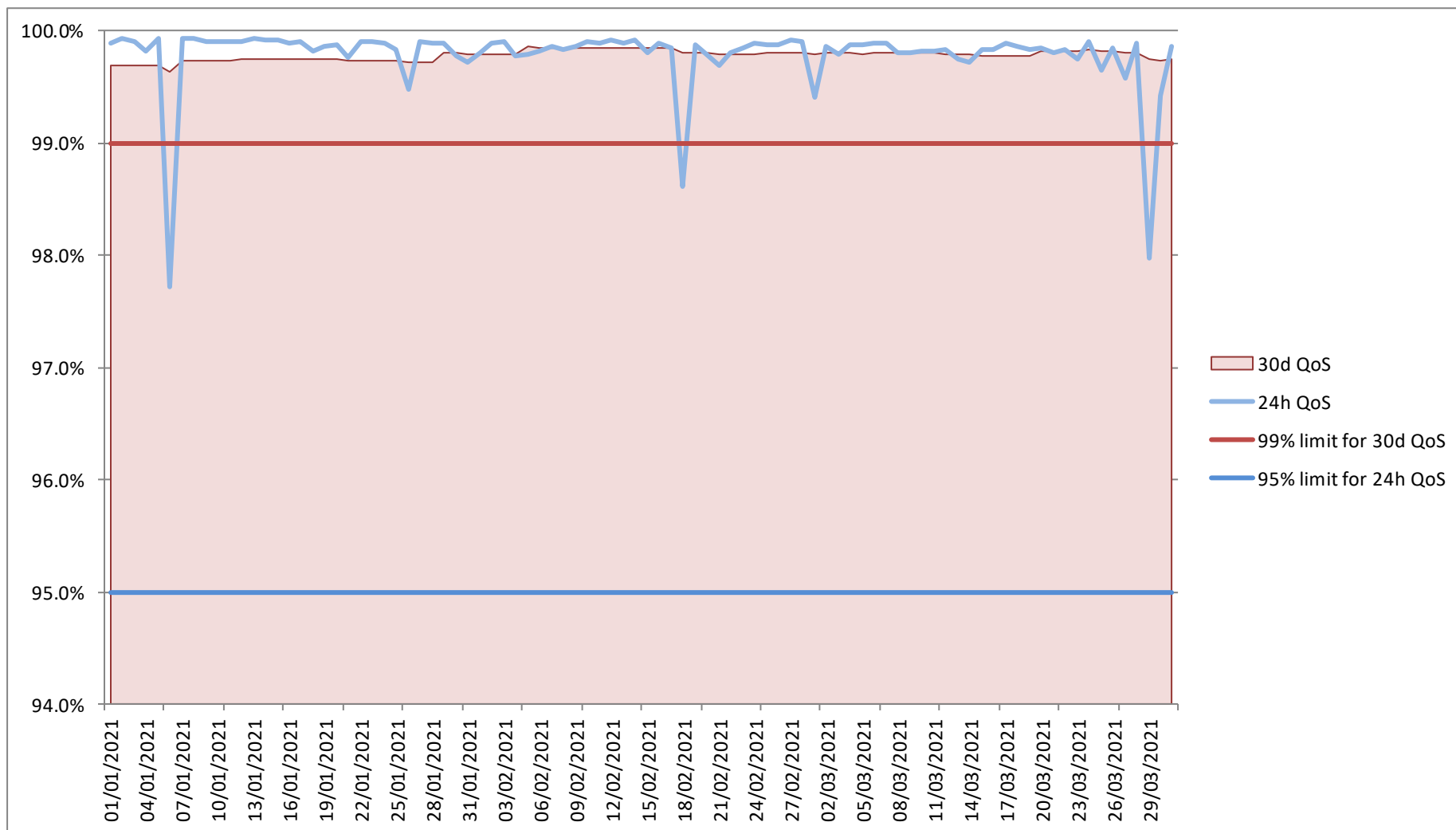


Figure 9 – IMO-24h and 30d QoS

3.3.2. Delivered periodic position reports QoS (Type 1)

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

Table 10 – Delivered periodic position reports QoS figures

| | January | February | March |
|--|---------|----------|---------|
| Monthly IMO-30d QoS (target 99%) | 99.80% | 99.81% | 99.73% |
| Number of Reports that did not meet the 15 min limit | 1,672 | 1,416 | 2,238 |
| Percentage of Reports out of the 15 min limit | 0.20% | 0.19% | 0.27% |
| Total number of Reports | 829,553 | 756,139 | 841,644 |
| Average Latency in minutes | 2.58 | 2.49 | 2.65 |

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 30 minutes 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.

