

CASE STUDY – INTEGRATED MARITIME SERVICES FOR MEMBER STATES

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|----------|------------------------------------|
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1. INTRODUCTION

The present case study is an in-depth investigation into **Integrated Maritime Services (IMS)** for the purpose of exploring the relation between the activities implemented by EMSA and the achievement of the Agency's objectives.

The case study focuses on a specific area of EMSA's work in order to assess in-depth the utility, effectiveness and efficiency of EMSA's activities in this area. The case also explores potential alternative explanations, external and internal drivers influencing the results observed. The analysis is based on triangulation of different data sources.

Following this introduction, the second section of the case study introduces the policy background of EMSA's Integrated Maritime Services, outlines the scope of the case study, presents the intervention behind the delivery of integrated maritime services for Member States and lays down the methodology of this case study.

The findings of the case study are then organised according to the evaluation criteria: relevance, utility, effectiveness, efficiency and added value. The last section contains conclusions and recommendations.

2. SCOPE AND METHODOLOGY

2.1 Policy background

The European Union's vessel traffic monitoring and information system is legislated by Directive 2002/59/EC¹, and other relevant Union legislation. It is the European platform for maritime data sharing and it allows the exchange and sharing of additional information facilitating efficient maritime traffic and maritime transport.²

The delivery of information and data services in the maritime area is enshrined in the Founding Regulation of EMSA³ as a core task of the Agency. In particular, articles 1.2, 2.4 (a)⁴, 2.4 (b)⁵ (f)⁶, 2a (d)⁷ underpin the tasks of EMSA to provide relevant information and data to relevant competent authorities.

¹ Directive 2002/59/EC of The European Parliament and of The Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC

² EMSA Annual Work Programme 2016 page 27

³ Regulation (EC) No 1406/2002 of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency

⁴ "in the field of traffic monitoring [...]develop and operate the European Union Long-Range Identification and Tracking of Ships European Data Centre and the Union Maritime Information and Exchange System (SafeSeaNet)"

⁵ "Provide [...]relevant vessel positioning and Earth observation data"

⁶ improving the identification and pursuit of ships making unlawful discharges

⁷ "development of a Common Information Sharing Environment for the EU maritime domain"

The concept of *Integrated Maritime Services (IMS)* has developed over time as an evolution of the requirements of relevant EU Acquis in the area, EMSA's responsibilities and technical advancements. While the integration of data elements were first mentioned by Directive 2009/17/EC⁸ which called for integration of data referred to by Directive 2002/59 to be integrated into the SafeSeaNet, Directive 2014/100/EU⁹ was much more explicit, mentioning, in its preamble that:

- *Experiences have been gained and technical advancements have been made, in particular in developing an interoperable data exchange system which can combine information from SafeSeaNet with information from the other Union monitoring and tracking systems (CleanSeaNet, the European Union Long-Range Identification and Tracking of Ships European Data Centre (EU LRIT Data Centre) and Thetis), and also from external systems (e.g. satellite AIS), further enabling integrated maritime services. Several satellite AIS initiatives have been launched, including by Member States, confirming the operational benefits from having access to SAT-AIS data.*¹⁰
- *The EMSA hosted systems and applications are able to provide Member States' authorities and Union bodies, comprehensive information on, for example, ship positions, dangerous cargoes, pollution, etc., as well as provide support services in areas such as coast guards, anti-piracy and, statistics*¹¹
- *These advancements and the testing of an integrated maritime data environment by the European Maritime Safety Agency have produced synergies, improved systems features and services.*¹²

Furthermore, it was enshrined that:

*[...]The European Maritime Safety Agency, in cooperation with the Member States and the Commission, is responsible for [...] development, operation and integration of the electronic messages and data as well as maintenance of the interfaces with the central SafeSeaNet system, including AIS data collected by satellite, and the different information systems in this Directive*¹³

In terms of development of the integrated system, between 2013 and the end of 2014, Integrated Maritime Services have been running as a pilot project implemented by EMSA (also known as IMDatE) which became an operational service, known today as IMS, from the beginning of 2015.

In this respect, through the delivery of integrated maritime services, EMSA: (i) meets its data provisioning obligations as legally obliged/mandated, (ii) offers further datasets of interest and (iii) gives MS the opportunity to make use of an expanded data set portfolio.

2.2 Scope of the case study

The scope of the case study is centred on the delivery of Integrated Maritime Services to Member States.

The topic was chosen because the package, consisting of **surveillance and monitoring systems**, are strategically important services provided by EMSA to stakeholders and because their integration, within a common user interface, is seen as a necessary and important step towards improving the service offering of the Agency towards its users.

The case study intends to focus on the added value stemming from the **integration** of the various data services provided by the Agency, and not necessarily from the data services themselves, however where a distinction was not possible (e.g. in terms of the final benefits for

⁸ Directive 2009/17/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2002/59/EC establishing a Community vessel traffic monitoring and information

⁹ Directive 2014/100/EU of 28 October 2014 amending Directive 2002/59/EC of the European Parliament and of the Council establishing a Community vessel traffic monitoring and information system

¹⁰ Preamble (6), Directive 2014/100/EU

¹¹ Preamble (7), Directive 2014/100/EU

¹² Preamble (8), Directive 2014/100/EU

¹³ Annex III, Directive 2014/100/EU, electronic messages and the union maritime information and exchange system (Safeseanet), replacing previous annex to Directive 2002/59/EC

users), both elements are taken into account. As a result, the scope of the final case study looks at IMS from the perspective of having:

- (i) relevant maritime data and information accessible for Member State users
- (ii) Integrated within one common user interface.

In order to achieve a satisfactory level of depth to the analysis of this case study, the scope of the data collection has been limited to the perspective of Member State users. This choice is consistent with EMSA's founding Regulation which puts the Member States at the centre of traffic monitoring, vessel positioning and Earth observation data

2.3 Intervention logic

EMSA is providing a common **user interface** (IMDatE / IMS), available on both a web as well as a mobile platform which integrates a range of data elements collected from a range of different sources.

At the basis of the intervention logic is the collection, integration, correlation, analysis and filtering of all available maritime and relevant ancillary information. These include:

- Automatic identification systems (AIS)
 - Terrestrial AIS
 - Satellite AIS
- Long range identification and tracking (LRIT)
- Additional ship and voyage information
- Synthetic aperture radar satellite images (SAR imagery)
- Optical satellite images
- Meteorological-oceanographic data
- Remote Piloted Aircraft Surveillance Systems (RPAS)
- Other data sources from national systems¹⁴:
 - Vessel Monitoring Systems (VMS)
 - Coastal radar
 - User specific data

In terms of services resulting from the use of the above data, over the years, EMSA has developed its service offering in the area of provision of data in line with the legislative requirements as well as with the user needs. At present, EMSA covers the following service offering:

- Automated Behavioural Monitoring
- Traffic monitoring
- Support data for Search and Rescue operations
- Pollution monitoring (complementing the existing CleanSeaNet service¹⁵); by providing an alternative means of visualisation
- Maritime Border Control (Supporting Frontex and Eurosur);
- Anti-piracy in support of EU NAVFOR;
- Fisheries monitoring in support of EFCA JD; and
- Anti-drug trafficking operations supporting MAOC-N

In addition, EMSA performs a series of complementary activities in support of the abovementioned; these include consultations, trainings, user support, testing, adequate management and implementation procedures, etc.

