

# **Appendix B to Tender Specifications**

**Business  
Requirements the  
SSN Ecosystem  
GUI (SEG)  
and  
scope of the  
releases**

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**Definitions and acronyms**

Acronym	Description
AIS	Automatic Identification System
AIS SART	AIS Search and Rescue Transmitter
AIS SAR	AIS transmitter of the Search and Rescue units e.g. helicopters
ABM	Automated Behaviour Monitoring
CSN	CleanSeaNet
AOI	Area of Interest
POI	Point of Interest
TOI	Target of Interest
EIR	Electronic Inspection Report
ERS	Electronic Reporting System
EWS	Exchange Web Service
EEZ	Exclusive Economic Zone
ENC	Electronic Nautical Chart
EO	Earth Observation
FMC	Fisheries Monitoring Centre

Acronym	Description
GIS	Geographic Information System
GUI	Graphical User Interface
IDE	International LRIT Data Exchange
IMDatE	Integrated Maritime Data Environment
LRIT	Long-range Identification and Tracking of ships
LRIT-SAM	LRIT Sensitive Area Monitoring
MS	Member States
NCA	National Competent Authority
POC	Probability Of Containment
POD	Probability Of Detection
POB	Persons on Board
PSC	Port State Control
RPAS	Remotely Piloted Aircraft Systems
SA-VAS	Automated behaviour monitoring
S-AIS	Satellite AIS, AIS position reports received by satellite
SAM	SafeSeaNet Accident Module
SAR	Search and Rescue
SAR	For EO products, SAR means Synthetic Aperture Radar
SAR SURPIC	Search and Rescue SURface PICture
SEG	SSN Ecosystem GUI
SLA	Service Level Agreement
SRR	Search and Rescue Region
SSN	SafeSeaNet
SSN EIS	SafeSeaNet European Index Server
SSN-GI	Graphical Interface of SafeSeaNet

Acronym	Description
SSN-TI	Textual Interface of SafeSeaNet
STMID	Shore Based Traffic Monitoring Infrastructure Database
T-AIS	Terrestrial AIS, AIS position reports received by coastal stations or other ground based stations
UAV	Unmanned Aerial Vehicle
VDS	Vessel Detection System
WFS	Web Feature Service
WMS	Web Map Service
VMS	Vessel Monitoring System fisheries data
WUP	Web User Portal

## 1. Structure of the document

### User requirements

The user **requirements** for specific functionalities are described in the following chapters and are numbered using the naming convention **SSN\_ECOSYS\_GUI\_REQ\_X** and have an indication of their priority: higher priority “**P1**”, lower priority “**P2**”.

**Note** The priorities are of purely informative nature related to the business perspective.

Additionally, due to the nature of this particular project, information is given whether the functionality is present (or partially present) in one of the existing EMSA’s maritime application GIs or if it is a new feature (Available today: **New / Partially / Existing**).

**New** –means that particular requirement/functionality does not exist in any of the current interfaces

**Partially** – means that functionality exists in the current interfaces but may not handle the integrated data or specific data types described in the requirement

**Existing** - means that the functionality exists in one of the current interfaces and shall follow, the same or similar (described) implementation approach

Template

<b>Ref: SSN_ECOSYS_GUI_REQ_X</b>	
<b>Available today: New / Partially/ Existing</b>	<b>Priority: P1/P2</b>
<i>Description</i>	
<b>Application/ data used for the functionality:</b> SSN, IMDatE, LRIT, CSN, Other (specify), ALL	

Following the description of the user requirement(s) (*numbered SSN\_ECOSYS\_GUI\_REQ\_X*), indications are given regarding the specific data used per maritime application or whether this functionality uses all types of data (information from all maritime applications).

### Use cases

**Use cases** (*numbered SSN\_ECOSYS\_GUI\_UC\_X*) may be given in relation to the specific requirement or to a number of requirements.

Use cases are not binding in terms of their implementation but rather informative and explain how users envisage application of specific functionalities. Nevertheless, the use cases will be considered when verifying the implementation of the specific user requirements.

Template

<b>Use case No: SSN_ECOSYS_GUI_UC_1</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_X - SSN_ECOSYS_GUI_REQ_X; SSN_ECOSYS_GUI_REQ_X</b>
<b>Use cases (for information only):</b> < descriptive or figure>

## 2. Functional Requirements

### 2.1 Horizontal functionalities

<b>SSN_ECOSYS_GUI_REQ_1.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>The ship's latest position displayed and additional information</b>	
<p>The user shall have access to the latest position report as per his/her access rights (regardless of the tracking source i.e., LRIT, S-AIS, T-AIS, MRS, VMS, VDS or other).</p> <p>In practical terms the SEG shall be capable of displaying the most recent position reports of all the tracking systems and not just the latest position report.</p> <p>The target age shall be indicated with a use of colour code. User shall be able to activate a function allowing a colour coding of the most recent position based on the timestamp – for example: received within last 10 minutes -in green, in the last 20 minutes- in orange, in the last 30 minutes - in red.</p>	
<b>Application/ data used for the functionality:</b>	
ALL	

<b>SSN_ECOSYS_GUI_UC_1.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_1</b>
<p>Scenario 1: A user having access to VMS only, will see the most recent position report as presented below on 'B' text box.</p> <div data-bbox="453 1160 1168 1778" data-label="Image"> <p>The image shows a map with a ship's track. Three callouts are present: 'A. The most recent T-AIS' points to a black arrowhead at the top of the track; 'B. The most recent VMS' points to a blue ship icon on the track; 'C. The most recent LRIT' points to a pink ship icon on the track. The track itself is a line of green dots.</p> </div> <p>Figure 1- The latest position display</p> <p>Scenario 2: A user having access to LRIT position reports, will see the most recent position report as presented below on 'C' text box.</p> <p>Scenario 3: User activates the 'target age' presentation/display. The most recent positions of the</p>

vessels on the screen are colour coded in accordance with the time-stamp of the position report.

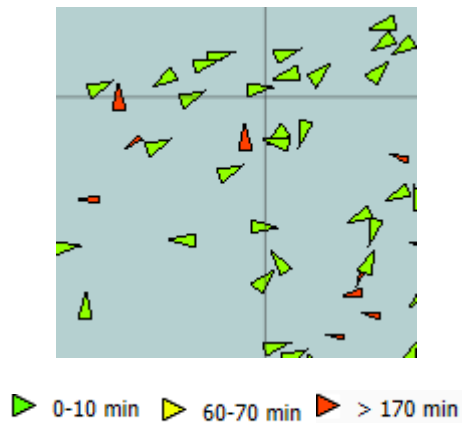


Figure 2 - Target Age

<b>SSN_ECOSYS_GUI_REQ_2.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>MRS positions display in the SEG</b>	
User shall see the MRS report sent by specific Member State (s) in a form of position report in the SEG. The MRS position report shall include all the information provided in the MRS Notification (MS2SSN_Ship_Not, MRS Notification), that is: the vessel identification, ship position and voyage information as well as the MRS and CST identifications. This information shall be treated in the same manner as other position reports (T-AIS, S-AIS, LRIT, VMS).	
<b>Application/ data used for the functionality:</b> SSN	

<b>SSN_ECOSYS_GUI_REQ_3.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>Display of the ship identifiers and dead reckoning linked with the most recent position.</b>	
<b>The ship identifiers</b> <ul style="list-style-type: none"> <li>- Shall be displayed in the label and the tool tips</li> <li>- The user shall be able to configure the display and the content of the labels and tool tips</li> </ul>	
<b>Ship dead reckoning</b> <ul style="list-style-type: none"> <li>- Shall be displayed</li> <li>- The user shall be able to configure the display of the dead reckoning</li> </ul>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_4.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>Time preferences</b>	
For all data elements the user shall be able to configure the following data and time parameters:	



<ul style="list-style-type: none"> <li>- Time zone</li> <li>- Time format</li> <li>- Position timestamp format</li> </ul>
<b>Application/ data used for the functionality:</b> ALL

<b>SSN_ECOSYS_GUI_REQ_5.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>User preferences</b>  The user shall be able to configure preferences, as defined in the Appendix B.VI. The user preferences can be saved and re-used in another session and is not shared with other users.	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_6.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Intelligent search functionality</b>  An 'intelligent search' functionality shall be implemented.  When making the intelligent search the user shall be able to search for the specific data type values which are currently displayed on the map. When typing text, the system will immediately display all results including: <ul style="list-style-type: none"> <li>• identified or named elements/layers of the SSN Ecosystem, for example: vessels' identifiers, ports, AOIs, accidents, detected/confirmed or potential pollutions; EO planned and delivered acquisitions, , Authority identifiers, etc.</li> </ul> Refer to Appendix B.III for relevant data values applicable to the search functions.  It shall be possible to <ul style="list-style-type: none"> <li>• Save last search criteria for re-using</li> <li>• Always include the latest position(s) of vessel(s) when performing any vessel related searches</li> </ul> <b>Alert messages</b> <ul style="list-style-type: none"> <li>• Should the search criteria be too large, the user should be informed with an alert message indicating the cause of the warning.</li> </ul> <b>Export search result</b> <ul style="list-style-type: none"> <li>• The user should be able to export the tabular search result to different formats,</li> <li>• The user should be able to export images or another type of data to relevant formats.</li> </ul> <b>Save search result</b> <ul style="list-style-type: none"> <li>• The user shall be able to save search results for further re-use</li> </ul> Refer to Appendix B.IV for the relevant export format definitions.	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_7.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Advanced search functionality</b>  When making an advanced search the user should be able to define criteria from the following identifier or the combination of the identifiers: <ul style="list-style-type: none"> <li>Set the search time period. (i.e. for EO data could be monthly and yearly basis over their national alert areas of interest).</li> <li>Search based on AOI or TOI (s) <ul style="list-style-type: none"> <li>Search among the identified or named elements/layers of the SSN Ecosystem, for example: vessels' identifiers, ports, AOIs, accidents, detected/confirmed or potential pollutions; EO planned and delivered acquisitions, authority identifiers,, etc.</li> <li>Save last search criteria for re-using</li> <li>Always include the latest position(s) of vessel(s) when performing any vessel related searches</li> </ul> </li> </ul> Refer to Appendix B.III for relevant data values applicable to the search functions. <b>Alert messages</b> <ul style="list-style-type: none"> <li>Should the search criteria be too large, the user should be informed with an alert message indicating the cause of the warning.</li> </ul> <b>Export search result</b> <ul style="list-style-type: none"> <li>The user should be able to export the tabular search result to different formats,</li> <li>The user should be able to export images or another type of data to relevant formats.</li> </ul> <b>Save search result</b> <ul style="list-style-type: none"> <li>The user shall be able to save search results for further re-use</li> </ul> Refer to Appendix B.IV for the relevant export format definitions.	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_8.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Area Centric Query (ACQ) and Playback/Replay function</b>  <b>Area Centric Query</b> The system shall allow a query linked with the specific rectangular area drawn by a user with the time configured. The results of the query shall, by default, be based on all information sources, and cover all historical tracks as well as the EO products, events and enrichment information. The results will, include the elements mentioned in the Appendix B.III under the Area Centric Query column.	

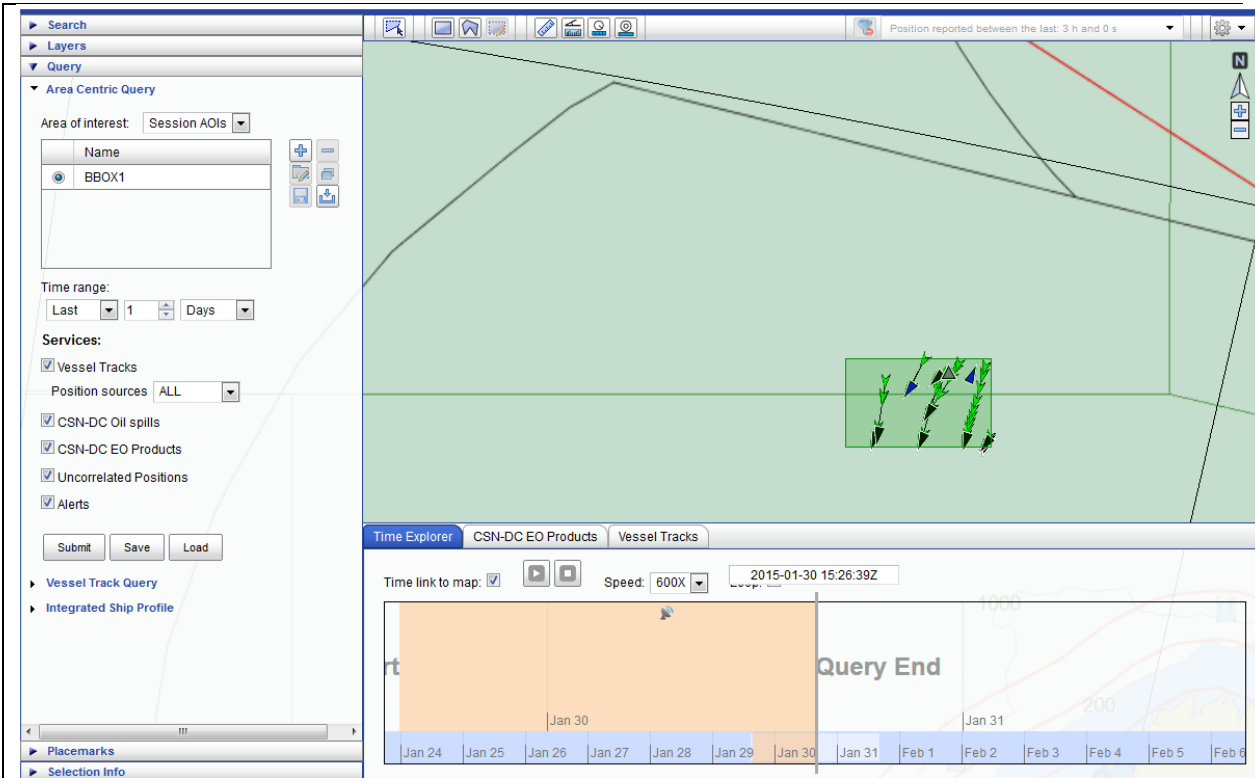


Figure 3 - Example of playback/replay function.

**Replay**

When selecting the replay/playback function, the movement of the selected ship (s) as well as the events associated with these movements (for example, reported port arrivals, incidents, any additional reported data e.g. piracy information) shall be displayed together with a time-slider.

The replay/playback shall be easily accessible for the default, pre-defined settings i.e. (single ship for last 24 hours, using all the tracking systems) however; advanced configuration shall be possible.

In the advanced configuration a user shall select specific area, time window, tracking source and the events presentation (for example replay based on a single tracking system, like S-AIS, displaying historical tracks and not to present any related events on the route, like accidents).

The zooming and panning as well as the basic map interactions shall be possible once the ACQ and Playback/Replay are activated.

The replay playback shall be available for a selected vessel with a minimum number of actions (configurations) required by the user.

For an area configured by a user only selected ships can be displayed in the playback/replay.

Information - The description above combines the existing: ACQ in the IMDatE WUP and the playback functionality of the SSN GI.

**Application/ data used for the functionality:**

ALL

**SSN\_ECOSYS\_GUI\_UC\_2.****Ref: SSN\_ECOSYS\_GUI\_REQ\_8**

Scenario: For investigation purposes a user would like know which ships were passing in the area closed for navigation during the 24hours of the previous day. User selects his AOI and activates the ACQ and the replay function in order to review the movements of the ships using all possible tracking systems, including the VDS for those uncooperative/unidentified targets (targets not maintaining their identifications transmissions or mandatory reporting).

Time slider is presented on the screen to allow an interaction and navigation to the specific moment in time as well as for controlling the speed of the display. Additionally, advanced configurations are to be made available: for example for the detailed time and event window configurations as well as the historical track parallel display and the events presentation.

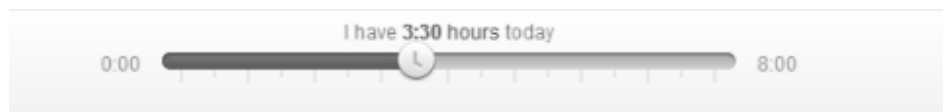


Figure 4 - Example of playback/replay function time slider.

**SSN\_ECOSYS\_GUI\_REQ\_9.****Available today: Existing****Priority: P1****Integrated Ship Profile**

The user should be able to query an Integrated ship profile, and which will provide and aggregated information for the vessel selected to include the vessel historical track for the last 6 months, all events related to the ship and as well as other events linked with the ship or its track for the time period specified by the user.

The historical track will depend on the available information and may be down sampled in order for the query not to time-out and for the user to get the meaningful results. Data types relevant for the Integrated Ship Profile (ISP) are described in the Appendix B.III.

**Application/ data used for the functionality:**

ALL

**SSN\_ECOSYS\_GUI\_REQ\_10.****Available today: Existing****Priority: P1****Integrated Ship Profile Datasheet (ISPD)**

The IMDatE planned integration of the ISPD shall be used as a reference for this functionality.