Table 11 – Delivered on-demand reports QoS figures

| | January | February | March |
|--|---------|----------|---------|
| Monthly IMO-30d Poll QoS (target 99%) | 100.00% | 100.00% | 100.00% |
| Number of Reports that did not meet the 30 min limit | 0 | 0 | 0 |
| Percentage of Reports out of the 30 min limit | 0.00% | 0.00% | 0.00% |
| Total Number of Reports | 91 | 77 | 86 |
| Average Latency in minutes | 2.75 | 2.42 | 2.58 |

3.4. Messages by source

3.4.1. General

The figure below shows the analysis of positions by source, for March.

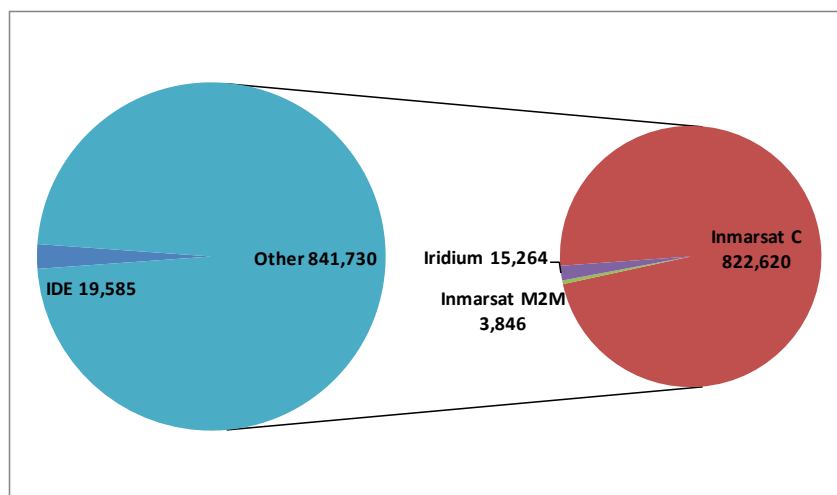


Figure 10 – Position reports by network (Message Type 1, 2 and 3)