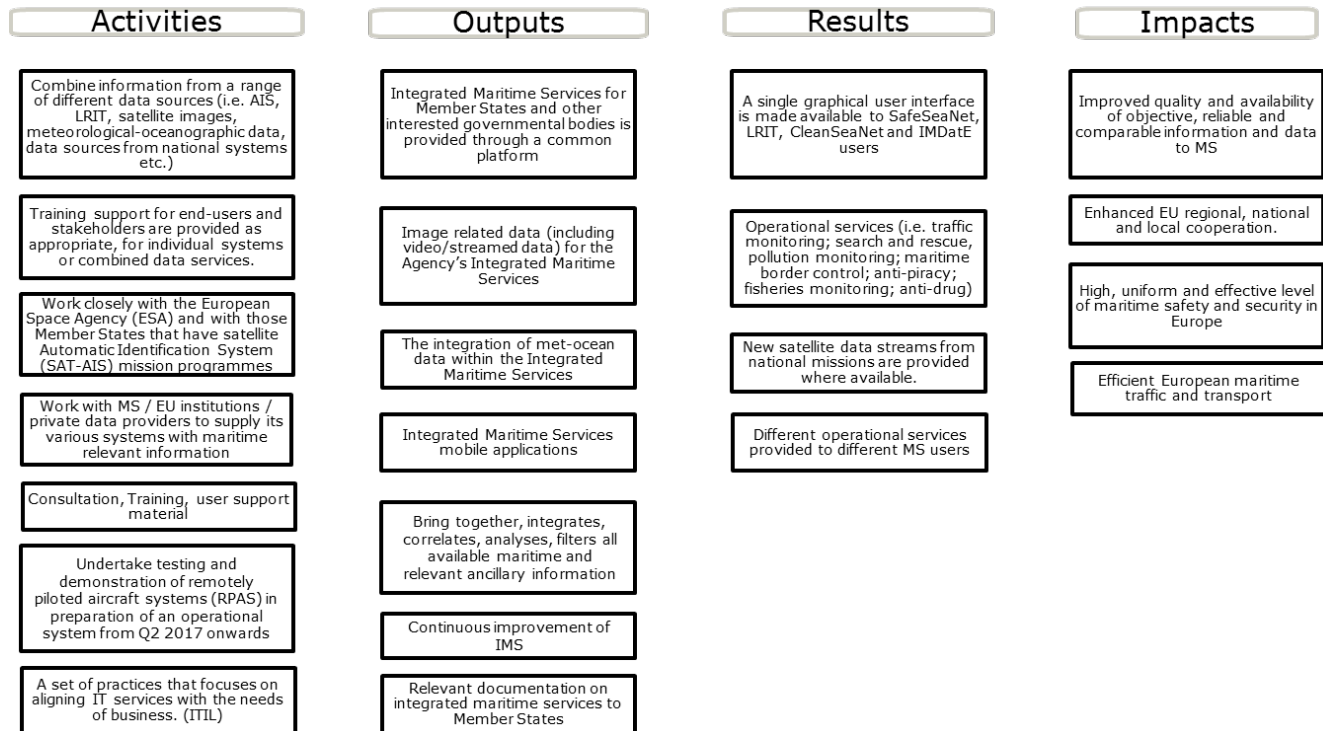
The objective is to improve the quality and availability of relevant data and information to competent authorities of Member States, which in turn, would be better equipped to undertake their core tasks in the maritime safety and security area.

¹⁴ <http://emsa.europa.eu/combined-maritime-data-menu/data-sources.html>

¹⁵ Including an expansion to monitoring of emissions by ships.

The figure below presents the simplified intervention logic behind EMSA's IMS. This intervention logic has been drafted by the study team based on EMSA's mandate in the area¹⁶ and has been subsequently revised and detailed with support of EMSA's staff.

Figure 1: EMSA's Intervention Logic in the field of Integrated Maritime Services



At an operational level, EMSA's objectives in this area are updated yearly as part of the agency's annual work programmes which are endorsed by the Administrative board¹⁷.

2.4 Methodology

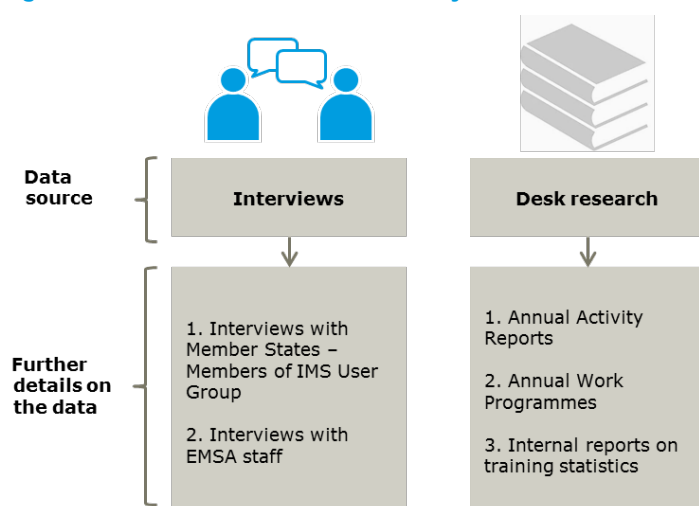
The case study is rooted in an understanding of the intervention logic behind the delivery of IMS by EMSA and the outputs and objectives which they are designed to achieve.

The case study is based on three types of data sources as presented in Figure 2.

¹⁶ Regulation (EC) No 1406/2002 as amended, and Directive 2002/59/EC, as amended

¹⁷ See EMSA Annual Work Programme 2016 pag. 29 for the most recent sets of annual objectives.

Figure 2: Data sources for the case study



The methodology for selecting respondents have taken an inclusive approach: an invitation to take part in interviews has been sent to all members of the IMS user group which consists of representatives of Member States to EMSA. All Member States which have accepted to take part have been interviewed.

Two EMSA representatives have been interviewed in order to take into account (i) the business aspects of the IMS, as viewed from a content point of view and (ii) the IT aspects which shed light on potential challenges related to implementation.

A full list of interviewees can be found in the Annex, accompanied by a complete overview of documents used for the desk research.

The collected data has been triangulated to respond to a number of evaluation questions. These questions have been developed to cover the evaluation criteria of the external evaluation of EMSA. In the annex, an overview table linking the case study questions to the evaluation question matrix of the external evaluation is presented.

3. FINDINGS

The main focus of the case studies is on assessing the effectiveness of EMSA in certain areas of their work, i.e. assessing the level of contribution of EMSA's activities to the defined results (and impacts, potentially). However, the case study on IMS has also looked at aspects pertaining to other evaluation criteria, such as relevance, utility, efficiency and added value.

In order to support an efficient reading to this document, the approach to each question is to begin with the conclusion drawn from the analysis, then follow up with presenting the evidence base in more detail in order to substantiate and, if necessary, qualify the conclusion drawn.

3.1 Relevance

3.1.1 To what extent is it (still) relevant to have EMSA in charge of developing and running integrated systems for monitoring and surveillance of vessel traffic and pollution?

The findings from the case study underline the continued relevance of developing and running integrated systems for monitoring and surveillance of vessel traffic and pollution.

All Member States interviewed have reported that EMSA, by providing an enriched, integrated maritime picture is fulfilling an important need

"There is a need and EMSA is fulfilling our need" – Representative quote

of the various authorities within their countries, including: Coast Guard, Customs authorities, Maritime Police, Fisheries control, Border control, Oil pollution response agencies and Maritime control units.