For a selected, single ship the user shall download from the SEG, in a pdf format, an Integrated Ship Profile Datasheet document containing the elements mentioned in the Appendix B.III. The ISPD shall cover the latest position of the ship as well as the enrichment information, events and the information from the reference data bases that are relevant for the ship.

Objective of the report is to provide to the user a simple, comprehensive and meaningful report of the selected ship, its movements and the related events.

The layout and the detailed presentation of the ISPD shall be defined at the development stage. The ISPD pdf report template shall be configurable by EMSA's system administrator.

**Application/ data used for the functionality:**

ALL

<b>SSN_ECOSYS_GUI_REQ_11.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<p>It shall be possible to filter ships based on the specific criteria as described in the Appendix B.III.</p> <p>Upon applying the filtering function, the result shall be a highlight of the selected vessels (e.g. all ships of a specified flag). Additionally it shall be possible to filter out the remaining ships with a simple action e.g. selecting an option 'filter out other vessels'.</p> <p>Filtering function shall be:</p> <ul style="list-style-type: none"> <li>• saved in user preferences with a possibility of re-using at each login</li> <li>• reused in other functionalities – TOIs, Risk Categorization etc.</li> <li>• clearly indicated in the display, e.g. with a message 'filter &lt;name&gt; applied'.</li> </ul>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_UC_3.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_11</b>
<p>Scenario: User would like to display the vessels of French flag, using the LRIT and VMS position reporting system. Upon applying filter the relevant vessels are highlighted and user may filter out the other vessels. The filter can be named and saved under user preferences to allow the same presentation upon first login to the system.</p>

<b>SSN_ECOSYS_GUI_REQ_12.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Targets of Interest (TOI)</b> <p>Targets of Interest (TOI) are a fixed list of vessels, points or areas (e.g. potential oil spills or incidents), selected manually by a user. TOI can be modified at any time (items can be removed). When creating a TOI(s) user will provide a name and generic description of the TOI(s) and will choose a style of the display.</p> <p><b>Selection of the targets of interest – TOI(s)</b></p> <ul style="list-style-type: none"> <li>• The user should be able <u>to manually select</u> the TOI (Targets of Interest), multiple TOI(s) or group of TOI(s).</li> <li>• The TOIs might be ships or graphical elements: potential oil spills. Refer to the Appendix B.III for the data elements being the selectable TOI(s).</li> <li>• Selected TOI(s) shall be visually distinguished from the remaining targets/ships/areas by means of a specific colour outline – refer to the Appendix B.V for the potential symbols for displaying of the TOI(s).</li> <li>• Selected TOI or TOI(s) should be as well distinguished one from another by means of different colours and outline style (outline width, line style)</li> <li>• The selection on TOI(s) shall not obstruct the other types of data presented on the screen.</li> <li>• The selection of the TOI(s) shall be active until disabled or deactivated by the user. The TOI(s) or their groups shall be saved with the user preferences.</li> <li>• The TOI(s) shall be editable, meaning that user could add or delete a specific target from the group of TOI(s) or modify their description.</li> </ul> <p><b>Style of the TOI selection and display</b></p> <ul style="list-style-type: none"> <li>• Shall be defined by each user separately</li> </ul> <p><b>Reusability</b></p> <ul style="list-style-type: none"> <li>• It should be possible to reuse the TOI(s) in other functions for the logged user.</li> </ul>	

Example: when searching, querying or filtering or upon creation of the alerting (SSN\_ECOSYS\_GUI\_REQ\_15).

#### Import TOI

It should be possible to import a list of the TOI(s) or group of TOI(s) from an external file, refer to the Appendix B.IV for the possible import formats.

#### Other:

- The selection and use of the TOI is a user preference, which can be saved and re-used in another session and is not shared with other users

#### SSN\_ECOSYS\_GUI\_UC\_4.

##### Ref: SSN\_ECOSYS\_GUI\_REQ\_12

Scenario: A user wants to highlight four ships involved in a Search and Rescue operation in a specific area in order to have an overview of the situation.

Scenario: A user responsible for an operation at sea has a number of patrol assets (vessels) allocated to a specific operation. He would like to distinguish them from the remaining targets on the screen to have a quick overview of their activities and location.

#### SSN\_ECOSYS\_GUI\_REQ\_13.

Available today: Partially

Priority: P1

#### Points of Interest (POI) and Areas of interest (AOI)

The user should be able to add Points of Interest (POI) and Area of Interest (AOI) by:

- Manually by drawing the a basic shapes: circle, line or a polygon area on the screen or dropping a POI marker;
- Inputting the coordinates manually in the system;

There shall be a possibility to import AOI from the external files (refer to the Appendix B.IV for the possible import formats).

#### Reusability

The selection and use of the POI and AOI is a user preference, which can be saved and re-used in another session and is not shared with other users. For example, the AOI or POI shall be re-usable when creating filters or alerts as well as in the Playback/Replay functions and shall remain on the screen unless user deletes or deactivates them.

#### Exception

The POI and AOI functions do not cover the definition of the LRIT Coastal Standing Orders or the CSN Alerting areas.

#### Application/ data used for the functionality:

ALL

#### SSN\_ECOSYS\_GUI\_UC\_5.

##### Ref: SSN\_ECOSYS\_GUI\_REQ\_13

Scenario 1: user would like to drop a POI marker when pollution has been reported in a specific position by a passing vessel.

Scenario 2: user would like to draw an area around an established traffic exclusion zone. The area will later be used for setting alerting functionality.

<b>SSN_ECOSYS_GUI_REQ_14.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<p><b>A User's Risk categorisation</b></p> <p>Each user shall be able to manually configure/define the following four risk levels related to the ship(s):</p> <ul style="list-style-type: none"> <li>• High;</li> <li>• Moderate;</li> <li>• Low;</li> <li>• Free text input defined by a user.</li> </ul> <p>Refer to the Appendix B.V for the indicative symbols for displaying the risk categorization.</p> <p><b>Symbols and colours</b></p> <p>For each of the risk levels there shall be specific symbols/ colours applied. In terms of display, the risk labelling shall be distinct and not obstruct the enrichment symbols (e.g. presentation of the ship carrying HAZMAT), labelling or the manual selection of the TOIs (outline).</p> <p><b>Risk levels and Criteria</b></p> <p>The risk categorization data values are provided in the Appendix B.III, column' risk categorization.</p> <p>The risk categorization is a user preference, which can be saved and re-used in another session and is not shared with other users</p> <p>For each of the risk levels the criteria shall be configurable by the logged user, based on the enrichment types defined in the Appendix B.III:</p> <ul style="list-style-type: none"> <li>• Information available in any of the tracking systems (for example name, flag, type of ship).</li> <li>• Information available in the enrichment (for example, HAZMAT, Incident information, PSC/THETIS Paris MoU 'black flag' categorization, PSC risk factor, type of HAZMAT cargo on board, Cargo Type based on AIS information,</li> </ul> <p><b>Risk level and TOI</b></p> <p>It shall be possible to assign a risk level to the TOI(s) as described in the SSN_ECOSYS_GUI_REQ_11.</p> <p><b>Inheritance</b></p> <p>The new ships assigned to the TOI(s) should automatically inherit the risk level assigned to the TOI(s) group, as such: when list of TOI(s) is assigned with 'Moderate' risk and a new vessel is added to the TOI list, then the new vessel inherits the 'Moderate' risk automatically.</p> <p><b>Reusability</b></p> <p>The risk categorisation shall be reused in the alerting functionalities and shall be available in the search and filtering functionalities.</p> <p>The search options shall include the risk categorisation, that is: high, moderate or low risk, as well as those ships which were not assigned a risk level.</p> <p>It should be possible to import a list of the TOI(s) or group of TOI(s) from an external file, refer to the Appendix B.IV for the possible import formats.</p>	
<p><b>Application/ data used for the functionality:</b></p> <p>ALL</p>	

<b>SSN_ECOSYS_GUI_UC_6.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_14</b>
<p>Scenario 1: User defines that a high risk vessel is a SHT from one of the flags included on the Paris MoU PSC Black list which is intending to enter his port.</p> <p>Scenario 2: User defines that a high risk ship is a ship carrying HAZMAT involved in an accident in the EEZ of his neighbourhood countries.</p> <p>Scenario 3: user manually selected TOI(s) which are carrying, according to his knowledge, sensitive or valuable cargoes and assign a moderate risk level to them.</p> <p>Scenario 4: EU NAVFOR user selects a group of TOI(s) which according to his internal categorisation/assessment are vulnerable to piracy attack. The group is assigned with a high risk. Once a new ship enters or leaves an area of operations the group of TOI(s) is modified manually by the user but it is still assigned with the specific risk level.</p> <p>Scenario 5: user searches for the ships which were associated with the moderate risk level in order to display them on the screen. The search option identifies the risk profile when user types a text 'moderate' and the selected ships are highlighted.</p>

<b>SSN_ECOSYS_GUI_REQ_15.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<p><b>Alerts</b></p> <p>This requirement describes how the alerts are set up and visualised, and only a general reference is made to the existing or new types of automated behaviour monitoring algorithms triggering the alerts.</p> <p>Alerting is a function set up by a specific user, which remains active for the selected time, even after the user logs out.</p> <p><b>Setting the alert</b></p> <p>The user shall be able to configure the following criteria for each alert:</p> <ul style="list-style-type: none"> <li>• area of interest</li> <li>• time (start and end of alerting)</li> <li>• targets or vessel(s) of interest</li> <li>• reporting mode (report - when an event occurs or the report containing a summary of the events over a time)</li> <li>• alerting method (email or specific message or on screen pop-up)</li> <li>• type of automated behaviour algorithms (algorithm to be used for the alert)</li> <li>• specific parameters of the automated behaviour algorithm chosen</li> </ul> <p><b>Alerting Methods</b></p> <p>The system shall allow alerting:</p> <ul style="list-style-type: none"> <li>• of the logged user - on the screen (sound and pop-up message)</li> <li>• of the offline users - by means of the email or a specific message or a file</li> </ul> <p>upon the detection of the specific ship behaviours or events within an area defined or predefined by a user during a selected time period.</p> <p>Note: The alerting interfaces will be discussed separately within the context of the automated behaviour algorithms development and implementation.</p>	



**Availability**

The alerts can be set up for:

- one particular ship, a group of ships or the existing TOI's (Targets Of Interest) and IUU (Illegal Unreported and Unregulated fishing vessels).
- Events in the area (incidents reported)

**Target Selection**

When selecting a ship or a group of ships for the particular alert all the parameters linked to a ship shall be taken into consideration, that is: those derived from the ship tracking (position within a certain polygon) or those linked with the ship and derived from other sources or enrichment data (for example based on the fishing gear type of a fishing vessel or an accident/incident type of ships in a specific area) as specified in the Appendix B.III under enrichment types.

**Area Selection**

Areas configured for the alerting could be selected from the AOIs or the existing geographical sets or central geo-registries (for example specific fishing areas, anchorages, CSN alert areas, SRR or EEZ) or manually configured by a user (creating a line, polygon or a circle on the screen) or imported using a file of a format specified in the Appendix B.IV.

There shall be an export function for the results of the ship alerting for example all alerts sent to a user, list of vessels entering the area) in a format specified in the Appendix B.V.

**Reporting Mode**

The user shall set up a report generation, based on the results of the particular automated behaviour algorithm.

The layout/style of the report will be defined with the contractor during the development phase.

It shall be possible according to a recurring period or to a fixed period. There shall be two types of reports: (1) when an event occurs or the (2) report containing a summary of the events over a time.

**Timing**

There shall be a possibility to set up a time during which the specific alerting is active.

**Type of automated behaviour monitoring algorithms (for information only)**

While it is out of scope of this document to define the full list of possible automated behaviour monitoring algorithms, we foresee the following possibilities:

- Ship behaviour;
  - Entry to the area (both a pre-defined area and a user defined/configurable area).
  - Leaving the area.
  - Approaching an area within a configurable distance.
  - Passing through the area.
  - Close encounter at sea.
  - Sudden course/speed change.
  - Deviation from the planned route.
  - Nearing a certain point or within range of certain point (e.g. port, fish farm, sensitive area, patrol ship, etc.).
  - Incident/accident of the ship.
  - Arrival or departure to or from a specific port or a country.
  - Idle ships.
  - Close encounter with another ship that has previous been identified as undertaking one of the behaviours listed above.

It shall be analysed whether a detection of an alleged transmission of the incorrect position report (spoofing) or switching off ship's reporting systems (AIS, VMS for example) in a specific area are feasible.

Some of the events are not linked with particular ships but with events related to the specific area (for

example an accident of an unknown/unidentified/not tracked ship – SafeSeaNet; or a pollution of unknown source in the alerting area – SafeSeaNet POLREP), as such the user shall be able to select from the additional types of alerts:

- Pollution detections;
  - POLREP potential pollutions.
- Activity detection;
  - Incidents.

Appendix B.III provides the list of data types to be used for this functionality under the 'Alerting' column.

**Application/ data used for the functionality:**

ALL

**SSN\_ECOSYS\_GUI\_UC\_7.****Ref: SSN\_ECOSYS\_GUI\_REQ\_15**

Scenario 1: User would like to be alerted by means of an on-screen alert or an email when any fishing vessel equipped with drift nets (as the main gear) enters (by means of a high level alert) or approaches within X nautical miles of (by means of a medium level alert) an area prohibited for fishing between 01 January 2015 and 31 January 2015.

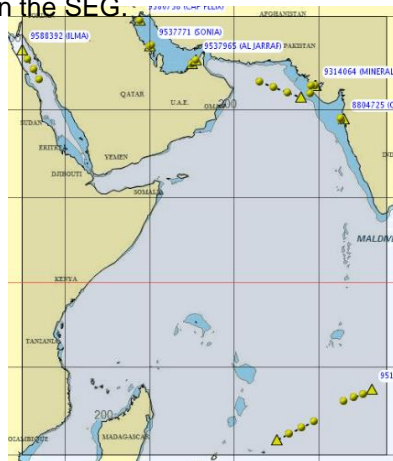
Scenario 2: User would like to be alerted whenever a vessel carrying dangerous and polluting goods is involved in an incident 40Nm off of Cabo de Roca.

Scenario 3: User would like to be informed when vessel IMO 9456875 has reported its planned arrival or actual arrival at the port of Le Havre.

Scenario 4: User from a maritime administration would like to be alerted whenever a ship flying a 'black' flag as per Paris MoU PSC categorisation enters in to their EEZ.

**Scenario 5: LRIT Sensitive Area Monitoring (LRIT-SAM) display of the information**

The system allows the detection and alerts which are currently included in the EU LRIT DC which would now be shown on the map in the SEG.



**Figure 5 - Example of current LRIT map alert.**

This would allow for on screen (sound and pop-up and by means of the email or text message) upon the detection of a specific ship entering or leaving an area or predefined area by a user.

If the user has the relevant access rights he/she can view the active LRIT- SAM areas. The active area should have a relevant label indicating the monitoring operation (i.e. EU NAVFOR ATALANTA operation). The user should be able to export the data from any of the ships or more than one ship to a format specified in the Appendix B.IV.

**SSN\_ECOSYS\_GUI\_REQ\_16.****Available today: Partially****Priority: P1****Historical Track**

The configurable/selectable historical track of the ship for last 24 hours shall be based on the integrated ship data, derived from all the tracking systems the user is authorized to view.

The 'advanced' historical track shall be additionally configurable, allowing user to select the tracking system(s) used as well as the time period (beyond the basic 24 hours) for the last 6 months.

In case the number of positions in the 'advanced' historical track cause the considerable performance impact, the user shall be warned by the system and shall be offered with an option to display a down-sampled data.

The historical track displayed on the map shall allow a presentation of all timestamps or those selected by the user.

**Application/ data used for the functionality:**

ALL

**SSN\_ECOSYS\_GUI\_UC\_8.**

**Ref: SSN\_ECOSYS\_GUI\_REQ\_16**

Scenario 1: A user would like to display a historical track of a ship crossing the Atlantic from Felixstowe to Jacksonville based on the LRIT and S-AIS information.

Scenario 2: TOI had a malfunction of the AIS equipment. User would like to display the historical track based on the LRIT historical/archived information.

Scenario 3: User would like to compare the VMS with the AIS transmissions from an on-board equipment of the fishing vessel.

Scenario 4: An LRIT NCA would like to display an LRIT historical track of their flag ship for the last 3 weeks. The system will display the data based on the archived position request made to the LRIT CDC.

**SSN\_ECOSYS\_GUI\_REQ\_17.**

**Available today: Partially**

**Priority: P1**

**SSN Enrichment information**

The SSN Ecosystem SEG shall display additional information provided by the EU Member States in the SSN EIS or other interlinked systems (further referred to as "SSN enrichment" as defined in Appendix B.III in addition to the latest position report (regardless of the tracking system used e.g. LRIT, S-AIS, T-AIS, MRS, VMS, VDS or other).

There shall be specific icons or labelling proposed for the enrichment data.