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

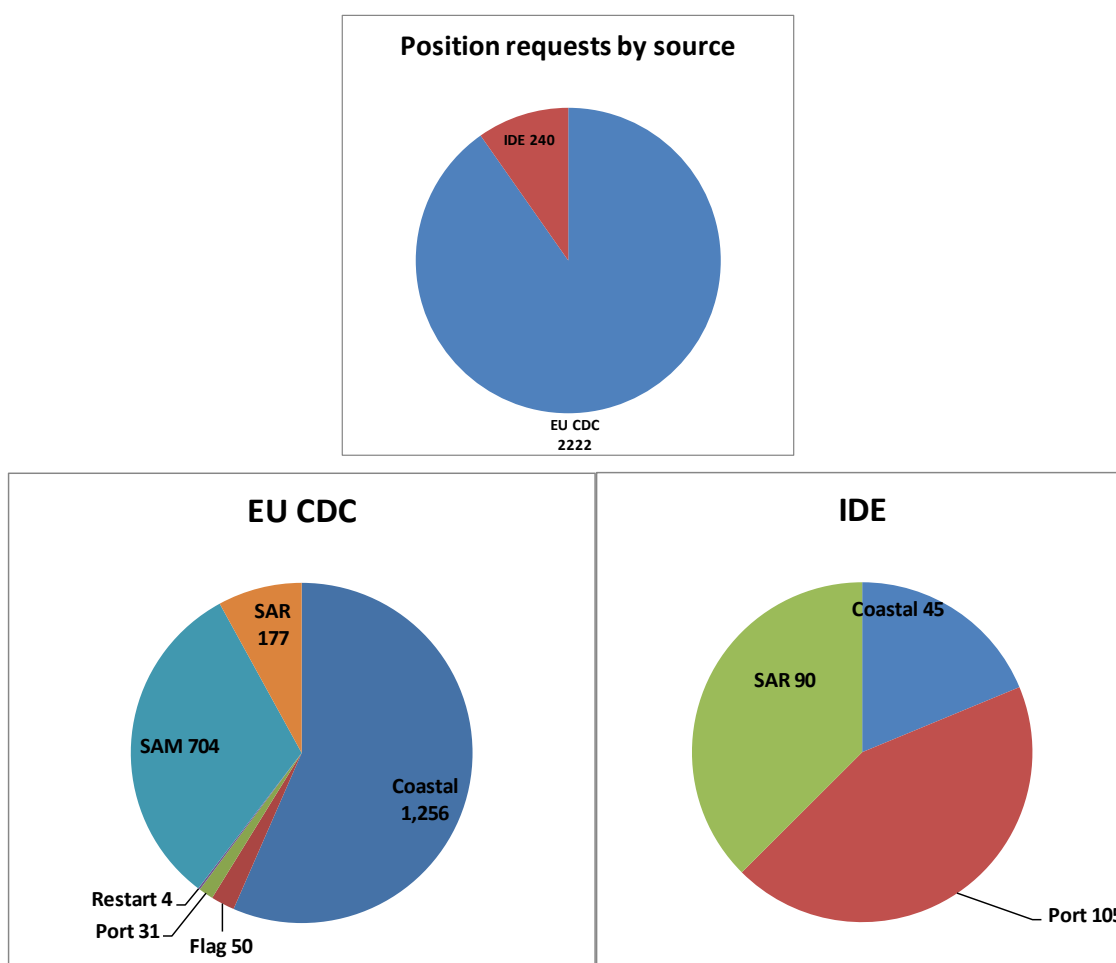


Figure 11 – Position requests by role (Message Type 4, 5 and 6)

3.4.2. Evolution of messages exchanged

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

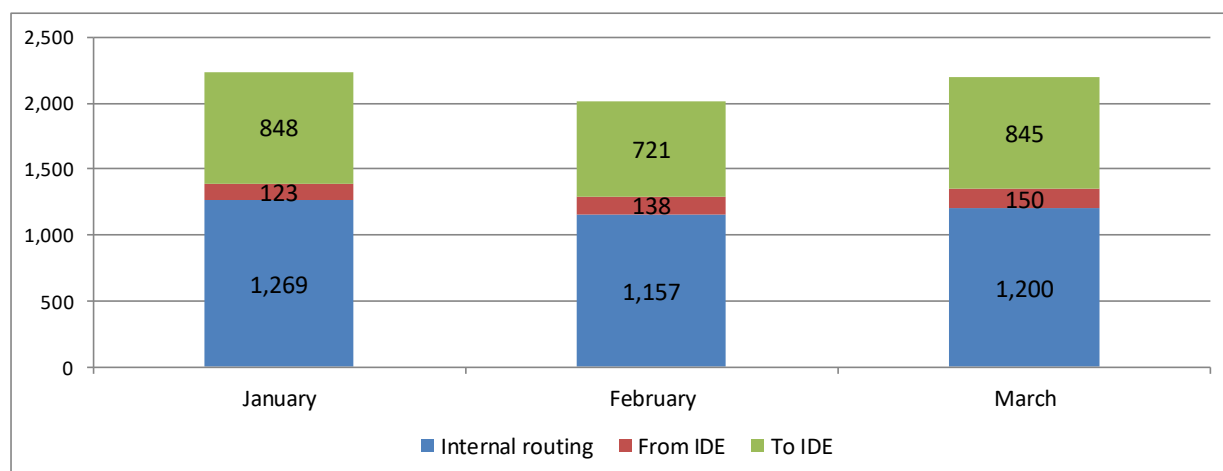


Figure 12 – Number of position requests (Type 4)

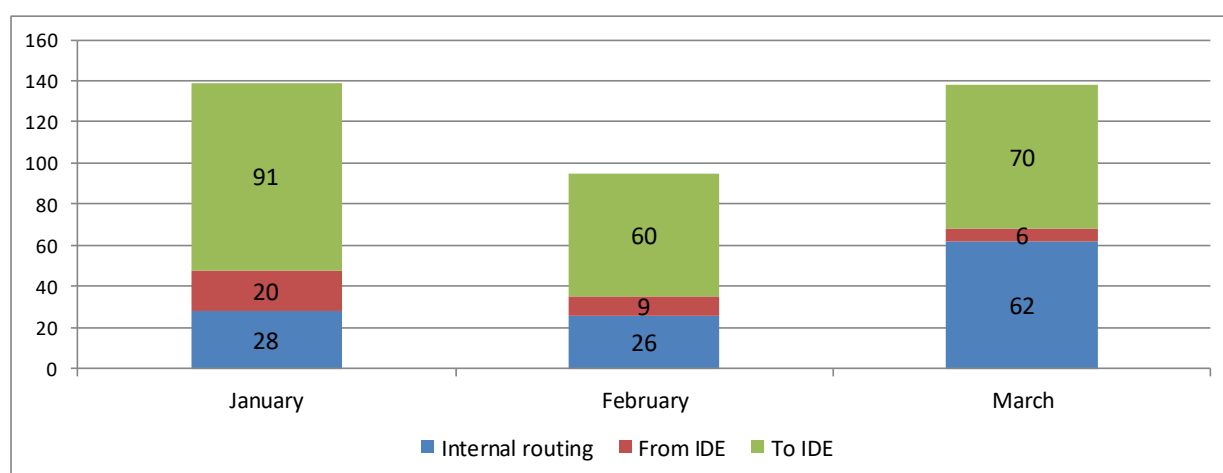


Figure 13 – Number of SAR requests (Type 5)