Even for those Member States with more advanced capabilities and more mature maritime authorities which have the capacity, on their own, to generate a sufficient picture of the maritime environment at a national level (and often rely on their own systems on a daily basis), the services offered by EMSA expand the scope of information they receive. Moreover, through the integration and enrichment offered by the system, the IMS allow member states to benefit from functionalities which fulfil a real need in the different authorities. As an example of this, the mobile platform recently introduced by EMSA has been particularly singled out by respondents as extremely relevant to their national needs.

The positive results on the relevance of the IMS are supported by the fact that EMSA has employed a user-centric approach to develop the systems, based on input from Member State users. In that sense, the involvement of the target user in the development and improvement of the systems ensure a high degree of relevance. Furthermore, this user-centric approach has raised the level of trust and has ensured that Member States are invested in the results of the work further increasing its effectiveness as well as relevance of the services.

Even in countries where Member States already have systems which aggregate and integrate maritime data developed nationally and which are preferred (for various institutional reasons) for day to day use over EMSA's web-based interface, some interviewees pointed out that EMSA's services still provide some added value, as it provides additional data and an ability to triangulate and increase the robustness of information available to them. As those MS favor system-to-system (S2S) integration to further development of the web-based interface, EMSA is in the process of setting-up a better S2S approach through an IMS Group Working Group tasked to collect the user requirements and an internal EMSA project team tasked to work on its implementation.

3.1.2 Is there any other organisation in a position to provide a similar services to Member States

In the context of the interviews, all stakeholders agreed that EMSA is best placed to carry out this activity as it is uniquely placed to provide this service to Member States.

This point of view is underlined by the wealth of data which EMSA is mandated to collect and administer, however it is not limited to this aspect.

"EMSA is in the best position to provide the data, and it is the only one to have the legal mandate"
– Representative quote

"We were in a unique position to provide these services, because we could make use of what we had in-house. It was like sitting on a gold mine. We have just begun to scratch the gold mine" – EMSA Staff

Stakeholders have stressed that the involvement of EMSA, in their role as a European Authority is beneficial as it increases the level of cooperation between countries and increases the level of data which is ultimately shared. One interviewee has specifically referred to the fact that EMSA has been particularly effective in building trust among Member States [as data providers], and in doing so have been effective in accessing data beyond the legal mandate, thus providing a higher quality service overall.

3.2 Utility

3.2.1 To what extent are EMSA's stakeholders satisfied with the agency's work

In the context of the case study, Member States were asked to rate their satisfaction with the IMS.

At a general level, eight out of ten respondents expressed very high satisfaction with the work of the

"We are very satisfied with the IMS – IMS opens the sea to us, to have a clear picture of what happens at the long range" – Illustrative quote

agency, citing several elements which they regarded as particularly positive. Among those, we mention: Reliability of the system, good technical support provided by EMSA, good communication between EMSA and the Member States, a welcome approach to integrate data sources and services and a specific nod to the mobile based application.

Among the users who have reported to be highly satisfied, improvements were, nevertheless suggested, these included: having traffic density over time (1 respondent) and improving the single graphic user interface (GUI).

The two respondents who reported lower levels of satisfaction provided different reasons: One cited the latency of the web-based interface¹⁸ while another one reported that, while his organisation is very satisfied with the services themselves, it has little use for the web-based application as it does not replace the national system. For the latter, more system-to-system integration was preferable to additional work on the common application (see 3.1.1).

"We find it [the web-based interface] very slow" – Illustrative quote by one MS

3.2.2 To what extent do EMSA's stakeholders find that the outputs and results produced by the Agency match their needs?

In order to analyse the systems in-depth, discussions have differentiated between the different types of services and uses that the system may deliver (e.g. Automated Behavioural Monitoring (ABM), traffic, and pollution monitoring, search and rescue). As the RPASS system was not operational at the time of data collection, only the perceived value of the planned RPASS is included in the analysis.

Although not all respondents were familiar or have used the IMS for each of their intended purposes, the interviewees have reported to be overall satisfied with the Agency's work. However, high satisfaction was not expressed unanimously across the different services, as some respondents expressed a number of specific areas of improvement and weaknesses to the system. Detailed results are presented in the table below:

Table 1: Assessment of stakeholder satisfaction

| Area of Service | General Assessment |
|---|--|
| Automated Behavioural Monitoring | <p>5 out of the 10 Member State users interviewed reported not using service, therefore declined to express an opinion, among the reasons offered was a lack of relevance relative to their needs (2 responses) an inferiority of the ABM against their own system (2 respondents) and uncertainty related to the confidentiality of information (1 respondent).</p> <p>The five interviewees that use the service reported some degree of satisfaction and found the system to be useful. Recently, the system has been improved by giving Member States an "ABM administration role" to define and configure their own scenarios and alerts.</p> |
| Traffic monitoring, | <p>EMSA's traffic monitoring functionality is, as with all elements of the IMS, in competition with national systems. Nevertheless, almost all MS interviewed (9 of 10) mentioned that they use EMSA's traffic monitoring system, at least as a complement to their own system and that they are satisfied with the value it offers.</p> <p>Marginal improvements and areas of slight dissatisfaction were mentioned, these include: the real-time delay (2 responses), the lack of possibility to archive information (1 respondent), more access to operational services and</p> |

¹⁸ It is important to note that "speed" depends on both provider (EMSA) and receiver ICT infrastructures. Use of "small" bandwidths and old browsers can translate to "slow" experience. The lack of comprehensive statistics on this indicator made it difficult to triangulate this statement which translates into a generally applicable conclusion.

| | |
|--|---|
| | <p>better databases (1 respondent) and, finally, as most MS use the service as a complement to an already existing national system, better system-to-system integration was desired (2 respondents).</p> |
| Search and Rescue | <p>The respondents who use this service (5/10) were very satisfied by the value it brings. The ability of the system to support the identification of ships in distress and those in the vicinity was mentioned to be highly relevant.</p> <p>Nevertheless, several improvements were mentioned: one respondent suggested that the integration of meteorological data (weather, currents, wind speed) would make the system smarter while two respondents suggested that the integration SAR and Radar would also improve the system.</p> |
| Pollution monitoring | <p>6/10 respondents reported using this service, and all of them reporting high level of satisfaction, especially regarding the integration of data, (e.g. SAR, ship tracking to find the possible source, etc.) These were seen as improvements over national systems and hence a source of added value.</p> <p>Once again, the integration of meteoroidal information was seen as a relevant potential improvement (1 respondent). Another suggestion (1 respondent) was the integration of data related to the general arrangements of the vessels (e.g. cargo, dangerous substances on board, etc.)</p> <p>One of the respondents reporting not using the system wished for higher system-to-system integration to allow complementarity with their own national systems, which are preferred for day-to-day use.</p> |
| Services provided by Remote Piloted Aircraft Surveillance Systems (RPASS) | <p>Generally, respondents were not sufficiently familiar with the RPASS to provide clear answers to this question (e.g. the range of conditions in which the aircraft can function, costs, etc.). Nevertheless, based on the information available, they were optimistic regarding the potential added value of the system. Two respondents suggested that the roll-out of the service should be accelerated.</p> |