The vessel enrichment information shall be derived from:

- the relevant PortPlus notifications and shall include,
  - voyage related HAZMAT, Incident, Waste, Security information.
  - voyage related POB, Passenger and crew lists (Note for information only: Passenger and crew lists are not compulsory information in SSN at the moment, as such they will not be available for all ships).
- exempted ships – ships that are exempted from the pre-arrival and/or Hazmat (Directive 2002/59/EC: Article 15), or Security (Regulation (EC) 725/2004: Article 7) or Waste (Directive 2000/59/EC Article 9) reporting requirements and which are registered/recorded in SSN.  
In case of exemptions, the enrichment information shall not be linked with a particular voyage but displayed 'for information' with a possibility of requesting details. In this sense, user will see that a ship has exemptions granted but will have to request for details to get specific information for which services it is applicable,
- MRS information and details – reported by ships in the EU waters (Note: The MRS is considered as a ship position system, providing the identification, position and the timestamp)

<ul style="list-style-type: none"> <li>Incident/accidents information.</li> <li>Status of the single hull tankers (SHT) or banned ships (only the enrichment flag)</li> <li>Specific "ad hoc" data requested by the users (i.e. specific EUNAVFOR data).</li> </ul> <p>The enrichment information shall be reflected in either vessel symbols and in the specific labelling of the ships.</p> <p>If there is no link between a ship or port and the event, (for example, when a pollution of unknown source has been detected/ reported) the additional/enrichment information shall be presented at the reported location of a specific event. As such the event will not be linked with a ship or a port but only with a geographical location.</p>
<b>Application/ data used for the functionality:</b> SSN

<b>SSN_ECOSYS_GUI_REQ_18.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Port Enrichment</b> <p>The SEG shall display additional information provided by the EU Member States in the SSN EIS or other interlinked systems (further referred to as 'Port Enrichment' as defined in Appendix B.III) and link it with particular port locations.</p> <p><b>Port Data</b></p> <p>The port enrichment information shall be a list derived from the reported SSN data on expected arrivals, departures and ships in ports (in the future the source data be expanded to additional information sources such as THETIS and MARINFO information on arrivals, departures, intended ship calls).</p> <p>The information presented shall cover, in a tabular form:</p> <ul style="list-style-type: none"> <li>Expected arrivals</li> <li>Ships expected to leave soon (expected departures)</li> <li>Ships in Port</li> </ul> <p>There shall be a quick way of displaying or highlighting the above mentioned ships on the map (except the ships in port).</p>	
<b>Application/ data used for the functionality:</b> SSN	

<b>SSN_ECOSYS_GUI_REQ_19.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>SSN Voyage related information</b> <p>The system shall present the user, as linked with the latest position report (regardless of the tracking system used e.g. LRIT, S-AIS, T-AIS, MRS, VMS, VDS or other) the basic SSN voyage related information;</p> <ul style="list-style-type: none"> <li>- Destination and ETA.</li> <li>- Previous port, and ATD/ETD.</li> <li>- Last Port, and ATD/ETD.</li> </ul> <p>and, additionally the system shall allow a presentation of an expandable list of</p>	

<ul style="list-style-type: none"> <li>- Planned/expected 10 port calls.</li> <li>- Full list of the last 10 calls</li> </ul> <p>The basic voyage information shall be readily available while the expandable list could be recalled upon a specific action from a user (icon or a button click)</p>
<b>Application/ data used for the functionality:</b> SSN

<b>SSN_ECOSYS_GUI_REQ_20.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>SSN data requesting</b>  The specific, detailed information based on the enrichment, shall be made available to the user on request. Requesting for the SSN data shall be transparent to the end user and made on with minimum number of actions ('clicks'). There shall be a 'short path' selection to get the specific data.	
<b>Application/ data used for the functionality:</b> SSN EIS	

<b>SSN_ECOSYS_GUI_UC_9.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_20</b>
Scenario: For a vessel has been identified as carrying HAZMAT, the user would like to quickly get the details without needing to switch to different tabs/ functions in the graphical user interface.

<b>SSN_ECOSYS_GUI_REQ_21.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>SafeSeaNet Events display</b>  There shall be a display of the SSN related events (notifications) possible on: <ul style="list-style-type: none"> <li>- The configurable historical track of the ship - presenting the event linked with the position (voyage) of the ship, that is, for example when a Port+ with HAZMAT was reported and by whom.</li> <li>- The configurable event timeline, that is the Integrated Ship Profile, related to the ship – displaying the moment (date /time) when a particular notification has been sent, and by whom, as well as the validity period (how long the particular notification is valid, for example in case of HAZMAT reporting until the next port or for the period of the voyage around European coasts).</li> </ul>	
<b>Application/ data used for the functionality:</b> SafeSeaNet	

<b>SSN_ECOSYS_GUI_REQ_22.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>SAM – SafeSeaNet – SafeSeaNet Accident Module- background information</b> The SafeSeaNet Accidents Module (SAM) combines information on significant accidents from MS incident reports provided to SSN (e.g. sinkings, groundings, collisions, contacts, fires, explosions, loss of life, significant injuries/pollution/cargo loss, etc.) and from other sources (e.g. the European Commission media monitoring service, commercial maritime information systems and a wide range of maritime-oriented Internet sources). The information is used, both to feed the module, and also to produce daily accident reports for EU decision makers and technical /operational support staff. The main three SAM components (GUI, database and input tool) are now to be transferred to the SSN Ecosystem.	
<b>SAM data display</b> The detailed information regarding the accident/incident shall be presented on the screen without the need to switch to different tabs/functions in the application. The display and presentation shall follow	

the general rules and principles as set up in the *3.1 Usability, ergonomics – general principles and drivers*.

The current SSN GI display of the SAM should be used as a reference for implementation of the module. The SEG shall be able to fully replicate the functionality currently available in the to-be-deprecated SSN GI and display the SAM information for authorised users in the following ways:

- The details of all accidents/incidents in the SITREP/POLREP and SAM databases (e.g. type of accident, position, date, time, detailed description).
- The details of the ships involved in each accident/incident (type, tonnage, build year, IMO number, MMSI number, call sign, class, flag and country of owner/manager – as made available in the SAM).
- There should be a link to ship positions and historical tracks, in order to be able: to see the latest and historical positions of all ships involved in accidents that are transmitting AIS signals in and around EU waters at the selected time, and to be used as input to functionalities such as risk categorisation, alerting/surveillances, density maps, replay/playback, etc.
- User-friendly icons to represent the different types of accidents/incidents.
- An information display capability based on the mouse hovering over the location of an accident/incident.
- The ability to present all information on the video wall in the MSS Operations Centre for visitors to EMSA.

and additionally it shall allow search and filtering for the accident/incident(s) based on

- the criteria included in the SAM, for example on the time criteria, identifiers of the involved ships(s) or the location of the accident/incident
- A filtering capability to enable the display of all possible combinations of the information (both on the SEG map and also in tabular form).

In terms of presentation specific icons and labels shall be applied:

- per accident type, location of the accident and its description as well as the vessels involved.

The SAM information shall be considered as an external enrichment information to the ship position and track, (and is distinct from the SafeSeaNet Incident Reports (Alerts) from the Member States.

The winning bidder will be provided with the relevant existing documentation for the SAM module.

**Maritime Application/ data used for the functionality:**

SSN, External sources, EMSA EWS, SafeSeaNet Accident Module (SAM)

**SSN\_ECOSYS\_GUI\_UC\_10.**

**Ref: SSN\_ECOSYS\_GUI\_REQ\_22**

Scenario 1:

An authorised user shall be able to:

- Know and display the exact locations of all or selected accidents/incidents that have happened.
- Have all readily available information on all or selected accidents/incidents.
- Have all readily available information on the ship(s) involved.
- Know the present and historical positions of ships that have been involved in accidents/Incidents.
- Present the overall view of accidents/Incidents in and around EU waters on a graphical interface to selected EMSA MSS centre visitors.
- Present the accidents/incidents linked to a ship on her historical track.
- Present the density of the accidents per type and location.
- Assign an alerting based on a specific incidents/accident for a selected ship or a location (area).

<b>SSN_ECOSYS_GUI_REQ_23.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Enrichment from other (existing) sources of information</b>  <p>The enrichment shall be also possible based on additional criteria provided by the existing IMDatE users for their specific operations. For example, it may cover information provided or requested by a specific community, like Fisheries, EUNAVFOR or Customs in a defined format and display the additional information provided:</p> <ul style="list-style-type: none"> <li>- Ships under reporting or in the area covered by the Naval Cooperation and Guidance for Shipping (NCAGS).</li> <li>- Ships trading between EU ports only as per BlueBelt concept</li> <li>- Ships engaged in the ad-hoc reporting scheme set up by a Member States or group of Member State(s) in a specific area (for example a non-IMO approved MRS or new EU wide IMO approved MRS).</li> <li>- Fisheries mandatory reporting data (i.e. ERS, EIR, Catch reports).</li> </ul>	
<b>Application/ data used for the functionality:</b> Other external information sources	

<b>SSN_ECOSYS_GUI_UC_11.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_23</b>
<p>Scenario 1: NCAGS has been established in the EU waters in an area close to the war/conflict zone/coast/country, Specific symbols or labels are assigned to the ships participating in the NCAGS and additional information from the reporting.</p> <p>Scenario 2: A group of Member States decided to establish a reporting system or a Mandatory Reporting System and displayed specific information provided by the ships within the reporting scheme.</p> <p>Scenario 3: Customs offices of Member States would like to obtain more information about ships and their cargoes within the EU to assist the decision-making process of custom authorities and facilitate custom procedures. Selected ships (BlueBelt ships) will be presented with additional information regarding their status.</p>

<b>SSN_ECOSYS_GUI_REQ_24.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Enhanced SAR SURPIC service</b>  <p>The system shall allow the authorised users to perform an Enhanced integrated SAR SURPIC request (request for the latest positions and identification of the ships within a defined area for Search and Rescue purposes), by using all of the position reports available. Note that for the LRIT position reports it concerns the maximum of 4 positions available in the last 24 hours.</p> <p>The SEG shall display all the integrated SAR SURPIC information (positions from all tracking systems) instantaneously and shall refresh automatically in case an additional data is received (for example LRIT position reports from other Data Centres).</p> <p>The current available back-end solution for the Enhanced SAR SURPIC shall be followed.</p>	
<b>Application/ data used for the functionality:</b> ALL	



<b>SSN_ECOSYS_GUI_REQ_25.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>AIS SART and AIS SAR means display/presentation</b>	
There shall be specific presentation/symbols for the AIS SART data and AIS information transmitted by the SAR means (e.g. helicopters).	
<b>Application/ data used for the functionality:</b> T-AIS, S-AIS	

<b>SSN_ECOSYS_GUI_REQ_26.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>AIS presentation of the base stations</b>	
There shall be a specific, permanent presentation/symbols for the AIS based stations based on the: <ul style="list-style-type: none"> <li>- (dynamic) Transmissions of the stations with the MMSI starting with 00MID identification</li> <li>- (static) Layers of the AIS based stations based on the reference databases/data available in -house</li> </ul>	
<b>Application/ data used for the functionality:</b> T-AIS, S-AIS	

<b>SSN_ECOSYS_GUI_REQ_27.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Display of video data streams from different sources (e.g. EO satellites, UAV - Unmanned Airborne Vehicles; or RPAS - Remotely Piloted Aircraft Systems).</b>	
The current/recent implementation of the video data streams from UAC or RPAS in the IMDatE shall be used as a reference for this functionality.	
Whenever a video data stream (for example an acquired optical image or video stream from an UAV) is available the SEG shall display it using a specific icon, time information and the location.	
The display of the video data stream shall be presented to the user in such a manner that it does not obstruct the remaining data on the screen.	
The SEG shall allow export of the video data stream.	
The video data stream shall be available in the search queries and filtering options as well as for the alerting/surveillance/watchdog setups.	
Video data shall be made available in both live mode and historical mode.	
The [continuous] footprint of the platform which produces/transmits the video shall also be displayed to the user (on demand).	
<b>Application/ data used for the functionality:</b> Video data stream platform/ sensor	

<b>SSN_ECOSYS_GUI_UC_12.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_27</b>
Scenario: A user would like to know where the location of the recent UAV acquisitions was and view them. The user will be presented with an icon representing the UAV acquisitions at their location for the pre-defined period of time. When a video or photo has been taken it will be geo-referenced and

time referenced. Upon clicking on the UAV acquisition icon user will be to view the acquisition (video or photo) as well as the UAV track.



Figure 6 -Example of video streaming icon display.

<b>SSN_ECOSYS_GUI_REQ_28.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Upload imagery and video data streams from different sources (e.g. cameras, EO satellites, UAV - Unmanned Airborne Vehicles; or RPAS - Remotely Piloted Aircraft Systems).</b>	
A user shall be able to upload/import an image and/or a video data stream (for example an acquired optical image or video stream from an UAV) to the SEG. The uploaded shall be geo-referenced and made available to other authorised users, following the requirements given in the SSN_ECOSYS_GUI_REQ_27.	
<b>Application/ data used for the functionality:</b> Video data stream platform/sensor	

<b>SSN_ECOSYS_GUI_UC_13.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_28</b>
Scenario 1: A user acquired a video stream from the UAV in his area of operation. In a period 15- 20 minute of the flight there was a ship detected and filmed apparently illegally dumping waste. The user would like to share the 5 minutes video stream with others. He/she will upload and geo-reference the video data stream to the SEG.

<b>SSN_ECOSYS_GUI_REQ_29.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Density maps</b>	
In order to display a particular density map, the user shall only configure:	
<ul style="list-style-type: none"> <li>- The month, quarter or a year, and</li> <li>- Type of density map</li> </ul>	
Once produced, it shall be possible to export the density maps to an image file format (as defined in the Appendix B.IV.)	

The density maps shall be presented as static layers. The produced density maps shall work with standard zooming and panning ensuring smooth and good quality display of the density map even at a high-resolution.

The generation of the density maps is not ad-hoc, user-driven functionality. We envisage that a number of density maps will be produced by external or back-end services routinely and made available (displayed to users) through the SEG.

For information purposes, we assume the need for the following density maps:

- Traffic density maps based on all available sources of information (integrated density maps)
- EO density maps – showing the potential oil spills
- EO density maps – showing the frames of the acquisitions
- SSN Incident density maps – showing the locations of the incidents reported by Member States

The density maps shall be produced by the external or back-end services world- wide, with monthly, quarterly and yearly frequency.



Figure 7 - Example of a vessel traffic density map.

**Application/ data used for the functionality:**

ALL

**SSN\_ECOSYS\_GUI\_REQ\_30.**

**Available today: New**

**Priority: P1**

**Link to the Fisheries Data**

Where relevant (for example for the fishing vessels information) there shall be a link provided to the relevant entries in the EU Fleet Register on the European Commission website. The user accessing particular fishing vessel data shall be provided with a relevant link to the data registered in the EU Fleet Register for the selected ship.

**Application/ data used for the functionality:**

<http://ec.europa.eu/fisheries/fleet/index.cfm?method=Search.menu>

**SSN\_ECOSYS\_GUI\_REQ\_31.**

**Available today: New**

**Priority: P2**

**Access to external/ interoperable EO catalogues**

Through the SEG the user shall be able to connect to external interoperable Earth Observation catalogues in order to request information and display satellite imagery which is not specifically stored in the EMSA EO DC.

As part of the Copernicus Data Access System (CSCDA) the European Space Agency is developing the Copernicus Coordinated Data Access System (CDS) which implements the link between the different EO data providers and Copernicus Users and ensuring the long term data archive. The CDS offers users a dedicated interface for querying the ESA and Contributing Missions catalogues and to browse the collections of EO data of both missions. The CSCDA and CDS are built and provide interoperable interfaces using Heterogeneous Missions Accessibility (HMA) technology and OGC standards.

The user shall be able to connect to the ESA CDS through the SEG, and be able to enter a time, area and product type criteria to discover the relevant product(s) in the external archive. The user shall be able to browse the returned meta data and obtain further information about the collections and products available from the external provider. If made available by the external catalogue, the user shall be able to display the product (i.e. satellite image) directly on the SEG map via standard WMS services.

Note: this requirement does NOT cover the use case scenario where “future” planned satellite imagery is ordered (for subsequent delivery), nor the ordering (for subsequent downloading) of the satellite image dataset itself.

**Application/ data used for the functionality:**

EO satellite imagery from both ESA and Contributing Missions.

## 2.2 Specific mandatory LRIT requirements


<b>SSN_ECOSYS_GUI_REQ_32.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<p><b>LRIT Requests</b></p> <p>LRIT authorized users shall be able to request LRIT positions which will be later displayed through the SEG. The request menu shall include:</p> <ul style="list-style-type: none"> <li>• Polling, most recent position,</li> <li>• Periodic Rate Change, and</li> <li>• Archive Request (for the request using the archived position reports (see SSN_ECOSYS_GUI_REQ_9, SSN_ECOSYS_GUI_REQ_16 ).</li> </ul> <p>It shall be noted that the SEG allows only the request and displaying of the position reports, while the EU LRIT CDC will contain the underlying mechanisms and message treatment.</p> <p>The resulting positions will be displayed in the SEG and will be displayed as one of the ship tracking systems with the same level of detail as what is currently displayed on the EU LRIT CDC User Web Interface (UWI). As an example the figure below is presented:</p>  <p><b>Figure 8 - : Example of current LRIT position display.</b></p> <p>For the polling and periodic rate change, the user shall be presented with a clear, on-screen warning informing him/her that this is a paid service which will be billed to the indicated financial contact point for the LRIT.</p> <p>The warning shall also include the information on the price for the particular request, for example LRIT Poll (XX €), Most Recent Position (XX €), etc. and shall follow a 2 step validation of the request (meaning an additional acknowledgment from a user following a warning on paid services).</p> <p>Graphical information of previous position reports shall be displayed when archived information is requested.</p>	



Figure 9 - Example of current LRIT position display.