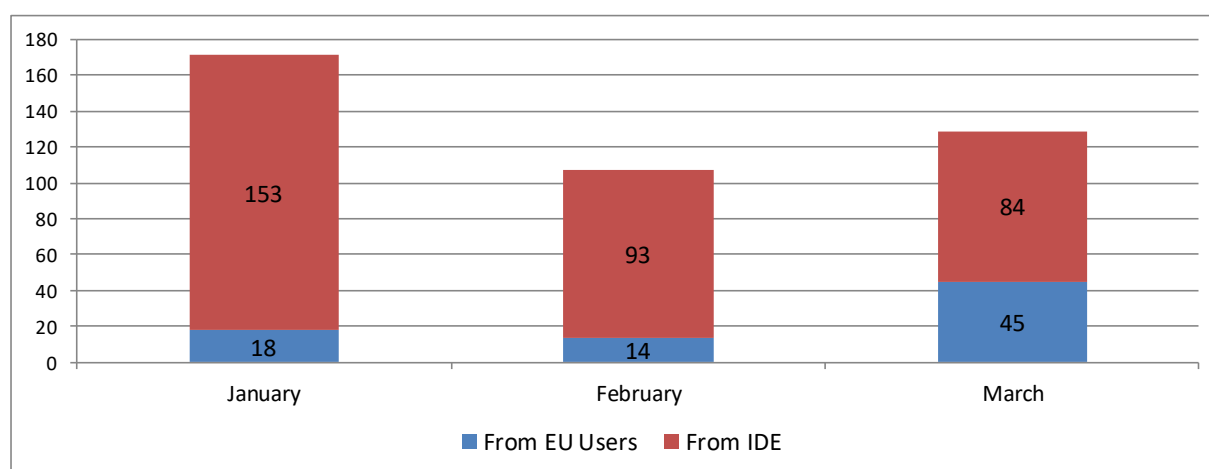


Figure 14 – Number of SAR SURPIC requests (Type 6)

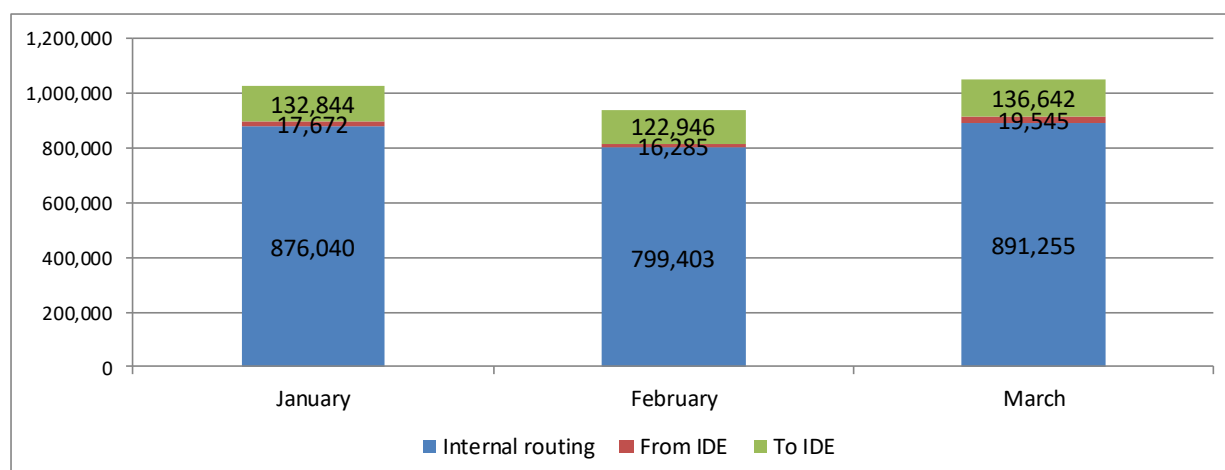


Figure 15 – Number of position reports (Type 1, 2 & 3)

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 these, a new ticketing tool called Jira was implemented on 14 February 2019.

For this quarter and the previous one, Table 12 shows the distribution of the tickets handled by the MSS:

Table 12 – Incident management

| | Q4 2020 | Q1 2021 |
|--|--------------------|----------------------|
| Number of LRIT CDC and EU LRIT Ship DB tickets out of total number MSS tickets | 345 / 4311 (8%) | 315 / 4311 (7.3%) |
| <u>Ticket per type</u> | | |
| Administration and reporting: | 22 | 28 |
| Helpdesk (CGs, ASP...): | 93 | 68 |
| Monitoring and Incident management (Task Monitor...): | 230 | 219 |

This quarter, no major incident happened.