3.3 Effectiveness and Impact

3.3.1 To what extent are the Agency's tasks completed on time and meet expectations in terms of quality?

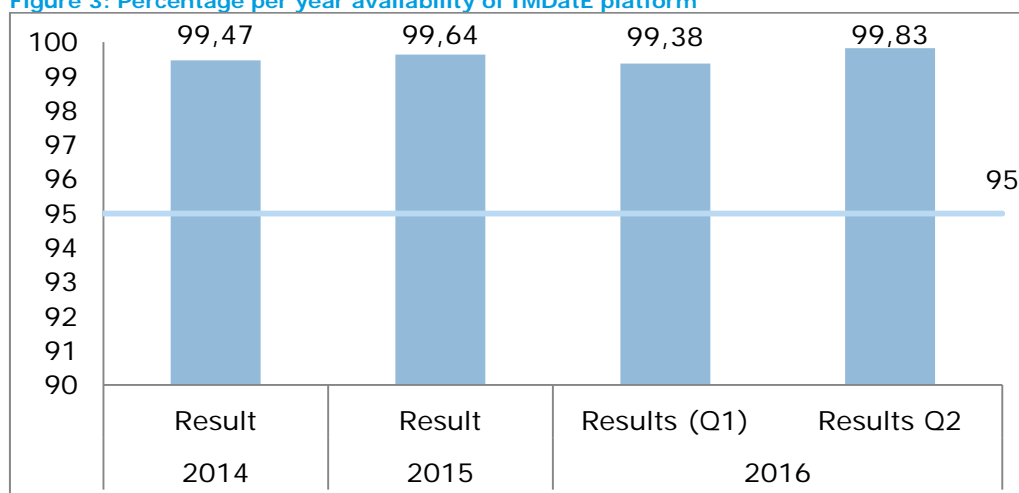
The functioning of the IMS as well as its underlying systems is subject to consistent monitoring by EMSA, who assesses the functioning of the system against a wide number of quality indicators which are reported on an annual basis.

For the purpose of this case study report, we will limit to presenting a limited number of key quality indicators, however a complete list of results have been published, by EMSA, as quarterly KPI reports.

System availability

As can be seen from the figure below, the availability of the IMS user interface platform itself, known as IMDatE, has exceeded the targets and, in Q2 of 2016 has been very close to 100%. This indicates that the platform itself is, as some stakeholders noted, highly reliable and stable.

Figure 3: Percentage per year availability of IMDatE platform



Source: European Maritime Safety Agency. (2016). EMSA KPI 2014, 2015 and 2016 Definitions & Methodology

Similar conclusions can be drawn when looking at some of the underlying systems which feed data into the user interface platform. KPIs from several systems (e.g. SafeSeaNet, MarSurv, EU LRIT Data centre, LRIT IDE, etc.) show that the systems are highly reliable and are all characterised by a very low downtime. All the systems mentioned above have significantly exceeded their targets in terms of availability and downtime, some approaching to 100% availability.

In as far as the latency¹⁹ of the system is concerned, the IMS defines internal targets on the latency of position messages. The currently defined targets are:

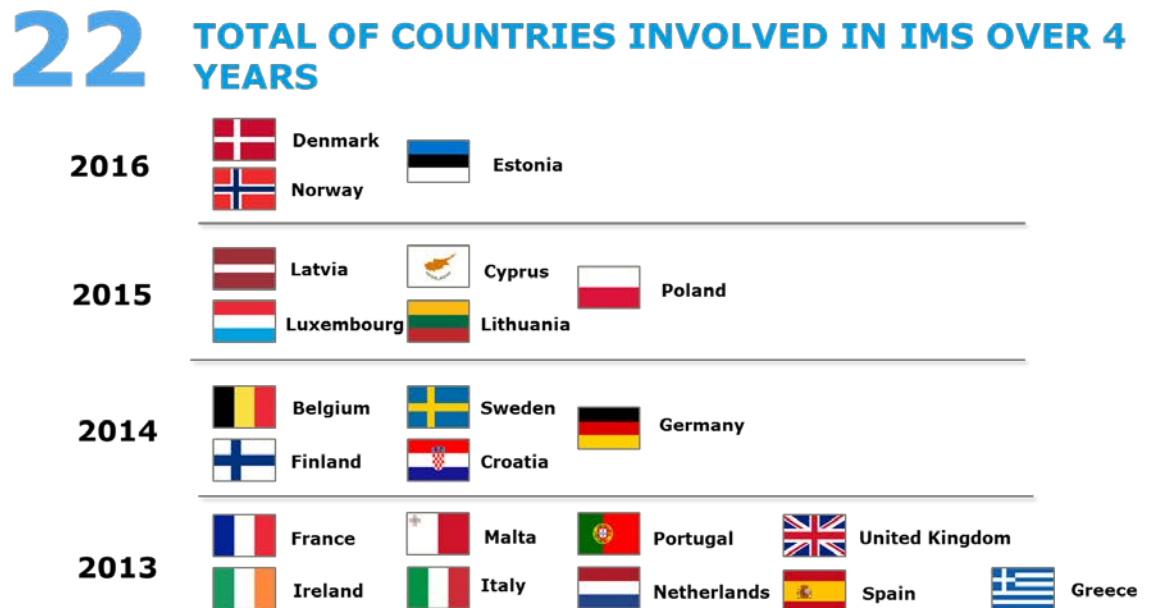
- Ten seconds average latency from report reception to IMS storage
- Thirty seconds average latency from report reception to display in IMS user web interface

3.3.2 To what extent are the delivered outputs being used by the beneficiaries?

Over the course of the development of the Integrated Maritime Services, the number of Member States which have been involved in sharing and receiving relevant maritime data to and from the IMS system has grown to a total of 21 Member States and Norway. This evolution is depicted in Figure 4. As can be seen, at present, this includes all coastal Member States with the exception of Romania and Bulgaria.

¹⁹ Latency is defined as the average time between ship position report reception and its availability to the user

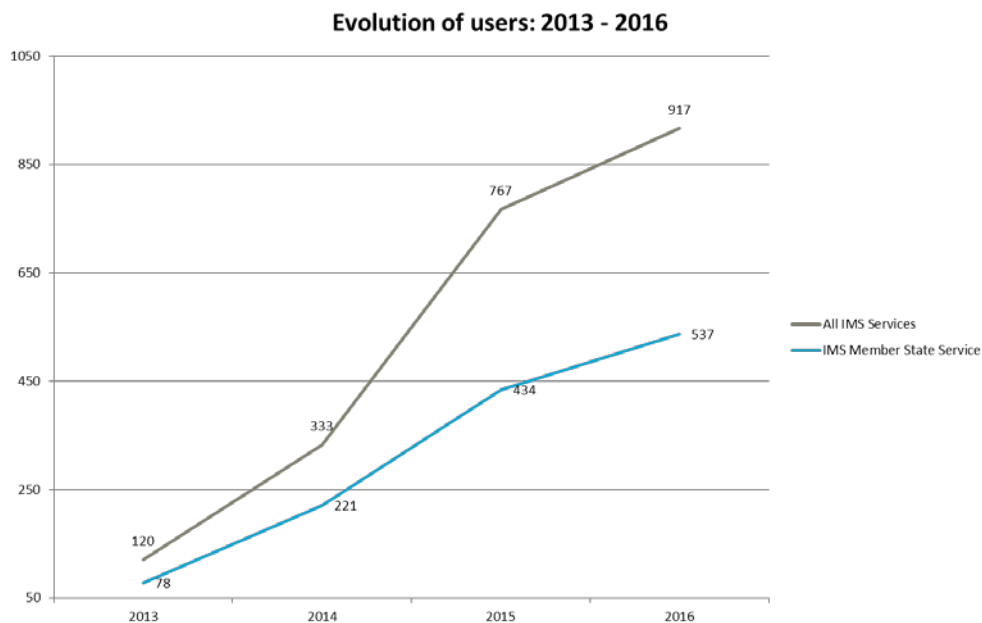
Figure 4: Evolution of the involvement of Countries within the context of the IMS



Source: Internal user data provided by EMSA

The number of users of the system has also grown at a rather steady pace between 2013 and 2016 (see Figure 5), indicating the increased interest in the project and its evolution as a useful tool for Member States.