**Application/ data used for the functionality:**  
LRIT

SSN_ECOSYS_GUI_REQ_33.	
Available today: Existing	Priority: P1
<b>LRIT Coastal Standing Order (CSO)- visualization of positions and coastal standing order polygons.</b>	
<p>This allows the user to view all the coastal standing order polygons on the map. Furthermore, when the coastal standing order is activated in the EU LRIT CDC, the positions can be viewed on the SEG map. Again as mentioned earlier for the requests, the mechanisms for the coastal standing order will remain at the EU LRIT DC level and will only be viewed here on the SEG map.</p> <p>The display should be done in a similar way to what is currently present in the EU LRIT CDC UWI (see Figure 10). The coastal standing order polygon should be visible when the standing order is activated the ship tracks should also be visible on the map. It should be clearly visible when a ship is entering or leaving the coastal standing order area. The user should be able to export the data from any of the ships or more than one ship in various formats (i.e. csv, excel, etc.). The standing orders will only be viewed if the relevant user has the right access rights to do so.</p>	
A map showing a coastal area with a blue polygon representing a coastal standing order. The polygon is labeled 'PSSA'. There are also labels for '9501954 (A)', '9279123 (PALLIET ER)', and 'Brug'. The map includes geographical features like landmasses and water bodies.	
<p>Figure 10 - Example of display of coastal standing order polygons.</p>	
<b>Application/ data used for the functionality:</b> LRIT	

**SSN\_ECOSYS\_GUI\_UC\_14.****Ref: SSN\_ECOSYS\_GUI\_REQ\_33****Use cases (for information only):**

Scenario: A user having received an alert that a specific ship has entered a SAM area or is in a coastal standing order of interest, he/she would like to increase the reporting rate of the relevant ship.

He places a request and the result is displayed on the map. The user should be able to export the data from any of the ships or more than one ship in various formats (i.e. csv, excel, etc.).

Request window as it currently is displayed in the EU DC:

The screenshot displays the SSN\_ECOSYS\_GUI interface. On the left, a map shows a ship's track (yellow dots connected by a dashed line) passing through a coastal area. The map includes labels for ship IDs (1071005, 1071011) and coordinates (2000, 3000). On the right, a configuration window for requests is visible. It includes fields for Contracting Government, Access type (set to Coastal), and Request type (set to Positions every 15 min). Below these are fields for ship ID, start/end dates, and a 'Send' button. At the bottom, a table lists recent requests with columns for Date, Request type, Start date, End date, Ship, and IMO number. The table shows a list of requests, with the first two rows highlighted in red. The first row is for ship ITA1071001, and the second row is for ship ITA1071001. The table also shows requests for other ships like BEL1014001, FRA1050020, and DEU1054021.

Date	Request type	Start date	End date	Ship	IMO number
14/11/2014 12:23:31	Positions every 15 min	14/11/2014 12:23:31		ITA1071001	1071001
14/11/2014 12:15:25	One time poll of ship	14/11/2014 12:15:25		ITA1071001	1071001
04/09/2014 16:30:41	One time poll of ship	04/09/2014 16:30:41		BEL1014001	1014001
03/09/2014 09:45:23	SAR SURPIC				
03/09/2014 09:40:15	One time poll of ship	03/09/2014 09:40:15		ITA1071002	1071002
03/09/2014 09:33:59	SAR SURPIC				
02/09/2014 16:59:17	Most recent position report	02/09/2014 16:59:17		FRA1050020	1050020
02/09/2014 16:57:52	Most recent position report	02/09/2014 16:57:52		DEU1054021	1054021
02/09/2014 16:55:20	Most recent position report	02/09/2014 16:55:20		ITA1071002	1071002
02/09/2014 16:53:11	Most recent position report	02/09/2014 16:53:11		ITA1071016	1071016
02/09/2014 16:43:06	One time poll of ship	02/09/2014 16:43:07		BEL1014001	1014001
02/09/2014 16:34:33	One time poll of ship	02/09/2014 16:34:33		ITA1071022	1071022
02/09/2014 16:33:32	One time poll of ship	02/09/2014 16:33:32		ITA1071002	1071002
02/09/2014 16:31:52	Positions every 15 min	02/09/2014 16:31:52	03/09/2014 00:00:00	ITA1071001	1071001
02/09/2014 16:27:26	Most recent position report	02/09/2014 16:27:27		ITA1071022	1071022

Figure 11 - Example of LRIT configuration for increase ship reporting rate.

**SSN\_ECOSYS\_GUI\_UC\_15.****Ref: SSN\_ECOSYS\_GUI\_REQ\_33****Use cases (for information only):**

A user wants to poll a ship. He receives a warning on the SEG that this is a paid request.

He places a request and the result is displayed on the map. The user should be able to export the data from any of the ships or more than one ship in various formats (i.e. csv, excel, etc.).

Request window as it currently is displayed in the EU DC:

The screenshot displays the SSN ECOSYS GUI. On the left, the 'Request configuration' window is open, showing the following details:

- Contracting Government:** Belgium
- Access type:** Flag
- Request type:** One time poll of ship
- Dates:** Start date and End date fields.
- Port details:** Port or port facility field.
- Distance in nautical miles from the port to start tracking the selected ships:** Input field.

On the right, a map of the Tyrrhenian Sea is shown, with a ship icon labeled '1071020' and a yellow triangle icon. The map includes labels for 'B.co di Filicudi', 'La Camis', 'Filicudi', 'Cao Graziano', and 'TYRRHENIA'.

Below the map, the 'Manage requests' window is open, displaying a table of requests. The table has columns for Date, Request type, Date, Ship, and IMO number. The first row is highlighted in red.

Date	Request type	Date	Ship	IMO number
14/11/2014 12:15:25	One time poll of ship	14/11/2014 12:15:25	ITA1071001	1071001
04/09/2014 16:30:41	One time poll of ship	04/09/2014 16:30:41	BEL1014001	1014001
03/09/2014 09:45:23	SAR SURPIC			
03/09/2014 09:40:15	One time poll of ship	03/09/2014 09:40:16	ITA1071002	1071002
03/09/2014 09:33:59	SAR SURPIC			
02/09/2014 16:59:17	Most recent position report	02/09/2014 16:59:17	FRA1050020	1050020
02/09/2014 16:57:52	Most recent position report	02/09/2014 16:57:52	DEU1054021	1054021
02/09/2014 16:55:20	Most recent position report	02/09/2014 16:55:20	ITA1071002	1071002
02/09/2014 16:53:11	Most recent position report	02/09/2014 16:53:11	ITA1071016	1071016
02/09/2014 16:43:06	One time poll of ship	02/09/2014 16:43:07	BEL1014001	1014001
02/09/2014 16:34:33	One time poll of ship	02/09/2014 16:34:33	ITA1071022	1071022
02/09/2014 16:33:32	One time poll of ship	02/09/2014 16:33:32	ITA1071002	1071002
02/09/2014 16:31:52	Positions every 15 min	02/09/2014 16:31:52	ITA1071001	1071001
02/09/2014 16:27:26	Most recent position report	02/09/2014 16:27:27	ITA1071022	1071022
02/09/2014 15:50:20	Most recent position report	02/09/2014 15:50:20	ITA1071001	1071001
02/09/2014 15:48:51	Most recent position report	02/09/2014 15:48:51	ITA1071001	1071001

The 'Manage requests' window also includes a 'Request status' section with checkboxes for 'In progress', 'Terminated', and 'Rejected'. The 'Access type' section shows a map icon and a red cross icon. The 'Request type' dropdown is set to 'All types of requests'. The 'Start date' and 'End date' fields are empty. The 'IMO' field is also empty. The 'Refresh' button is at the bottom left. The 'Page' indicator shows 'Page 1 of 9'. The 'Displaying items 1 - 50 of 433' text is at the bottom right. The 'Show on map', 'Export', and 'Close' buttons are at the bottom right.

Figure 12 - Example of LRIT polling configuration.



**SSN\_ECOSYS\_GUI\_UC\_16.****Ref: SSN\_ECOSYS\_GUI\_REQ\_33****Use cases (for information only):**

A user wants to make a most recent position request.

He places a request and the result is displayed on the map. The user should be able to export the data from any of the ships or more than one ship in various formats (i.e. csv, excel, etc.).

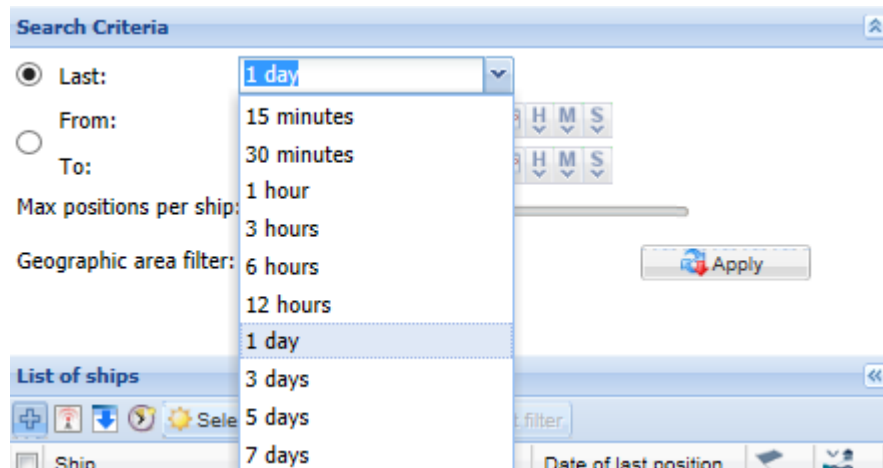


Figure 13 - Example of LRIT configuration for most recent position request.

## 2.3 Specific requirements for services using Earth Observation products

<b>SSN_ECOSYS_GUI_REQ_34.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<p>EO acquisitions</p> <p>After the user logs in, he will automatically be presented with relevant information as described in the next requirements without having to do any manual action such as searching for acquisitions over a given period of time. For example, if a CleanSeaNet user logs in, he shall automatically see the last delivered acquisition with its associated results. It shall be possible to reload the default information with a single click.</p> <p>The user will be able to search at any time for other available information using the search tools.</p> <p><b>Application/ data used for the functionality:</b> EO DC</p>	

<b>SSN_ECOSYS_GUI_REQ_35.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<p><b>EO Planned Acquisitions display at login and search options</b></p> <p>After the user logs in, the user shall view the EO planned acquisitions limited over national areas for the next 3 days. These should be displayed both on the map and in a tabular view.</p> <p>Planned acquisitions will be viewed as a black footprint on the map. See example below.</p>	

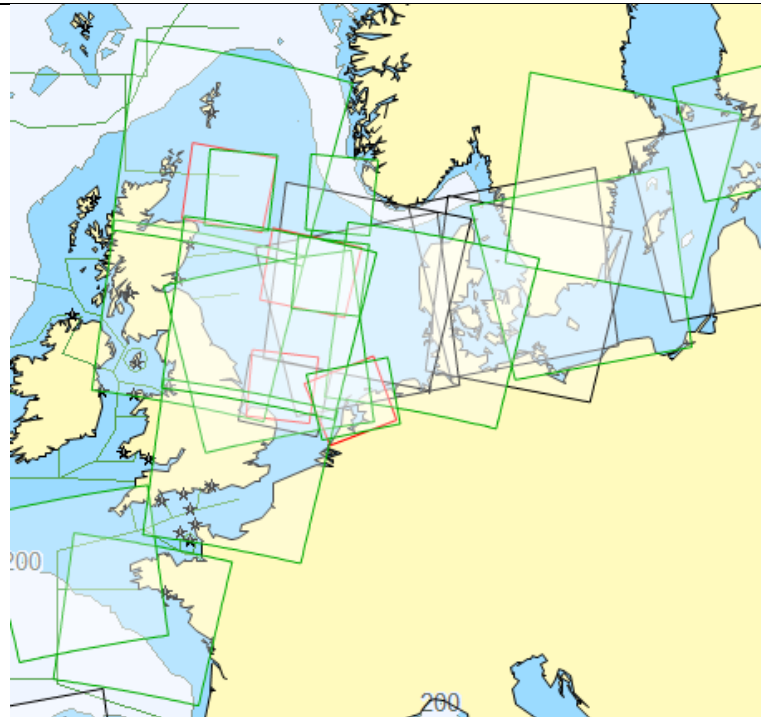


Figure 14 - Example of EO planned acquisitions display.

The user will search the planned acquisitions both in their national areas as well as in other areas. This shall be filtered in the search criteria without any limit of time in the future.

The user shall only see planned acquisitions if they are planned for the operations the user belongs to. (E.g.: a CleanSeaNet user shall not see FRONTEX planned acquisitions).

**Application/ data used for the functionality:**

EO DC

<b>SSN_ECOSYS_GUI_REQ_36.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Display of the EO Delivered Acquisitions at login</b>  <p>After the user logs in, the user shall view all delivered acquisitions over national areas in the past 3 days. These should be displayed both on the map and in a tabular view. The tabular view shall present all EO added value service results. These services can be spill, vessel, and activity detection, or any future EO service.</p> <p>The user shall only see delivered acquisitions and associated added value products if they are delivered for the operations the user belongs to.</p> <p>Delivered acquisitions will be viewed as a green footprint on the map. See example below.</p>	

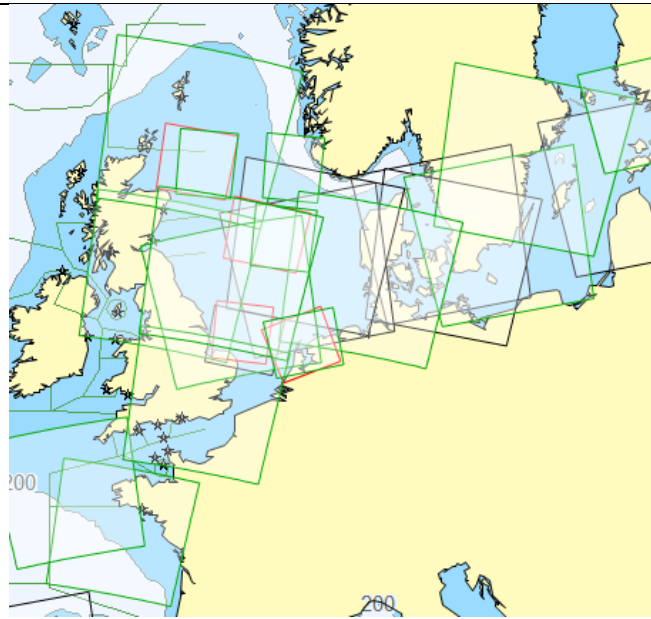


Figure 15 - Example of EO delivered acquisitions display.

**Application/ data used for the functionality:**  
IMDatE, EO DC

<b>SSN_ECOSYS_GUI_REQ_37.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<p><b>Access to EO added value services at login</b></p> <p>These services can be potential oil spills (both the EO detected as well as the ones reported in the SSN POLREPs<sup>1</sup>), vessels, and activity detections, or any future EO service.</p> <p>When the user logs in, his map view is centred on his national areas depending on which operation he has access to. If the user has access to more than one national area, the zoom level will be adapted to enable to display all areas.</p> <p>It should be noted that national areas might be different depending on the operation. e.g. for the same country, CleanSeaNet alert areas are different from the FRONTEX alert areas.</p> <p>Once the user logs in, he is automatically able to see all acquisition footprints for the past and next 3 days.</p> <p>Only the last acquired image is displayed on the map together with all the added value services provided with this acquisition (i.e. spill detection, vessel and activity detection). Next to the map, a tabular view should also be present with the relevant information.</p> <p>EO acquisition details (i.e. scene information in current EO DC) are displayed for the image on the screen.</p> <p>By selecting another image, either in the map or in the tabular view, the user can also view the relevant added value services provided for this acquisition.</p> <p>For the active image (by default the last acquisition), the user can select in the map or in the tabular view a specific added value product (i.e. a spill or vessel detected) providing him with the detailed</p>	

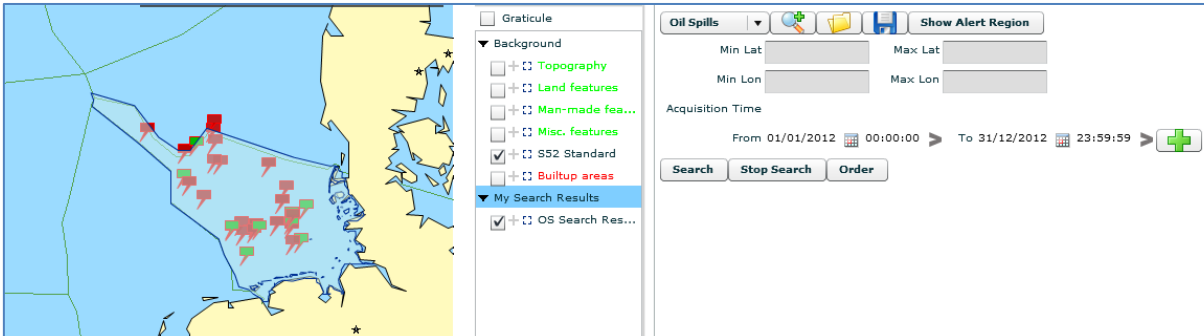
<sup>1</sup> The EO detected potential oil spill and the SSN POLREP potential oils spills are two distinct products and as such shall be displayed as two separate data-sets. The user shall be able to configure his/her display preferences (presentation of only EO or SSN data or both).

information on the screen.