Figure 5: Evolution of the total number of Member State users (2013 - 2016)



Source: Internal user data provided by EMSA

In terms of usage, at the time of drafting this report (November 2016):

- The total number of individual IMS users representing MS institutions was approximately 700 covering approx. 70 different organisations.
- The mobile app was used by approx. 250 users.

- The ABMs services were used by seven Member States (and three EU Bodies). Four of the MS have been granted with the “ABM Administrator role”²⁰ functions. There are approx. 60 active ABMs.

3.3.3 Generally, what are the main benefits for Member States of EMSA providing Integrated Maritime Services?

Interviews with the Member States have shown that, irrespective of the overall level of satisfaction (see 3.2.1) or the extent to which the individual services comprised match the needs of the users (see 3.2.2), all Member States find value in using the IMS.

While it is possible to identify some patterns in the main benefits the MS derive from the IMS (e.g. from the integration itself), it is worth noting that respondents have, in general, identified and reported different elements as the source of the highest benefit for them.

This should be unsurprising, as the subjective nature of the “main benefits” depends to a high extent to the needs of the MS in questions, the level of maturity of their own systems, the specific maritime circumstances, the capacity of their administration as well as many other factors.

Nevertheless, it is a positive assessment to find that, the large scope of the service makes it highly adaptive to the large range of needs of Member States and stands as proof that users can derive different benefits from the IMS.

Given the large differences in points of view on the topic, we reproduce the main benefits expressed by the interviewees (10 responses) in the table below:

Table 2: Reported benefits derived from EMSA providing Integrated Maritime Services by the different Member States interviewed

| |
|--|
| <i>Given the low downtime [See 3.3.1], the IMS provides a useful backup to our national system which is often used.</i> |
| <i>As a combination of many relevant services in one, ready-to-use single access platform it can be used by different organisation with different remits. It then allows different users to share a common, comprehensive maritime view.</i> |
| <i>To have all the data [...] available in a single screen, with global coverage for the most part (Satellite AIS) means that it is an upgrade to traditional, non-integrated systems.</i> |
| <i>Having information available within seconds on the high seas has allowed for a quicker response. Today we can operate on the high seas as we did two years ago at the coastal level</i> |
| <i>Another benefit is that you have a certain degree of system-to-system integration, allowing national administrations to enrich their own system (operational and technical)</i> |
| <i>Having integrated information from multiple sources.</i> |
| <i>Increased reliability of the maritime picture due to the triangulation between sources and systems</i> |
| <i>The low cost and ease-of-use means that it became easy to cooperate with neighbours and partners which use the same system, enhancing cooperation.</i> |
| <i>The integration of satellite AIS data which, in the absence of EMSA's work, only a few Member States would had available</i> |
| <i>Having satellite pictures in clean-sea-net overlapped with the movement of ships is a great tool for pollution monitoring.</i> |
| <i>The potential for development in the future: Automated monitoring and the drones.</i> |

²⁰ Meaning that they are able to define their own ABM scenarios and alerts.

The Automatic identification systems (AIS) and the database of marine traffic.

To have a single tool integrating maritime information from various sensors

Enhanced SAR service provides a very useful picture.

The mobile app, provides the highest value as we now have access a large set of data on a mobile device.

3.3.4 To what extent has EMSA's work in this field contributed to improved quality and availability of objective, reliable and comparable information and data to MS.

All member states interviewed agreed that having an integrated maritime picture based on multiple data sources have improved, to a high extent, the quality and availability of information.

"If you have a central application that integrates all data for you, you have more assurance that you are looking at an accurate picture" – Representative quote

3.3.5 To what extent has EMSA's work in this field contributed to improved ability of MS to prevent, deter and respond to maritime pollution

With respect to whether the IMS have had an impact in preventing, deterring and responding to marine pollution, member states overwhelmingly agreed that EMSA's work has helped them improve the time for response and that it helped authorities identify polluters more effectively (i.e. through the ability to track vessels which may have potentially been responsible for a discharge).

"It has improved our time for response, surely, however, we are not so sure about prevention and deterrence" – Representative quote

This overwhelming positive assessment of the IMS as pollution prevention and response tool is unsurprising as CleanSeaNet is the underlying service at the foundation of the IMS and Member States have long recognised the benefits of the system in this area.

Although it was not specifically part of the question, one Member State found it necessary to mention the impact of the IMS on improving their ability to perform search and rescue operations by helping locate all the vessels near the vicinity of the vessel in distress.

3.3.6 Which other factors (positively or negatively) influenced the achievement of the desired outputs and results?

Member States were kept to recognise that a strong barrier which may influence (negatively) the achievement of results of the IMS are the potential difficulties resulting from the complex system of gaining access to the various data elements from a myriad of data providers. Half of the respondents pointed to this as the single most important challenge for EMSA (5 respondents).

Another external influencing factor was mentioned to be the other EU agencies with different mandates which also require maritime information and who may seek to build competing systems²¹ if not granted access to the IMS service provided by EMSA (2 respondents)

As pointed out by one respondent, natural disasters may pose a risk. Such a risk is mitigated by EMSA through an established Business Continuity Plan and associated Business Continuity Facility located in a different geographical location.

3.3.7 To what extent is EMSA's provision of integrated maritime services expected to support the attainment of the Agency's expected impacts?

High, uniform and effective level of maritime safety and security in Europe

Overall, respondents agree that EMSA's work in the area of Integrated Maritime Services is linked to the ability of Member States to ensure a high level of maritime safety and security in Europe

²¹ E.g. DG MARE's Common information sharing environment (CISE)

In particular, the influence on Search and Rescue and pollution monitoring (see above sections for details) were cited as considerations to their conclusions.

Furthermore, by integrating data from multiple sources and making it available to Member States on a common platform, the IMS have contributed to bridging the gap between countries with advanced maritime surveillance systems and those who lacked the integration of certain elements within their own national systems.

Efficient European maritime traffic and transport

Despite the usefulness of the IMS to complement national traffic monitoring systems (see section above) it was less clear to respondents as to whether the IMS would be able to significantly contribute to increased efficiency of maritime traffic.

Half of the respondents were not able to answer this question. Those that did considered the IMS to either have a light impact (3 respondents) on increasing the efficiency of maritime traffic or no impact at all (2 respondents).

This finding underlines the fact that Member States perceive the information provided by the IMS as a tool primarily for prevention and response of pollution and for increasing maritime safety and security rather than as tool for increasing the efficiency of maritime traffic.

3.4 Efficiency

The figures below present the resource allocation (in payment appropriations and human resources) dedicated to the activities under the broad scope of this case study. It encapsulates costs and staff associated to: (i) EU VESSEL TRAFFIC MONITORING, (ii) EU LRIT CDC and (iii) LRIT IDE and MARITIME SUPPORT SERVICE. The methodology for aggregating cost and staff cost is based on the data reported in EMSA's Annual Activity Reports for the years 2013, 2014, 2015 and from the EMSA Annual Work programme for the year 2016.²²

Data reported in those sources does not relate solely to IMDatE / IMS itself, as the data is not presented on such a detailed level of granularity. The IMDatE / IMS service itself, falls within the costs reported under EU Vessel Traffic Monitoring aggregated with several other elements:

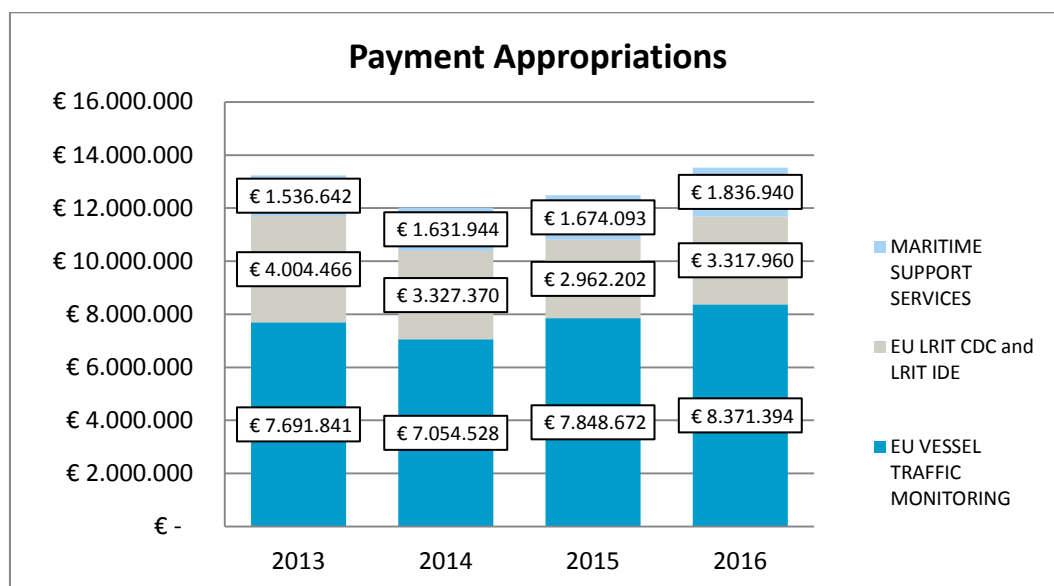
Depending on the different years, the data in terms of payment appropriations and staff members for the EU Vessel Traffic Monitoring covers:

- 2013: SafeSeaNet, Maritime Surveillance, Satellite AIS and **IMDatE**, and Cooperation with Frontex;
- 2014: SafeSeaNet, **IMDatE**, Maritime Surveillance, cooperation with Frontex, Satellite AIS and Blue Belt;
- 2015: SafeSeaNet, maritime surveillance, satellite AIS, **IMDatE** and FAL;
- 2016: **Integrated Maritime Services**, Improving Internal Market and Maritime Transport Efficiency and SafeSeaNet.

The above limitation of the financial data, although not allowing us to single out the costs associated with the IMDatE / IMS in a narrow sense is in line with the scope of the case study which, placed the IMDatE / IMS in the broader scope of the underlying data services which it integrates.

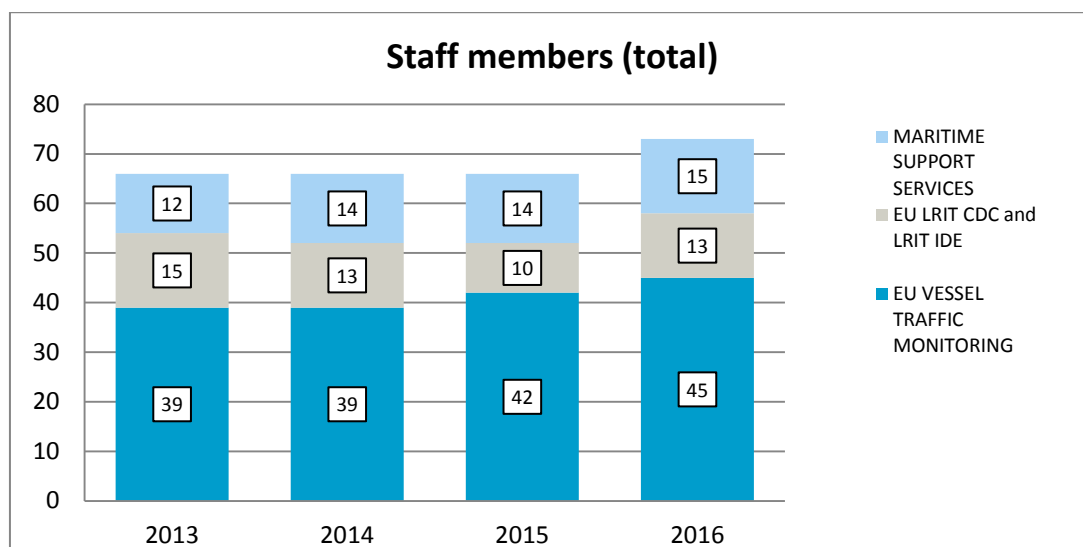
²² More information on the methodology related to the aggregation of financial and staff cost data can be found annexed to this report

Figure 6: Payment appropriations to EU vessel traffic monitoring, the EU LRIT and Maritime support services (2013-2016)



Source: European Maritime Safety Agency. *EMSA Consolidated Annual Activity Report 2013, 2014, 2015 and 2016*

Figure 7: Total Staff Members dedicated to EU vessel traffic monitoring, the EU LRIT and Maritime support services (2013-2016)



3.4.1 To what extent has EMSA been able to increase its efficiency in this area, by:

Producing similar results at lower costs,

As we can see, EMSA's budget has remained overall stable over the period 2013 – 2016. This comes in the context in which the total number of users has grown significantly (see 3.3.2).

Overall, the evolution of the budget suggests that EMSA is capable of producing similar results at lower costs over time. Nevertheless, it is important to note that the outputs resulting from these budgets are not fully comparable over the years.²³

²³ See appendix for a detailed description of the activities included in the calculation of the budget presented above

Producing improved results at similar costs

Given the short period of time (2013-2016) since the IMS have been delivered in their current form to Member States; it is not possible to reach a definitive conclusion as to whether EMSA is providing improved results at similar costs.

Nevertheless, it is clear from the interviews with member states that the current situation of integration is a stark improvement against the previous situation in which the various data elements were made available to Member States as part of separate systems, or not at all. From this point of view, the budget allocated to the IMS, iMDATe and the broader area of maritime surveillance to MS appears to have produced improved results at similar costs over 2013 – 2016.

3.4.2 To what extent has EMSA's work in this field resulted in reduced costs for administrations at national level?

Member States continue to use, maintain and develop their own national systems. While the IMS presents a series of advantages and disadvantages relative to national systems (depending on the MS), in no cases has it made the national systems obsolete. As a result, the IMS do not reach their full potential (and are not expected to do so in the future) to eliminate redundancies and duplications between EMSA and the Member States. For various legal, technical and institutional reasons, it is not expected that the IMS will be able to fully replace national systems in the foreseeable future.

As a result of this consideration, the IMS are not in a position to reduce costs for administrations at national level as all MS are expected to continue to maintain their own systems in the foreseeable future. This position was supported by a majority of interviewees in the context of the case study.

However, the case study findings show that the work of EMSA to centralise all relevant data elements, host them on common servers and associated IT infrastructure, build a common interface and common algorithms for ABM on behalf of more MS generates economies of scale by alleviating the need for Member States to perform certain upgrades to their own system in order to reach the same level of service as the IMS. Furthermore it has brought a similar level of information previously available only to maritime authorities or other key authorities in the Member States at no marginal cost to other institutional actors within the Member States.

Furthermore, the IMS have had a demonstrable effect on the efficiency of the users at national level by making resources available for other work in certain elements or by alleviating the need for MS to make some upgrades to their systems which are otherwise available through the IMS or associated systems.