EO added value services shall only be visible if the acquisition that was used to provide the added value services is visible for the operations the user belongs to.

**Application/ data used for the functionality:**

IMDatE, EO DC

<b>SSN_ECOSYS_GUI_REQ_38.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Access to EO products and added value services through a manual query</b>	
<p>Added value services can be potential oil spills (both the EO detected as well as the ones reported in the SSN POLREPs), vessel, and activity detection, or any future EO service.</p> <p>At any time the user shall be able to search for individual EO products and/or added value services using the standard search tool.</p> <p>The user shall be able to search for an individual EO product and associated added value services using the service ID.</p> <p>The user shall be able to search for delivered acquisitions, potential oil spills, activity detection results both in their national areas as well as in other areas for the past 5 years.</p> <p>The search for spills shall include criteria based on feedback information provided by the end user. The search for activities shall include criteria based on feedback information provided by the end user. Acquisition footprints, spills, and detected activities shall be available online for 5 years. However the EO images, VDS will be archived after 3 months. Older images will be seen as a foot print and marked as archived in the tabular view. The user shall be able to request that the full EO service linked to this acquisition will be restored online and including vessel traffic information (if available) to be used for polluter identification purposes. Note: this requirement was directly expressed by the Member States in order to be able to retrieve information that was available when a court case action is initiated.</p> <p>The maximum search time period for EO products, spills, activity detection shall be one year with the possibility of also searching by area(s) available in the system (i.e. alert areas, CSN sensitive area). It shall be possible to search for data up to 5 years old.</p> <p>The example below is a search of all spills reported in the German alert area in the North Sea between 1 January 2012 and 31 December 2012.</p>	
	

**Figure 16 - Example of an oil spill query.**

Vessel detection searches shall be managed differently as they involve a high number of features. Vessel detection as an added value product extracted from the SAR image shall be available only via the EO acquisition itself. It is only when a delivered image footprint is selected that the user shall have the possibility to call the vessel detection layer on top of the image. If an archived image is restored, the vessel detection shall be restored as well. It shall be noted that image footprints, spills, and activity detection results are always available online.

<b>Application/ data used for the functionality:</b> IMDatE, EO DC
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<b>SSN_ECOSYS_GUI_REQ_39.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Access to EO images and derived products</b> <p>Following login or after a query manually executed by the user, footprints of images will be visible on the map and the list of images should be listed in a tabular view.</p> <p>By selecting a footprint in the map or a record in the tabular view, the detailed information for an EO acquisition shall be displayed in the EO acquisition information panel.</p> <p>The tabular view shall present a summary of the EO added value service results (possible spills detected and feedback results (see SSN_ECOSYS_GUI_REQ_44), number of vessels detected, activity detected and feedback results (see SSN_ECOSYS_GUI_REQ_44).</p> <p>Depending on the user profiles, some added value service features will automatically be displayed when selecting the image without the need to call functions which are specified in the next requirements. For example, for a CleanSeaNet service user, spills will be automatically displayed when an image is selected without calling the 'Display/hide spills function'.</p> <p>The user shall be able to change the level of transparency of the image displayed on the map.</p> <p>Some users, based on licencing conditions, might not be allowed to see the image depending on the country of the user, the satellite platform and the EMSA product class. In that case, the user shall only have access to the footprint of the image.</p>	
<b>Application/ data used for the functionality:</b> IMDatE, EO DC	

<b>SSN_ECOSYS_GUI_REQ_40.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Functions available for EO images and derived products</b> <p>With a click on the selected acquisition, the user shall have access to a contextual menu with the following functionalities:</p> <ul style="list-style-type: none"> <li>• Display/hide image</li> <li>• See/forward alert report(s) for service ID &lt;service ID number&gt;</li> <li>• Display/hide potential oil spill detected in service ID &lt;service ID number&gt;</li> <li>• Display/hide vessel detected in service ID &lt;service ID number&gt;</li> <li>• Display/hide activity detected in service ID &lt;service ID number&gt;</li> <li>• Display/hide SAR wind extracted</li> <li>• Display/hide SAR swell extracted</li> <li>• Report spill</li> <li>• Report activity</li> <li>• Show video</li> <li>• Download EO product</li> </ul> <p>The list of functionalities shall be shown according to what is available for the selected acquisition. For example, if there is no activity detection for the selected acquisition, the 'Display/hide activity detected in service ID' functionality will not be shown in the menu. Another example: 'Display SAR wind' will not be shown in the menu for optical images.</p> <p><u>Display/hide image</u></p> <p>By selecting this function the user will toggle on/off the image. This is necessary to see for example spills on top of ENC's. It is useful for example to see if there is an offshore installation and the image is preventing the user to see the information.</p>	

See/forward alert report for service ID <service ID number>

By selecting this function the user shall be able to visualise the national alert report received as a result of the analysis of the selected service and to forward it by email.

Note that the alert report can be a potential oil spill alert report or an activity alert report depending on the service provided.

Alert reports are customised per country. EMSA users shall be able to select the alert report per country.

Display/hide potential oil spill detected in service ID <service ID number>

By selecting this action, the user shall see all possible spills detected in this service ID on the map on top of the image. Spills shall be listed in a tabular view. This function shall behave as a toggle on/off button which is very important because the polygon prevents seeing the spill correctly on the image.

Display/hide vessel detected in service ID <service ID number>

By selecting this action, the user shall see all vessels detected in this service ID on the map on top of the image. This function shall behave as a toggle on/off button. Vessels detected will not be presented in a tabular view.

Display/hide activity detected in service ID <service ID number>

By selecting this action, the user shall see all possible activities detected in this service ID on the map on top of the image. Activities shall be listed in a tabular view. This function shall behave as a toggle on/off button.

Display/hide SAR wind extracted

SAR wind is meteorological information directly extracted from SAR images. By selecting this action, the user shall display the SAR wind on top of the image. This function shall behave as a toggle on/off button.

Display/hide SAR swell extracted

SAR wind and SAR wave are meteorological information directly extracted from SAR images. By selecting this action, the user shall display SAR wind/SAR swell on top of the image.

Report spill

By selecting this function, the user shall be able to report the observation of a spill that was not reported in CleanSeaNet. The user shall be able to indicate the spill position by clicking directly on the map at the observed spill location. The user shall be able to indicate if the spill was visible or not in the image. To report the observation, the user will have access to the observation feedback form as defined later in this document. The result of this action is the creation of a spill in the database with a feedback attached; the feedback attached being the observation details.

Report activity

By selecting this function, the user shall be able to report the observation of an activity. The user shall be able to indicate the activity position by clicking directly on the map at the observed activity location. To report the observation, the user will have access to the activity observation feedback form. The result of this action is the creation of an activity in the database with a feedback attached; the feedback attached being the observation details.

Download image

Through this function authorised users shall be able to download the EO product. The interface shall request the user to accept the End User Licence Agreement attached to the selected EO product before the download starts.

**Application/ data used for the functionality:**

IMDatE, EO DC

<b>SSN_ECOSYS_GUI_REQ_41.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Access to EO spill detection and related information (alert report, feedback)</b>  <p>Following login or after a query manually executed by the user, possible spills which have been detected shall be visible on the map and in tabular view.</p> <p>Spills will be represented as symbols depending on:</p> <ul style="list-style-type: none"> <li>• Spill classification A or B if no on site verification.</li> <li>• Observation results if an observation feedback was submitted: <ul style="list-style-type: none"> <li>○ Mineral oil confirmed;</li> <li>○ Other substance confirmed;</li> <li>○ Natural phenomena observed;</li> <li>○ Unknown feature observed;</li> <li>○ Nothing observed.</li> </ul> </li> </ul> <p>Depending on the zoom level, only symbols or spill polygons will be displayed.</p> <p>When a spill is selected either on the map or in tabular view:</p> <ul style="list-style-type: none"> <li>• Spill details shall be displayed in a spill info panel presenting the clip image and all relevant details.</li> <li>• The list of possible sources reported by service providers or users will be displayed in a tabular view. By selecting a possible source from the list, the user shall be able to display it on the map. If the possible source is a vessel, the track of the vessel shall be displayed for the period covering from spill detection – 24 hours to spill detection time + 10 minutes.</li> <li>• The list of feedback submitted by end users shall also be presented in a tabular view. This list of feedback shall be presenting the following information: <ul style="list-style-type: none"> <li>○ Country of the user submitting feedback;</li> <li>○ Organisation of the user submitting feedback;</li> <li>○ Report type: Not checked or Observation report type (see later in this document);</li> <li>○ Phenomena type which is the type of other substance or the type of natural phenomena;</li> <li>○ Observation method;</li> <li>○ Date and time of observation;</li> <li>○ Delay between detection and observation.</li> </ul> </li> </ul>	
<b>Application/ data used for the functionality:</b> IMDatE, EO DC	

<b>SSN_ECOSYS_GUI_REQ_42.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Functions available for EO spill detection</b>  <p>With a right click on the selected spill, the user shall have access to a contextual menu with the following functionalities:</p> <ul style="list-style-type: none"> <li>• Report on site observation;</li> <li>• Report possible source;</li> <li>• See/forward alert report;</li> <li>• Run automatic polluter identification tool;</li> <li>• Display vessel tracks in vicinity of the spill;</li> <li>• See drift model results;</li> <li>• Report pollution event in SafeSeaNet;</li> <li>• Report pollution event in Thetis.</li> </ul>	



<p><u>Report on site observation</u> By selecting this function the user shall have access to the observation report feedback form.</p> <p><u>Report possible source</u> By selecting this function the user shall have access to the feedback form for reporting a possible source or confirming a possible source previously reported.</p> <p><u>See/forward alert report</u> By selecting this function the user shall be able to visualise the national alert report and to forward it by email.</p> <p><b>Application/ data used for the functionality:</b> IMDatE, CSN</p>
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<b>SSN_ECOSYS_GUI_REQ_43.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Confirmed EO spill detection report to other systems (SSN, THETIS)</b>	
<p><u>Report pollution event in SafeSeaNet</u> By selecting this function the user shall be able to notify the incident report type POLREP through SafeSeaNet using available CleanSeaNet information to pre-fill the relevant POLREP fields in the SSN EIS. This function shall only be available to authorised SafeSeaNet users. Example: A SSN user would have access to CSN information to be able to use it in SSN.</p> <p><u>Report pollution event in Thetis</u> By selecting this function the user shall be able to enter an overriding factor message (Discharge of harmful substances or effluents) using the available CleanSeaNet information to pre-fill relevant information. This function shall only be available to authorised Thetis users. It shall be noted, that entering an overriding factor in Thetis makes an inspection in the next port of call mandatory. Consequently, this action shall always be taken manually by authorised authorities.</p> <p><b>Application/ data used for the functionality:</b> EO DC, SafeSeaNet, Thetis</p>	

<b>SSN_ECOSYS_GUI_REQ_44.</b>	
<b>Available today: Existing</b>	<b>Priority: P1</b>
<b>Feedback on CleanSeaNet detections</b>	
<p>It should be noted that feedback on CleanSeaNet detections is important for:</p> <ul style="list-style-type: none"> <li>Follow-up actions. A spill confirmed and a polluter identified by a coastal State might trigger an inspection in port by another State.</li> <li>Improving the service performance. For example, service providers use feedback internally to improve the skill of the operators.</li> <li>Building more reliable statistics including evaluating spill detection volume and trends.</li> </ul> <p>Users shall be able provide feedback on spills reported by CleanSeaNet (<b>use case 1</b>) Users shall also be able to report spills that were not detected by CleanSeaNet (<b>use case 2</b>) whether the spill was missed during the image analysis process (e.g.: the spill is visible on the satellite image and is not reported ) of the spill not linked with any acquisition (e.g.: a flight observes a spill outside the footprint of the satellite image or a SSN POLREP incident report (IR) from a Member State,</p> <p><b>Use case 1:</b> Feedback on spills reported by CleanSeaNet or available in the system following for example a SSN POLREP incident.. Users shall be able to provide feedback to report:</p> <ul style="list-style-type: none"> <li>that the satellite detection was not checked;</li> <li>the results of an observation on site;</li> </ul>	



- a possible source identified by the end user or to confirm a possible source previously reported by the service provider or another user.

It shall be possible to submit feedback for each individual spill (meaning the feedback is not managed per acquisition but per spill). For each spill, it shall be possible to submit 0 to n feedback reports.

Each feedback form submitted shall automatically contain the country, the organisation, and the contact details of the person submitting the feedback form.

All persons belonging to the same organisation than the person submitting a feedback form shall have the right to edit the feedback form previously submitted. The person shown will be the last one to have edited the feedback form.

All users shall be able to visualise all feedback forms submitted by other users as long as the acquisition and added value products are visible to the operation the user belongs to. This requirement should be automatically fulfilled as feedback on spills is retrieved via the spill itself. If the user cannot access spill information, he will not have access to the feedback.

The user shall always be able to visualise the history of changes to feedback forms made by users within the same organisation.

EMSA shall be able to visualise, edit and add keywords and a priority flag to every feedback. The image below describes the current interface.

This interface shall only be visible by users at EMSA.



Figure 17 - : Example of feedback insertion.

Note that the priority flag is used by the system to decide which feedback information shall be associated with the spill. The priority flag is set by default to the latest observation feedback for the spill. However, when several observations are reported by different countries, information might be inconsistent. In this case, EMSA sets a priority flag manually.

It shall be possible to report several observations and possible sources for the same spill.

When the user reports a "Satellite detection not checked", he shall have the possibility to give an explanation on why the verification activity was not carried out.

When reporting the results of an observation on site, the user shall fill a form as presented below.

**\* means mandatory field**

Observation Organisation:

Observer:

\* Report type: **Nothing observed**

Verified Position: 58 ° 09 ' 53 88 " N

Verified Width (mt.):

Verified Thickness:

Verified volume:

Thickness estimation method:

BAOAC:

Additional Information: <PUT YOUR COMMENT HERE>

\* Method:

\* Date: 26/08/2011 17:28:30.968

Phenomena type:

021 ° 28 ' 29 40 " E

\* Report type dropdown options:

- Nothing observed
- Mineral oil confirmed
- Other substance confirmed
- Natural phenomena observed
- Unknown feature observed
- Nothing observed

\* Method dropdown options:

- Fixed wing aircraft
- Helicopter
- Patrol vessel
- 00: Merchant vessel
- Other

Figure 18 - Example of feedback insertion.

When searching for spills, it shall be possible to filter the results based on a combination of the following observation elements entered by the end users through the observation feedback form.

- Observation report type which can take the possible values:
  - Mineral oil confirmed
  - Other substance confirmed
  - Natural phenomena observed
  - Unknown feature observed
  - Nothing observed
- Phenomena type which can be:
  - the type of 'Other substance' taken from
    - Chemical
    - Vegetable oil
    - Fish oil
    - Sewage
    - Garbage
    - Unknown substance
  - or the type of 'Natural phenomena' taken from
    - Algae
    - Current front
    - Pollen
    - Sandbank
    - Seaweed
    - Upwelling area
    - Windless area
    - Unknown phenomena
- The observation method
  - Fixed wing aircraft
  - Helicopter
  - Patrol vessel
  - Merchant vessel
  - Other
- The delay in hours between the detection and the observation which is calculated by the system using the detection date and time and the observation date and time entered as a mandatory field in the feedback form.

In case of multiple feedbacks, the information associated to the spill shall be the one coming from the

feedback which has the priority flag.

When reporting the possible source of a detected spill, confirming a source previously reported, or indicating a follow up action, the user shall fill a form as presented below

Figure 19 - Example of feedback insertion.

The type of possible source can be taken among the following values:

- Vessel
- Oil rig
- Wreck
- Pipeline
- Natural seepage
- Other

When searching for spills, it shall be possible to filter the results based on a combination of the following possible source elements entered by the end users through the possible source feedback form.

Source type, source identified, source confirmed and source inspected.

It shall be possible to report more than one possible source.

It shall be possible to confirm and to indicate follow-up actions on possible sources reported by service providers or by other countries.

It shall be possible to pre-fill the possible source information by selecting a vessel on the map.

A User shall be able to upload ancillary files to each feedback report type.

Figure 20 - Example of feedback insertion.