Examples of such benefits to Member States include:

- Alleviating the need for MS to invest in enhancing their capacity to monitor maritime information outside their area of responsibility (e.g. By facilitating the collection of data (LRIT) from other Member States)
- By generating useful ABM algorithms for multiple MS (e.g. monitoring ships coming from Africa within the time window of the quarantine period during the Ebola crisis)
- By providing unique services which no other MS have generated on their own (e.g. CleanSeaNet)
- Alleviating the need of maritime authorities to share data with other institutional organisations within their MS (e.g. as they now have access to similar data directly, through accessing the IMS)
- Reducing the amount of time necessary to respond to search and rescue operations (e.g. by having available data on both the vessel in distress as well as other vessels in the vicinity on a common platform)

3.4.3 To what extent do EMSA staff members find that they have sufficient resources and appropriate processes in place to carry out the work and fulfil the requirements/expectations?

Interviews with EMSA staff in the context of this study indicate that, for the purpose of designing and maintaining the IMS at a current level, the Agency has sufficient resources and appropriate processes in place. – It has been, however, mentioned that, given the growing number of users, the workload associated with technical and business support may generate the need for additional resources in the future. A full assessment of the expected increase in workload has not been conducted in the context of this case study.

3.4.4 To what extent do EMSA staff member find that internal communication and cooperation is sufficient and conducive to support their work?

No issues have been reported by EMSA staff on this subject.

3.5 Added value

3.5.1 To what extent would it be more/less/equally efficient and/or effective to have these tasks carried out at national or local level?

All interviewees agree that it is efficient for EMSA to develop and maintain the IMS. The value it brings to the users depends on a long list of factors (e.g.: the level of maturity of their own systems, the specific maritime circumstances, the capacity of their administration as well as many other factors), however it is clear that the absence of the work performed by EMSA would have a negative impact.

To exemplify this negative impact, interviewees have mentioned the following:

- A decrease in the level of cooperation between data providers and users leading to an overall decrease in the level of information available
- An increase in the costs, as investments by Member States would be required (see 3.4.2)
- The decrease of certain data elements (e.g. one MS mentioned that, in the absence of EMSA's work, they would lose access to Satellite AIS, while another mentioned that the extent of their reach will significantly be reduced to the area of responsibility).

4. CONCLUSIONS AND RECOMMENDATIONS

Overall, the case study shows that EMSA's work in the area of IMS has brought significant added value to Member State users, irrespective of the level of maturity and development of their own national maritime surveillance systems.

Importantly, EMSA has achieved this result through an active process of consultation with Member States which has generated an adequate level of trust and has ensured that Member States are invested in the results of the work further increasing its relevance and effectiveness.

From a back-office perspective EMSA has implemented the IMS effectively and efficiently, generating a robust and resilient IT system and providing a commendable level of technical support for users.

These findings are supported by evidence from multiple sources (interviews, survey and secondary data) from multiple types of stakeholders.

4.1 Should EMSA continue to deliver integrated maritime Services to Member States?

Given the added value of the services and the unique position EMSA finds itself in aggregating and delivering relevant maritime data, the results of this case study suggest that EMSA should continue to deliver IMS to MS.

Unequivocally, all interviewees expressed the same conclusion in the context of this case study.

4.2 What actions could be taken to improve the Agency's effectiveness, efficiency and/or added value?

Despite the positive conclusions expressed above, a number of very specific improvements have been suggested in the course of the case study and should be considered by EMSA. Examples provided by interviewees include:

- Maintain the current level of stakeholder engagement (which has been commended by several respondents) as a forum to maintain the relevance of the system for the users
- Increase the amount of training opportunities available for MS, in line with the growing number of users. (especially relevant for MS with multiple organisational users)
- Generate a better understanding of the amount of actual usage of certain parts of the applications and focus development on the areas which are more used in order to avoid over-stretching resources
- Increase the user-friendliness of the Graphical user interface (GUI) and continue work on reducing latency and increasing the speed of the application²⁴
- Continue the work in supporting Member States with developed systems by supporting enhanced system-to-system integration²⁵.
- Continue to engage with MS to provide additional indicators, tailored to the needs of the users (considering the resources necessary for generation of such indicators)
- Continue to allow Member States to define and configure their own scenarios and alerts in the context of the ABM services and ensure that MS are aware of the possibility to do so.
- Continue work on providing intelligence services in the form the foreseen Common Ship Database (CSD)²⁶.

²⁴ It is noted that there is an ongoing project (STAR) with the aim of decreasing latency, and increasing capacity for processing more maritime data, as well as improving the application backend response times

²⁵ An IMS Group Working Group tasked to collect the user requirements has been set-up and there is an internal EMSA project team tasked to work on its implementation.

²⁶ This development is already foreseen as the Common Ship Database (CSD) will be integrated within IMS in 2017.

5. ANNEX

5.1 Explanations on the methodology for calculating payment appropriation and total staff

The information on payment appropriations and total staff (see Figure 6 and Figure 7) were taken from the EMSA Annual Activity Report for the years 2013, 2014, 2015 and from the EMSA Annual Work programme for the year 2016.

EU VESSEL TRAFFIC MONITORING

Depending on the different years, the data in terms of payment appropriations and staff members for the EU Vessel Traffic Monitoring covers:

- **2013:** SafeSeaNet, Maritime Surveillance, Satellite AIS and IMDATE, and Cooperation with Frontex;
- **2014:** SafeSeaNet, IMDatE, Maritime Surveillance, cooperation with Frontex, Satellite AIS and Blue Belt;
- **2015:** SafeSeaNet, maritime surveillance, satellite AIS, IMDatE and FAL;
- **2016:** Integrated Maritime Services, Improving Internal Market and Maritime Transport Efficiency and SafeSeaNet.

EU LRIT CDC and LRIT IDE

The data for this sections cover:

- **2013:** the European Union Long Range Identification and Tracking Cooperative Data Centre (EU LRIT CDC) and the LRIT International Data Exchange (LRIT IDE);
- **2014:** The Long Range Identification and Tracking (LRIT) system, which consists of the European Union Cooperative Data Centre, the International Data Exchange, the LRIT Ship Database, and LRIT Consumption Tool;
- **2015:** The Long Range Identification and Tracking (LRIT) services, which consists of the European Union Cooperative Data Centre (EU LRIT CDC), the International LRIT Data Exchange (LRIT IDE), the EU LRIT Ship Database, and LRIT Consumption Tool;
- **2016:** The European Union Long Range Identification and Tracking Cooperative Data Centre (EU LRIT CDC); and the LRIT International Data Exchange (IDE).

MARITIME SUPPORT SERVICE

The tasks undertaken by the Maritime Support Services during the different years included:

- **2013**
 - Providing a 24/7 service helpdesk to users of all the vessel traffic monitoring and surveillance systems hosted by the Agency.
 - Continual monitoring of maritime applications hosted at EMSA.
 - Monitoring the data quality in, and the performance and continuity of, the national SafeSeaNet systems.
 - Providing a first point of contact, within the context of EMSA's Contingency Plan, for Member States whenever (operational) assistance was required.
- **2014**
 - Providing a 24/7 service helpdesk to users of all the vessel traffic monitoring and surveillance systems hosted by the Agency.
 - Continual monitoring of maritime applications hosted at EMSA, facilitating early incident management, and high availability and performance standards.
 - Monitoring the data quality in, and the performance and continuity of, the national SafeSeaNet systems.
 - Providing a first point of contact, within the context of EMSA's Contingency Plan, for Member States whenever (operational) assistance was required.
 - Since October 2014, providing EU member states with a weekly list of ships that departed from Ebola affected countries, and which have subsequently been detected in and around EU waters.
 - At the request of member states, providing near-real-time early warnings whenever notifications are received that ships from Ebola affected countries are bound for EU ports.
- **2015:**
 - Providing a 24/7 service helpdesk to users of all the vessel traffic monitoring and surveillance systems hosted by the Agency.
 - Continual monitoring of maritime applications hosted at EMSA, facilitating early incident management, and high availability and performance standards.

- Monitoring the data quality in, and the performance and continuity of, the national SafeSeaNet systems.
- Providing a first point of contact, within the context of EMSA's Contingency Plan, for Member States whenever (operational) assistance was required.
- Providing EU Member States with a weekly list of ships that have departed from Ebola affected countries, and, since June 2015, a weekly list of ships of interest has been provided to FRONTEX.

• 2016

An operational and technical helpdesk is available at EMSA to serve the Commission and Member State users of all the relevant services. The Maritime Support Services (MSS) helpdesk offers continuous (24/7) technical support in order to:

- Oversee the availability and performance of the EMSA operational maritime systems in accordance with performance requirements;
- Perform monitoring of systems and services. Activities include incident and problem management, user access assistance, technical support for testing, and management of security certificates;
- Ensure continuity of dataflow by data providers, contact them if this is interrupted, and verify and report on the quality of the data in the systems; Maintain the ship watch reference lists.

The MSS are also the single point of contact in EMSA for:

- Responding to requests in the event of a maritime pollution emergency (or during exercises) for mobilisation of EMSA operational services (oil recovery operations, dispersant spraying, pollution monitoring by satellite, technical information on hazardous materials), and alerting Member States authorities of potential oil spills;
- Responding to urgent requests for information by the Commission or Member States about ongoing accidents or incidents at sea.

5.2 List of references:

- EMSA: Annual reports 2012 to 2015
- EMSA: Work programmes 2012 to 2016
- EMSA: Consolidated Annual Activity Report 2012 - 2015.
- EMSA: (2014): Conclusions of 5th, 6th and 7th, IMDatE User Consultation Meetings
- EMSA: (2016): Statistics and KPI's 2011-2016 – internal documents
- EMSA: (2016). EMSA KPI 2016 Definitions & Methodology.
- IAS Audit on Maritime Support Services - Final Report

5.3 List of interviewees

Table 3: Lists of interviewees – EMSA Staff

| Name | Organisation and title |
|---------------------------|--|
| Samuel Djavidnia | EMSA - Senior Project Officer – Integrated Services and Design |
| Rodriguez Villaamil Oscar | EMSA - IMDate Platform Technical Manager |
| Fionn Molloy | EMSA - Deputy Head of Unit- Maritime Surveillance |

Table 4: Interviewed Member State officials

| Member State | Name | Position |
|-----------------------|-------------------|--|
| Croatia | Toni Maričević | Ministry of Maritime Affairs, Transport and Infrastructure |
| Netherlands | Edwin van der Pol | Netherlands Coastguard |
| United Kingdom | Phil Bostock | National Maritime Operations Centre (NMOC) |
| Cyprus | Themis Evriviades | Department of Merchant Shipping |
| Portugal | Nelson Santos | DSCTM - DIVISÃO DOS SISTEMAS DE CONTROLO DE |

| | | |
|----------------|------------------------------|--|
| | Marques | TRÁFEGO MARÍTIMO |
| France | Hervé Guichard ²⁷ | CEPPOL |
| Spain | multiple | ESP Navy – COVAM |
| Spain | multiple | Customs surveillance |
| Spain | Javier Castillejo Reyes | Directorate General of Merchant Marine |
| Finland | Antti Arkima | Finnish Transport Agency |

5.4 Correspondence table with evaluation questions

Table 5: Evaluation questions correspondence table:

| EQ | Descriptor | Case study section / question |
|-------------|--|---|
| EQ 1 | 1.2 Extent to which the objectives and tasks set out in the Regulation have matched the needs of stakeholders in the field of European maritime safety | 3.1.1 To what extent is it (still) relevant to have EMSA in charge of developing and running integrated systems for monitoring and surveillance of vessel traffic and pollution? |
| | | 3.1.2 Is there any other organisation in a position to provide a similar services to Member States |
| EQ 6 | 6.1 Extent to which EMSA's activities have produced the planned/desired outputs | 3.2.1 To what extent has EMSA's work in this field produced the desired outputs? |
| | 6.2 Extent to which the outputs (i.e. products/services) are being used by beneficiaries | 3.3.2 To what extent are the delivered outputs being used by the beneficiaries? |
| | 6.3 Extent to which the outputs produced have contributed to: • Improved quality and availability of objective, reliable and comparable information and data to MS | 3.3.3 Generally, what are the main benefits for Member States of EMSA providing Integrated Maritime Services? 3.3.4 Specifically, to what extent has EMSA's work in this field contributed to improved quality and availability of objective, reliable and comparable information and data to MS |
| | 6.3 Extent to which the outputs produced have contributed to: • improved ability of MS to prevent, deter and respond to maritime pollution | 3.3.4 Specifically, to what extent has EMSA's work in this field contributed to improved ability of MS to prevent, deter and respond to maritime pollution |
| EQ 7 | 7.2 Extent to which EMSA staff find that they have sufficient resources and appropriate processes in place for completing tasks in accordance with expectations in terms of time and quality | 3.4.3 To what extent do EMSA staff members find that they have sufficient resources and appropriate processes in place to carry out the work and fulfil the requirements/expectations? |
| EQ 8 | 8.1 Extent to which the achievement of the desired outputs and results (or lack thereof) can be attributed to other (external) factors outside the Agency's control | 3.3.6 Which other factors influenced the achievement of the desired outputs and results? |
| EQ 9 | 9.2 Extent to which the outputs and results generated from EMSA's work are | 3.3.7 To what extent has EMSA's work in this field contributed to a high, uniform and |

²⁷ Interviewed together with Vincent Lassourd and, Jean-Yves Carlier

| EQ | Descriptor | Case study section / question |
|--------------|---|--|
| | considered as having contributed to: <ul style="list-style-type: none"> High, uniform and effective level of maritime safety and security in Europe | effective level of maritime safety and security in Europe? |
| | 9.2 Extent to which the outputs and results generated from EMSA's work are considered as having contributed to: <ul style="list-style-type: none"> Efficient European maritime traffic and transport | 3.3.7 To what extent has EMSA's work in this field contributed to efficient European maritime traffic and transport? |
| EQ 10 | 10.1 Extent to which EMSA's stakeholders say that they are satisfied with EMSA's work | 3.2.1 To what extent are EMSA's stakeholders satisfied with the Agency's work? |
| | 10.2 Extent to which EMSA's stakeholders find that the outputs and results produced by the Agency match their needs | 3.2.2 To what extent do EMSA's stakeholders find that the outputs and results produced by the Agency match their needs? |
| EQ 11 | 11.4 Extent to which the work performed by EMSA can be said to: <ul style="list-style-type: none"> Produce similar results at lower costs, or Produce improved results at similar costs | 3.4.1 To what extent has EMSA been able to increase its efficiency in this area by producing similar results at lower costs, or improved results at similar costs? |
| | 11.6 Extent to which stakeholders agree that EMSA's work has contributed to reduced administrative burden for national authorities and the maritime industry | 3.4.2 To what extent has EMSA's work in this field resulted in reduced costs for administrations at national level? |
| EQ 15 | 15.2 Extent to which stakeholders agree that the same results could not have been achieved without the existence of a dedicated EU agency | 3.5.1 To what extent would it be more, less or equally efficient and/or effective to have these tasks carried out at national or local level? |