**Use case 2:** Feedback on spills reported by CleanSeaNet or available in the system following for example a SSN POLREP incident. Same as use case 1 but access through the 'Report spill' function described in SSN\_ECOSYS\_GUI\_REQ\_40

**Application/ data used for the functionality:**

EO DC

<b>SSN_ECOSYS_GUI_REQ_45.</b>	
<b>Available today: Foreseen in EODC release 1.9 – Q3 2015</b>	<b>Priority: P2</b>
<b>Access to Activity detection information and related information (activity report, feedback)</b>	
Activity detection is a service which is contracted to an external service and a provider to detect a specific activity of interest. Each provider will receive instructions on what he should look for. These activities could include an encounter at sea, a fast vessel, two vessels which are within a close proximity, activities on a beach, detection of a fishing vessel. The results of the activity detected are delivered by the provider to the EO DC using an activity package like the oil spill detection. This activity includes a position, a description and a clip image of the activity.	

Following login or after a query manually executed by the user, activities which have been detected shall be visible on the map and in tabular view.

When the EO DC receives an activity package, an automatically generated pdf activity alert report will be distributed by email to the users concerned (configured depending on area) as a pdf document.

When an activity is selected either on the map or in tabular view, activity details shall be displayed in an activity info panel presenting the clip image and all relevant details.

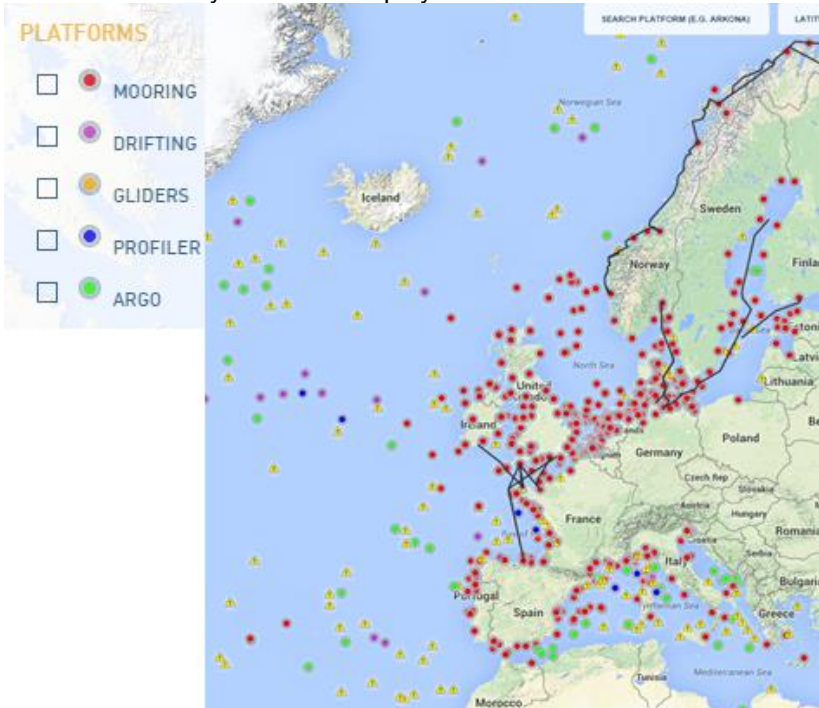
Symbols will differ based on the type of activity detected. The full list of activity types will be communicated during the design stage and this is part of the EO DC External Interface Control Document (EICD).

**Application/ data used for the functionality:**

IMDatE, EO DC

<b>SSN_ECOSYS_GUI_REQ_46.</b>	
<b>Available today: Foreseen in EODC release 1.9 – Q3 2015</b>	<b>Priority: P2</b>
<b>Functions available for Activity detection</b> <p>The user shall click on the activity and have access to a contextual menu with the following functionalities:</p> <ul style="list-style-type: none"> <li>• Report on site observation</li> <li>• Report possible source</li> <li>• See/forward activity alert report</li> <li>• Display vessel tracks in vicinity of the activity</li> </ul> <p>The form for reporting on site observation for activity detection will be defined at a later stage.</p>	
<b>Application/ data used for the functionality:</b> IMDatE, EO DC	

## 2.4 Meteorological data services

SSN_ECOSYS_GUI_REQ_47.	
Available today: Partially	Priority: P1
<p><b>Display of the Meteorological data</b></p> <p>Display of the meteorological data in the SEG shall be a distinct function/feature or module but shall follow all the usability and ergonomics as specified in section 3.1</p> <p>The system shall display three types of meteorological data:</p> <ul style="list-style-type: none"> <li>- In-situ data (including HF radar)</li> <li>- Earth Observation (EO) satellite data</li> <li>- Forecast weather &amp; sea state model data</li> </ul> <p>Display of the meteorological data shall be activated by the user.</p> <p>The system shall present the current meteorological conditions as default and keep it refreshed at configurable intervals in order to always display the most up-to-date information.</p> <p>The in-situ and HF radar data shall be provided by the EMODnet (Physics) service: <a href="http://www.emodnet-physics.eu/Portal">http://www.emodnet-physics.eu/Portal</a>. The EMODnet service provides standard (W*S) interfaces for presenting current and historical c conditions at the location of the sensor(s). When the display of the meteorological data is active the system shall display the location of the sensors as shown below</p>  <p><b>Figure 21 - Example of in-situ met-ocean platform display.</b></p> <p>The user shall be able to display all In-situ stations, as well as filtering between types of stations (see layers).</p> <p>By clicking on the station feature on the map, the user shall be presented with information about the station. This information will contain the [external] link to access the time series related to that station data as well as: lat, lon, last data measured, list of available parameters, data type, and name of provider. The aforementioned link will be opened as a new window.</p> <p>The relevant in-situ data shall be displayed when clicked on the icon and in such a manner that it does not obstruct the other data/information already on the screen (for example by applying the relevant</p>	

transparency and/or opacity).

Display of the Earth Observation satellite data shall be activated by the user. Once activated the information could be moved in time using a simple time slider.

The met-ocean Earth Observation (EO) data shall be provided by the Copernicus MyOcean Marine Environment Monitoring Service: <http://www.myocean.eu/>. The MyOcean service provides standard (W\*S) interfaces for presenting current and historical EO satellite data.

When the user enables one of the EO satellite layers, the current data layer will be displayed in the SEG. Since the content of the layer is updated every n hours, the refresh rate shall be configurable.

End-users will also be able to select and display past/historical layers, and therefore users shall be able to choose a layer associated to a specific time (day, hours, etc.).

The time dimension can be implemented preferably via a predefined selection of times (see below), or using a time slider, or a simple calendar selection.

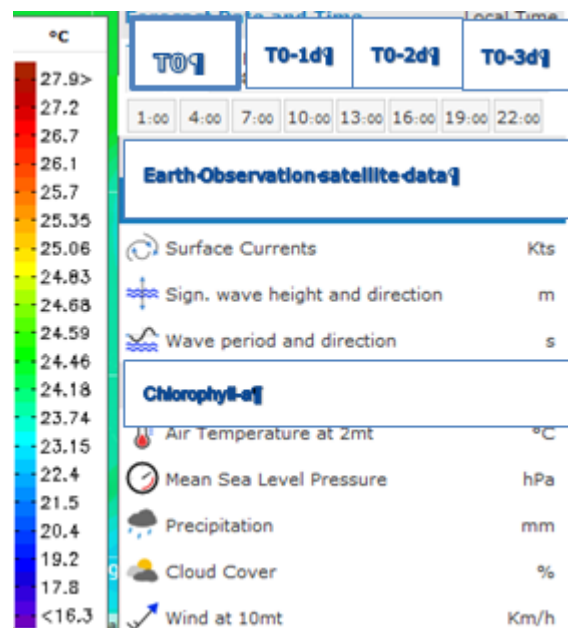


Figure 22 - Example of EO satellite met-ocean layer panel.

Display of weather and sea state forecast model data will be provided by model service providers through standard web services.

The users shall be able to select the parameters, day and model layer time seamlessly. When the user enables one of the weather and sea state layers, the current data layer will be displayed in the SEG. Since the content of the layer is updated every n hours, the refresh rate shall be configurable.

End-users will also be able to select and display additional future model layers, and therefore users shall be able to choose a layer associated to a specific time (day, hours, etc.).

The time dimension can be implemented preferably via a predefined selection of times (see below), or using a time slider, or a simple calendar selection.

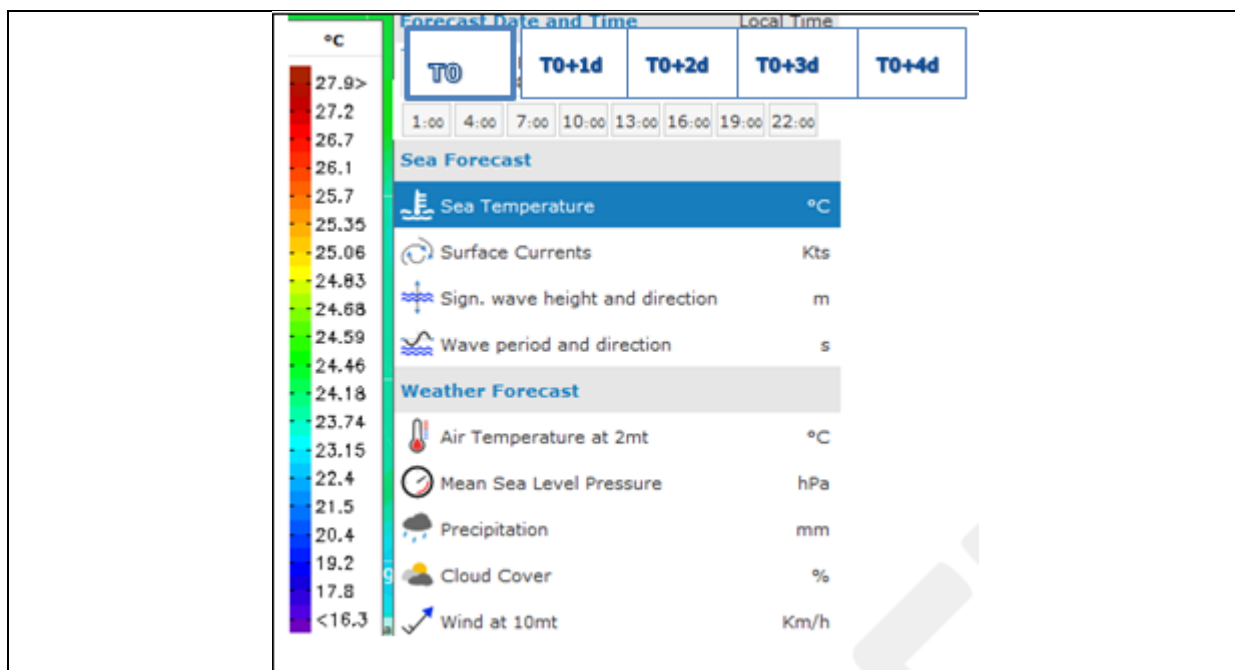


Figure 23 - Example of weather and sea-state forecast layer panel.

The current full set of met-ocean data requirements, with specific details on variables/parameters, spatial and temporal requirement is available as an Appendix B.II to this document.

**Application/ data used for the functionality:**

External services as provided by EMODnet, MyOcean and for model service providers TBD.

<b>SSN_ECOSYS_GUI_REQ_48.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<p><b>Meteorological Symbols and Terminology</b></p> <p>The data meteorological data symbols and terminology shall follow the recognized standards, for example as presented by NOAA or UK Met Office  <a href="http://www.opc.ncep.noaa.gov/product_description/keyterm.shtml">http://www.opc.ncep.noaa.gov/product_description/keyterm.shtml</a>  <a href="http://www.metoffice.gov.uk/media/pdf/a/t/No. 11 - Weather Charts.pdf">http://www.metoffice.gov.uk/media/pdf/a/t/No. 11 - Weather Charts.pdf</a></p> <p><b>Maritime Application/ data used for the functionality:</b>            External references of NOAA and UK Met Office</p>	

## 2.5 STMID Data services

<b>SSN_ECOSYS_GUI_REQ_49.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>Background information regarding STMID</b>  <p>The main objective of the Shore-based Traffic Monitoring and Information Database (STMID) is to use SafeSeaNet to simplify and facilitate the sharing of information regarding the MS designated authorities with the Commission and other MS.</p> <p>This database will be the place where all relevant information on the authorities will be held. It will be embedded in the SSN system and its services will be provided through the SSN web interface (SSN Textual Interface and SEG) as well as through the password protected section of the EMSA website.</p> <p>SEG shall be able to display the STMID authorities' locations and contact details as well as their areas of responsibility</p> <p><b>STMID display</b></p> <p>The user may consult the Authorities and their areas of responsibility on a map through the SEG .</p> <p>Each Authority and each associated area of responsibility represent a feature (geographical object) that can be displayed on the map. The Authorities will be placed using their LOCODE unless geographical coordinates are provided.</p> <p>These features shall be distinctly displayed with such a transparency setting that they will not obstruct viewing of the data already displayed (e.g. ship tracks).</p> <p>Symbols and colours (e.g. specific symbols to represent functions, different colours for areas etc.) will be defined during the design phase.</p>	
<b>Maritime Application/ data used for the functionality:</b> SSN STMID	

<b>SSN_ECOSYS_GUI_REQ_50.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>STMID filtering, presentation and interaction</b>  <p>At least the following features shall be provided for the STMID Data/service in the SEG</p> <ul style="list-style-type: none"> <li>• Authorities will be displayed with an icon representing the task (the list of duties will be provided by EMSA based on the implementation of the STMID in the SSN Textual Interface/CMC). If an Authority has several tasks, the system will display them in a user friendly way (e.g. expandable icons. This is to be agreed at design phase).</li> <li>• When a user hovers the mouse over the symbol of an Authority, a configurable dynamic tag will display information such as for example: the name, country and tasks of the Authority.</li> <li>• When the user single-clicks on the symbol of an Authority, a pop-up window will appear (similar to the ship information) and the areas of responsibility of the Authority will be displayed. This window will display details on the Authority (i.e. name, contact details, tasks, date and time of the latest change of the authority details etc.).</li> <li>• A free-text search function will be offered to find authorities (Search over the name, function, duty or geographical coordinates/ locode).</li> <li>• Pre-defined filters will be provided to enable visualisation of the authorities per duty/ function.</li> </ul>	
<b>Maritime Application/ data used for the functionality:</b> SSN STMID	



**SSN\_ECOSYS\_GUI\_UC\_17.****Ref: SSN\_ECOSYS\_GUI\_REQ\_49, SSN\_ECOSYS\_GUI\_REQ\_50**

Scenario 1: in the sea area between Member States A, B and C there is an ongoing, trans-border Place of Refuge situation. User from MS A would like to know what the contact details of the Member States' B and C authorities are in order to make the essential, operational arrangements. User will activate the STMID/Authorities functions/ filters in the SEG to display the PoR responsible authorities and their areas of responsibility, on the top of the ship's requesting assistance position.

**SSN\_ECOSYS\_GUI\_REQ\_51.****Available today: Partially****Priority: P1****Pre-defined geographical areas display**

The system shall display the pre-defined areas like SRRs, EEZs, Territorial Waters, Administrative boundaries, CSN alerting areas etc.

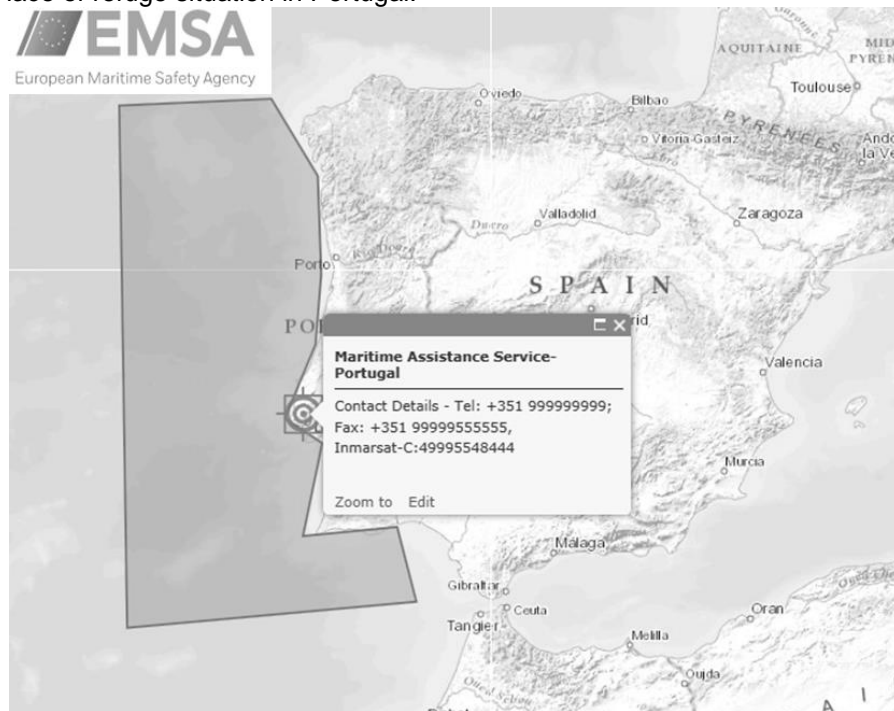
There shall be a link provided between the predefined areas and the areas of responsibilities of the competent authorities, allowing the association of the areas of responsibility to these predefined zones.

**Maritime Application/ data used for the functionality:**

CGD, Other sources

**SSN\_ECOSYS\_GUI\_UC\_18.****Ref: SSN\_ECOSYS\_GUI\_REQ\_49, SSN\_ECOSYS\_GUI\_REQ\_50**

Scenario 1: User activates the display of the authorities responsible for receiving and handling alerts in case of the Place of refuge situation in Portugal.



**Figure 24- Example of STMID authority details display.**

## 2.6 Display of the Central Reference Databases related information and services

<b>SSN_ECOSYS_GUI_REQ_52.</b>	
<b>Available today: Partially from the SSN OVR</b>	<b>Priority: P1</b>
<b>Presentation of the ship identifiers from the Central Ship Database (CSD) and other vessel databases registries.</b>	
<p>The following identifiers/ elements shall be presented in the SEG for each ship, if they exist in the CSD and other sources (vessel registries, for example for fishing vessels):</p> <ul style="list-style-type: none"> <li>- IMO Number;</li> <li>- MMSI;</li> <li>- Name;</li> <li>- Call sign;</li> <li>- Flag of the ship;</li> <li>- IR (of an EU fishing vessel).</li> </ul> <p>Status of the identifiers – valid or not confirmed could be presented using the colour code for the identifiers/ elements mentioned above. For example, the identifiers not confirmed could be presented in a specific greyish colour, once their status is temporary (not validated or not confirmed).</p> <p>User will access the information about the date and time for the specific identifier/ element from the CSD e.g. when placing the mouse pointer over the identifiers in the ship label.</p>	
<b>Application/ data used for the functionality:</b> Central Ship Database (CSD), other vessel registries	

<b>SSN_ECOSYS_GUI_REQ_53.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Presentation of the ship at certain scale</b>	
<p>The system shall present the outline of the ship, based on the AIS length and breadth once zoomed in to the specific, large scale (below 1: 32,000).</p>	
<b>Application/ data used for the functionality:</b> Central Ship Database (CSD)	

**SSN\_ECOSYS\_GUI\_UC\_19.****Ref: SSN\_ECOSYS\_GUI\_REQ\_53****Use cases (for information only):****Figure 25 - Example of ship outline display.****SSN\_ECOSYS\_GUI\_REQ\_54.****Available today: New****Priority: P2****General Arrangement (GA) plans – file upload by the Member States and sharing**

The system shall allow an upload, download and display of the General Arrangement plans in pdf format for those ships registered in the Central Ship Database.

Access to the uploaded GA plans shall only be made available to other/registered and authorised users of the SEG .

In principle, the GA plans will be only shared between Maritime Administrations and Emergency Response authorities for the purpose of effective planning of the inspections (for example HAZMAT cargo or PSC inspections) as well as the on-board response to the emergencies (fires, flooding, security incidents).

The following is assumed:

- upload will be possible from a CSD console, covered in a CSD RFC

- SEG should only be able to search the CSD and view the PDF.

**Application/ data used for the functionality:**

SSN, CSD, IMDatE

**SSN\_ECOSYS\_GUI\_UC\_20.****Ref: SSN\_ECOSYS\_GUI\_REQ\_54**

Scenario: There is a fire in the hold of the ship in the area of responsibility of a competent authority in Member State A. Master requested additional fire-fighting assistance and a response team will be transferred on board. In order to plan the response actions and familiarize the response team with the access routes as well as the cargo distribution, the General Arrangement plan for the specific ship will be downloaded and displayed.

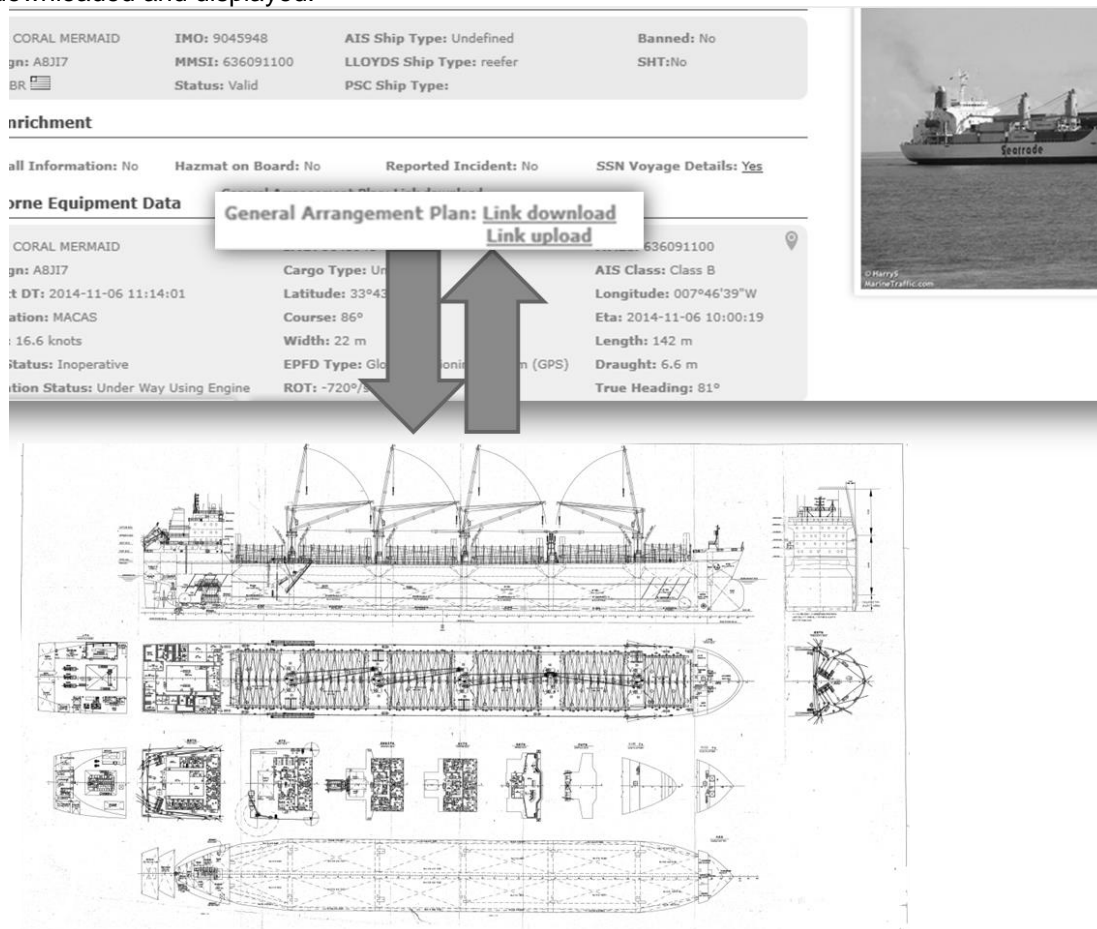


Figure 26 - Example of general arrangement plan display.

**SSN\_ECOSYS\_GUI\_REQ\_55.****Available today: Partially****Priority: P1****LOCODES Background information**

The LOCODEs registered in CLD are derived from the UNECE list. For the SafeSeaNet purposes they shall have a function of a port or off shore oil rig (functions = 1 and 7 as per UNECE standards) or a 'SSN specific' status (to allow using UNECE LOCODE without the function 1 or 7 in SSN).

Those UNECE LOCODEs not having function 1 or 7; will normally represent ashore locations and

some of the Competent Authorities'; locations may be linked to them.

### LOCODEs Display

Whenever there is a reference to the specific location (place ashore or a port) there shall be a link with a UNECE LOCODEs.

The SEG shall allow the display of the CLD registered LOCODEs, as well as their use, for example in the presentation of the SSN enrichment data and voyage details (for example destination, origin of the voyage).

The SEG shall also allow a display of the non-UNECE locations which will be stored in the CLD (SSN specific, user specific location codes).

Whenever a UN LOCODE is displayed in the SEG system, the system shall provide a full name of the location next to the code or alternatively allow displaying of the name once the user hovers the mouse pointer over the code.

### Application/ data used for the functionality:

SSN Central Locations Database (CLD), UNECE LOCODEs

### SSN\_ECOSYS\_GUI\_UC\_21.

Ref: SSN\_ECOSYS\_GUI\_REQ\_55

Use cases (for information only):



Figure 27 - Example of LOCODE tooltip display.

## 2.7 THETIS Data display

SSN_ECOSYS_GUI_REQ_56.	
Available today: New	Priority: P1
<p><b>Display of THETIS data</b></p> <p>All users will have access to (i.e. be able to call upon and display) THETIS Port State Control PUBLIC data. Examples include: Details of inspection reports; List of detained ships, and; List of banned vessels through the integrated ship profile function.</p> <p>Registered PSC users will have access to (i.e. will be able to call upon and display) THETIS PSC restricted data following the THETIS systems access right rules. Examples include: Ship particulars and details; Ship Risk Profile (SRP); Inspection reports; Priority for inspection and reason for priority, and; Ships selected for inspection.</p> <p>The following THETIS available data shall be displayed as 'enrichment' information for the ship (s) and ports in the SEG :</p> <ul style="list-style-type: none"> <li>- Date of the last PSC inspection with a link to the inspection details – (for ship)</li> </ul>	

- Information if the ship's flag is classified as White, Grey or Black according to the Paris MoU flag performance, the latest available information (for ship)
- PSC/THETIS ships risk profile (for ship)
- PSC/THETIS ship inspection priority (for ship)
- Current detentions (for port and for ship)
- Refusal of access information (for ship)
- Prevention of operation (for ship)

The THETIS enrichment information for the specific ships shall be available in the ship information panel for the identified ships, for example

- Detentions: Date of Detention, port of Detention, Detaining Authority;
- For the prevention of operation Date, Reason, Issuing authority
- For the refusal of access: ISM company, Date of banning, banning authority, reason for banning, occurrence

The THETIS enrichment information shall be reflected in the display and symbols of the ships.

The THETIS information as defined in Appendix B.III shall be available in all searches, filtering, historical track, replay/ playback, TOI(s) selection, risk profile categorization and alerting/surveillance configuration.

The THETIS enrichment information displayed shall be kept refreshed (for example the ship risk profile may change).

The historical track and the aggregated historical information on the ship shall contain a reference to the THETIS data. For example when looking on the ship historical track her risk profile level and its changes shall be reflected

Additionally, the authorized 'THETIS' profile users shall access the company performance information and have quick links to the ship risk profile and company performance calculators.

**Application/ data used for the functionality:** PSC/THETIS.

#### **SSN\_ECOSYS\_GUI\_UC\_22.**

##### **Ref: SSN\_ECOSYS\_GUI\_REQ\_56**

Scenario 1: user would like to display all the ships which are currently detained in his area or responsibility or any other type of ships. The system will allow the filtering of the ships displayed based on the criteria 'detained'.

Scenario 2: user would like to know what the evolution of the ship inspection priority was during a voyage of a selected ship in EU waters during the last month. User will activate the integrated ship profile and will obtain the relevant time-referenced THETIS data.



### 3. Non-functional requirements

This chapter provides the additional requirements that SEG will have to comply with.

#### 3.1 Usability, ergonomics – general principles and drivers

<b>SSN_ECOSYS_GUI_REQ_57.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Usability, ergonomics</b>	
<p>The SEG shall provide a <b><u>user friendly and simple interface which has a consistent way of handling and displaying data from numerous sources with specific access rights</u></b> and reflects the following principles:</p> <ul style="list-style-type: none"> <li>• The SEG shall make use of the full real estate of the screen. No un-used empty spaces should be present, no matter what the content management system template applied. The map should take the full advantage of the screen leaving no empty edges in full screen mode, in other words the map will occupy all of the screen real estate available.</li> <li>• The user shall be able to access and make use of the SEG from desktops, laptops and tablet devices with touch-screens.</li> <li>• The user shall be able to enable a full screen mode, where menu's/options, etc. are hidden.</li> <li>• Base and default information on the map <u>is the latest position of the ship as per user's access rights</u> (regardless of the tracking source i.e., LRIT, S-AIS, T-AIS, MRS, VMS, VDS or other) and its identification. In the case of EO services the default information displayed will be planned acquisitions for the next 3 days as well as the delivered acquisitions over national areas in the past 3 days</li> <li>• Additional information, as reported in the specific tracking system (course, heading, speed, size), shall be linked to the latest position information and the ship.</li> <li>• Starting point for all queries, searches, filtering shall be based on the latest position of the ship or a configured Area of Interest (or Point of Interest). Specific requirements for EO services such as CleanSeaNet starting point are defined in section 2.3.</li> <li>• The configuration options shall not impede the display of the basic information. They shall be also readily available and logically linked with the elements which they are covering.</li> <li>• By default, until configured by the user, when logging in to the system the default view of the map must be based on the geographical location (IP based geo-location) of the user (with the location of the user clearly indicated).</li> <li>• The SEG shall follow an 'operations' configuration approach. As such, there shall be an administration tool for EMSA operators allowing the setting-up of each operation/service for the customisation of display preferences, available functionalities and information [sub] panels, colour and access to data sets, also according to the related access policies.</li> <li>• Combined/integrated information/data shall always be the default way of presenting information to the user.</li> <li>• The combined/integrated information should be reselectable by the user to its original sources (for example, the user will display the integrated ship position and track by default but will easily reselect to a single tracking system, like S-AIS)</li> <li>• Error prone conditions should be eliminated. All default values and limits should be used throughout the system. For example, if the time limit for a query is 24h the user shall not be able to put a higher value.</li> <li>• All error messages should be expressed in plain language (no codes), precisely indicating the problem and constructively suggesting a solution to help users recognize, diagnose and recover from errors.</li> <li>• The system should always keep the user informed about the status and present appropriate feedback within reasonable time when unexpected events, such as if a query will take extended time.</li> <li>• There should be platform conventions to follow such as wording, situations or actions to follow so that the users use common approaches and clear understanding of different wording or how to recover</li> </ul>	

<p>different situations.</p> <ul style="list-style-type: none"> <li>• Deletion and changing of information shall always be confirmed by the user to prevent accidental deletion or change of information or settings.</li> <li>• When saving, the system shall suggest a default name.</li> <li>• All names suggested by the system shall by default be marked to directly be changed by the user before confirmation.</li> <li>• The system shall make use of hot corners, meaning that when the mouse pointer is close to each corner a certain panel, dialog window or function window will be shown.</li> <li>• All selectable options should have a master select all on/off to easily select or deselect several options at the same time.</li> <li>• It shall be always possible to export tabular data to different formats, as defined in Appendix B.IV.</li> <li>• It shall be always possible to export images, data, and the map to different formats, as defined in Appendix B.IV.</li> <li>• The importing of the objects (e.g. layers) or the pre-defined files (e.g. lists) shall be enabled for the specific functionalities indicated further in the document</li> <li>• Printer friendly html presentation of data shall be available as pdf to download and save.</li> <li>• Base settings to form a query (i.e. date/time/track-source etc.) shall be set once to be reused different type of queries. (i.e. the user sets date/time/track-source and can perform vessel track query, ship profile query and other types of queries with the same date/time/track-source)</li> <li>• There shall be a possibility to save a workspace with the selected configurations</li> <li>• The system shall allow an 'auto-refresh' of the displayed data at a configurable periods</li> </ul> <p>Refer to Appendix G for the indicative wireframes of the SEG.</p>
<p><b>Application/ data used for the functionality:</b> ALL</p>

<b>SSN_ECOSYS_GUI_REQ_58.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<p><b>Public Version</b></p> <p>The SEG shall be prepared to offer a simplified ('shadow') version of the interface, containing only the data that can be publically made available, for example:</p> <ul style="list-style-type: none"> <li>○ T-AIS position of the ship</li> <li>○ SSN Enrichment information without requesting possibility</li> </ul> <p>(see Appendix B.III for further details)</p>	
<p><b>Application/ data used for the functionality:</b> ALL</p>	

<b>SSN_ECOSYS_GUI_REQ_59.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<p><b>Colour coding and symbols:</b></p> <ul style="list-style-type: none"> <li>• There shall be at least two colour schemes for the Graphical User Interface to choose between: Regular and Night View, Regular would be the default one and which will be used on day to day basis and Night View to be used during late hours to increase productivity and comfort.</li> <li>• Selection of the colour scheme should meet the industry standards to create an aesthetic feeling when working in different lightening conditions to ensure optimal readability of all items on the screen.</li> <li>• The user should have the ability to customize and save the colour schemes available.</li> <li>• The system shall have a selectable function to automatically switch to Night View based on user settings</li> <li>• Colour coding or colour schemes for what is presented in the map (Ships, Track Source, different information categories) should be configurable by the user. Symbols and colours selected shall be readable when displayed on top of ENC's (S-52 IHO standard) but as well on top of EO SAR images.</li> </ul>	



<ul style="list-style-type: none"> <li>Ship track should colour wise reflect the tracking information source (e.g. LRIT, SAT-AIS etc.).</li> <li>Ship symbols should reflect the ship type based on if the ship is (e.g. Single Hull, Detained, Banned)</li> <li>Symbols of the ships should be configurable by the user to reflect different type of information such as SSN enrichment types.</li> <li>Icons used in the SEG shall have the conceptual clarity and purpose beyond being mere eye candy to serve a stated purpose that convey the right concept in its imaginary and common use worldwide. As such the most commonly used and recognized icons shall be used.</li> <li>Selecting a single ship shall be visually distinguished, for example by displaying a drawn outline around the symbol.</li> <li>Selecting several ships shall be visually distinguished, for example by displaying, a bold line around the symbols which are results of the search or selection of the TOI(s).</li> </ul> <p>Refer to indicative wireframes of the SEG .</p>
<b>Application/ data used for the functionality:</b> ALL

<b>SSN_ECOSYS_GUI_REQ_60.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Panels, side panels</b> (Panels are groups of components in a windowed GUI) The following features shall be implemented in terms of the panels: <ul style="list-style-type: none"> <li>Configurable panel size and font.</li> <li>Auto hidden side panel.</li> <li>User can decide to pin and keep the panel expanded.</li> <li>Information/data/functions shall be properly grouped inside each panel either through tabs or other solutions.</li> </ul> <p>Refer to indicative wireframes of the SEG.</p>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_61.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Accessibility and tool tips</b>  <b>Automatic Word Completion</b> <ul style="list-style-type: none"> <li>Automatic word completion feature based on the content in the database shall be used, for example in the search field to predict word or phrase to use.</li> </ul> <b>Profiles and portlets</b> <ul style="list-style-type: none"> <li>Modular elements shall be used for the detailed/expanded information.</li> <li>Modular elements shall be configurable and saved automatically in the user preferences.</li> <li>The modular elements deleted by the user shall be easily recalled upon clicking on an add-button.</li> </ul> <b>Tool tips</b> The tool tips shall be applied in the following manner: <ul style="list-style-type: none"> <li>General rule: The tool tip dialogue content should be configurable by EMSA.</li> <li>For the icons, explaining the meaning of the icon</li> <li>For the EO images meta-data information on the image</li> <li>For the geographical objects, like the STMID areas of responsibility (refer to the SSN_ECOSYS_GUI_REQ_49 and SSN_ECOSYS_GUI_REQ_50)</li> </ul>	

<ul style="list-style-type: none"> <li>For the codes or abbreviations in the system, explaining the meaning of the specific codes (refer to the example in the SSN_ECOSYS_GUI_UC_21)</li> <li>For the ship label when mouse cursor is placed on the vessel</li> <li>For the grid view, for example to display the number of ships involved in the accidents when an icon indicating the incident within a specific region is presented.</li> <li>For all redirections: clear indication of the redirection which is understandable by the user</li> <li>The tool tips shall be configurable by the system administrator at the system level and by the user for his own preferences</li> </ul> <p>Refer to indicative wireframes of the SEG .</p>
<b>Application/ data used for the functionality:</b> ALL

<b>SSN_ECOSYS_GUI_REQ_62.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Basic view of the ship details</b> <ul style="list-style-type: none"> <li>Basic view shall be presented when clicking on a vessel symbol, for example in a user movable box to not obstruct the map layout unnecessarily.</li> <li>When clicking on a vessel the basic information will be displayed in the movable box and detailed information in the movable selection info window.</li> <li>The basic view window of selected ship shall be divided into two parts: <ul style="list-style-type: none"> <li>An information panel, presenting a set of default or user's pre-configured data sets from the tracking system and other sources, as well as the photos of the ship.</li> <li>Functions panel, allowing user to get detailed information if needed, for example detailed particulars of the ship, all photos, dangerous goods information, recent incidents, risk level, etc.</li> </ul> </li> </ul> <p>Refer to indicative wireframes of the SEG .</p>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_63.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Presentation of the specific information/options/functionalities</b> <ul style="list-style-type: none"> <li>All possible options and menus of the SEG shall be made visible according to the user access rights. These should be presented consistently (i.e. non blanks in menu's, etc.).</li> </ul> <b>Detailed information</b> <ul style="list-style-type: none"> <li>The detailed information should be retrievable by the user either by clicking on the specific icon or a link when needed and with minimum number of steps.</li> <li>It should be easy to toggle between the basic and the extended set of information.</li> </ul> <b>Grid view</b> <ul style="list-style-type: none"> <li>Grid view of the map when zoomed out shall be applied giving the number of the vessels, authorities and events (accidents) within the specific square of the grid.</li> <li>The information to display in the grid view should configurable by EMSA.</li> </ul> <b>Origin/source of the information</b> <ul style="list-style-type: none"> <li>The source of information shall clearly be stated or referenced to make it clear to the user the origin of information since the SEG will display information from different systems and integrate data from multiple sources. The default settings shall be applied until configured by the user. (This could be realized</li> </ul>	

through colour coding or specific text naming of the data originator)
Refer to indicative wireframes of the SEG .
<b>Application/ data used for the functionality:</b> ALL

<b>SSN_ECOSYS_GUI_REQ_64.</b>	
<b>Available today: New</b>	<b>Priority: P1</b>
<b>Additional usability dynamics should be considered for the design of the interface:</b> <ul style="list-style-type: none"> <li>The goal is to have a transparent interface that maximises user task completion and minimises interfacing factors without making it unnecessarily complex.</li> <li>Large and readable font size to ease legibility.</li> <li>Empty space between elements to provide a clear and easy reading of the information.</li> <li>The EMSA's visual identity (for example colour coding, fonts etc.) shall be considered for the points mentioned above.</li> </ul> <p>Visual elements In terms of visual elements the following drivers shall be considered:</p> <ul style="list-style-type: none"> <li>They shall be aligned with standard and modern graphic icons, buttons as well as the existing standards for the maritime applications (for example those derived from IMO, IALA and IHO) ;</li> <li>Icons shall be consistent</li> <li>Font shall be selected accordingly for better legibility;</li> <li>Interesting and appealing interface with a broader colour palette shall be available;</li> </ul> <p><b>EMSA visual identity</b></p> <ul style="list-style-type: none"> <li>The EMSA logo shall be present on the main SEG and in all elements which can be exported, like printouts, lists etc. Whenever a report is generated from the SEG the EMSA logo shall be included.</li> <li>All the visual elements of the application (colours, codes, fonts, background etc.) shall in principle follow the EMSA's visual identity standards, unless otherwise decided.</li> </ul> <p>Refer to indicative wireframes of the SEG .</p>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_65.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Layer management</b> <p>All the data displayed shall be managed/ organised and made available as layers, as specified in the relevant column ('layers') in the Appendix B.III.</p> <p>It shall be possible to manage the layers in order to activate, de-activate and filter relevant data presented on the map:</p> <ul style="list-style-type: none"> <li>On the screen – vessels/ targets as explained in the Appendix B.III for the filter function</li> <li>In the layers (either by clicking specific checkboxes linked to the data sources) or</li> </ul> <p>Refer to indicative wireframes of the SEG .</p>	
<b>Application/ data used for the functionality:</b> ALL	

SSN\_ECOSYS\_GUI\_REQ\_66.

Available today: Partially

Priority: P1

Management of information in tables

- In tabular views it shall be possible to search and filter data in each column, using a free text search at the top of each column. For example:

Provider	Report Type	Generation Time	Start Date	End Date
EGEOS x	x	2014 x	x	x
EGEOS	Services Only	2014/11/03 15:02:14	2014/07/01 00:00:00	2014/07/31 23:59:59
EGEOS-L	Licences and Services	2014/10/08 09:46:34	2014/07/01 00:00:00	2014/07/31 23:59:59
EGEOS-L	Licences and Services	2014/10/07 13:18:01	2014/08/01 00:00:00	2014/08/31 23:59:59

Figure 28 - Example of filtering in tabular view.

- In all tables, it shall be possible to sort the data ascent/decendent even when filter is applied to the column.
- It should be possible to 'undo' options to revert to older state when filtering data. If multiple variables were applied the 'undo' option shall return to the previous filtering and shall not reset all the filters applied before

Refer to indicative wireframes of the SEG .

Application/ data used for the functionality:

ALL

<b>SSN_ECOSYS_GUI_REQ_67.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>On the screen warnings</b> On the screen warnings shall be applied: <ul style="list-style-type: none"> <li>Whenever a user filters out specific information from the visual presentation (for example presenting only a selected ships, or showing only the historical track or integrated profile of a selected ship)</li> <li>Whenever paid services are applied (for example, when performing a poll for the LRIT data or when LRIT standing orders have been applied)</li> <li>Whenever specific functions mentioned further below are enabled (for example in the alerting functions)</li> </ul> <b>Auditory warning sound</b> System shall use audio sound to warn the user about particular events. The sound effects and their application shall be configurable by user for particular services and by EMSA in terms of application in the system (what kind of sound warnings are available to choose). The sound warnings shall apply, for example: <ul style="list-style-type: none"> <li>To the use of paid services, used together with the onscreen warning</li> <li>To the alerting/surveillance services</li> </ul>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_68.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Video/ Photo record of the screen</b>  The system will allow recording the on screen actions (for example moving the moves, showing labels, switching between the information and functions). The record will be either in the real-time or using the time-lapse configurable by the user The video/photo registration could be used for example to register a playback or the movement of the	

ships on the screen.

**Application/ data used for the functionality:**  
ALL

**SSN\_ECOSYS\_GUI\_UC\_23.**

**Ref: SSN\_ECOSYS\_GUI\_REQ\_68**

Scenario 1: User would like to record the movement of two ships for the purpose of an investigation regarding the unlawful entry of a specific ship into a prohibited area. He will activate an on screen record function and select an video output format and save it in a specific location on the device/PC used.

Scenario 2: User would like to present in a time-laps a situation of the ships involved in an accident/incident. He will activate the tool and configure the time-lapse interval and the output format of the file.

**SSN\_ECOSYS\_GUI\_REQ\_69.**

**Available today: Partially**

**Priority: P1**

#### **Map interaction functions**

The standard map interaction functionalities shall be foreseen, as well as the following options:

Show hide legend and display scale bar

- Allow set up of the legend window(s)/box on the screen in order to make the user aware of the symbols used. This may be applicable, for example to the ship or accident icons. The Legend box could be moved or docked on the screen
- There shall be configurable scale bars applied to the display.

Centre of a display and additional tools

- Allow centring on a specific point
- Measuring distance between several points with bearing
- And getting position information of a point.

Zooming and panning

- There shall be a good zooming level provided as well as a clear indication on the map of a selection of vessels after a search (i.e. centring the vessels in question).
- Standard 'left button hold' panning of the centre of the display shall be possible.

In principle, unless otherwise stated for the specific functionalities, there shall be a consistent way of navigating/ interacting with the objects using the mouse/pointer/pad throughout the interface, for example:


- 'Hovering' over a symbol or an object provides a basic information label or the tool tip dialogue box explained earlier.

Refer to indicative wireframes of the SEG .

**Application/ data used for the functionality:**  
ALL

<b>SSN_ECOSYS_GUI_REQ_70.</b>	
<b>Available today: Partially</b>	<b>Priority: P1</b>
<b>Map projections</b>  <p>The user should be able to change and view the map and all the relevant data/ information in different projections <i>inter-alia</i>: Mercator, Universal Transversal Mercator (with automatic change of zone), Polar, Equirectangular (plate carrée) and orthographic.</p> <p>The SEG shall allow three-dimensional visualizations of the globe.</p>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_UC_24.</b>
<b>Ref: SSN_ECOSYS_GUI_REQ_70</b>
Scenario 1: User would like to display a global density map on the 3D globe e.g. 'blue marble' like.  Scenario 2: User would like to display a world-wide travel of a vessel on the 3D globe e.g. 'blue marble' like.

<b>SSN_ECOSYS_GUI_REQ_71.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Compass mode</b>  <p>The system shall use the location services of the mobile devices in order to switch the display mode from north-up to the display oriented by the compass .</p>	
<b>Application/ data used for the functionality:</b> ALL	

<b>SSN_ECOSYS_GUI_REQ_72.</b>	
<b>Available today: New</b>	<b>Priority: P2</b>
<b>Follow-up mode for a ship</b>  <p>'Follow up' mode is an option situating the centre of the map/display at the location of the selected ship/target. From the user perspective the selected ship/target remains in fixed position while the map/background moves when the ship/target relocates.</p> <p>Upon selection of a specific ship and activation of the follow-up functionality, the ship will be always presented in the centre of the display while the maps will move when the position reports are refreshed.</p>	
<b>Application/ data used for the functionality:</b> ALL	

#### 4. Order of releases

Requirement reference	Description	Standard Version	Comments
		Release Number	
SSN_ECOSYS_GUI_REQ_1	Display of ships' latest positions and additional information	1	excluding the 'target age'
SSN_ECOSYS_GUI_REQ_2	MRS information display	1	
SSN_ECOSYS_GUI_REQ_3	Display of the ship identifiers and dead reckoning linked with the most recent position	1	
SSN_ECOSYS_GUI_REQ_4	Time preferences	1	
SSN_ECOSYS_GUI_REQ_5	User preferences	1	
SSN_ECOSYS_GUI_REQ_6	Intelligent search functionalities	2	first version of the intelligent search
SSN_ECOSYS_GUI_REQ_7	Advanced Search functionalities	1	Based on STAR OVR
SSN_ECOSYS_GUI_REQ_8	Area Centric Query (ACQ) with a Playback/Replay function	1	
SSN_ECOSYS_GUI_REQ_9	Integrated Ship Profile	3	
SSN_ECOSYS_GUI_REQ_10	Integrated Ship Profile Datasheet (ISPD)	3	
SSN_ECOSYS_GUI_REQ_11	Filtering option	1	
SSN_ECOSYS_GUI_REQ_12	Targets of Interest (TOI)	3	
SSN_ECOSYS_GUI_REQ_13	Points of Interest (POI) and Areas of interest (AOI)	1	
SSN_ECOSYS_GUI_REQ_14	Risk categorisation	3	
SSN_ECOSYS_GUI_REQ_15	Alerts	2	
SSN_ECOSYS_GUI_REQ_16	Historical Track	1	
SSN_ECOSYS_GUI_REQ_17	SSN Enrichment	1	
SSN_ECOSYS_GUI_REQ_18	Port Enrichment	2	
SSN_ECOSYS_GUI_REQ_19	SSN Voyage related information	2	
SSN_ECOSYS_GUI_REQ_20	SSN data requesting	2	
SSN_ECOSYS_GUI_REQ_21	SafeSeaNet Events display	2	
SSN_ECOSYS_GUI_REQ_22	SAM – SafeSeaNet – SafeSeaNet Accident Module- background information	3	
SSN_ECOSYS_GUI_REQ_23	Enrichment from other (existing) sources of information	2	
SSN_ECOSYS_GUI_REQ_24	Enhanced SAR SURPIC service	1	
SSN_ECOSYS_GUI_REQ_25	AIS SART and AIS SAR means display/presentation	1	

SSN_ECOSYS_GUI_REQ_26	AIS presentation of the base stations	2	
SSN_ECOSYS_GUI_REQ_27	Display of video data streams from different sources	3	
SSN_ECOSYS_GUI_REQ_28	Upload imagery and video data streams from different sources	4	
SSN_ECOSYS_GUI_REQ_29	Density maps	4	
SSN_ECOSYS_GUI_REQ_30	Link to the Fisheries Data	2	
SSN_ECOSYS_GUI_REQ_31	Access to external/ interoperable EO catalogues	4	
SSN_ECOSYS_GUI_REQ_32	LRIT Requests	1	
SSN_ECOSYS_GUI_REQ_33	LRIT Coastal Standing Order (CSO)- visualization of positions and coastal standing order polygons	1	
SSN_ECOSYS_GUI_REQ_34	EO acquisitions	1	
SSN_ECOSYS_GUI_REQ_35	EO Planned Acquisitions display at login and search options	1	
SSN_ECOSYS_GUI_REQ_36	Display of the EO Delivered Acquisitions at login	1	
SSN_ECOSYS_GUI_REQ_37	Access to EO added value services at login	1	first version with CSN use case
SSN_ECOSYS_GUI_REQ_38	Access to EO products and added value services through a manual query	1	a.a.
SSN_ECOSYS_GUI_REQ_39	Access to EO images and derived products	1	
SSN_ECOSYS_GUI_REQ_40	Functions available for EO images and derived products	1	
SSN_ECOSYS_GUI_REQ_41	Access to EO spill detection and related information (alert report, feedback)	1	
SSN_ECOSYS_GUI_REQ_42	Functions available for EO spill detection	2	
SSN_ECOSYS_GUI_REQ_43	Confirmed EO spill detection report to other systems (SSN, THETIS)	4	
SSN_ECOSYS_GUI_REQ_44	Feedback on CleanSeaNet detections	2	
SSN_ECOSYS_GUI_REQ_45	Access to Activity detection information and related information (activity report, feedback)	4	



SSN_ECOSYS_GUI_REQ_46	Functions available for Activity detection	4	
SSN_ECOSYS_GUI_REQ_47	Display of the Meteorological data	1	
SSN_ECOSYS_GUI_REQ_48	Meteorological Symbols and Terminology	2	
SSN_ECOSYS_GUI_REQ_49	Background information regarding STMID	1	
SSN_ECOSYS_GUI_REQ_50	STMID filtering, presentation and interaction	2	
SSN_ECOSYS_GUI_REQ_51	Pre-defined geographical areas display	2	
SSN_ECOSYS_GUI_REQ_52	Presentation of the ship identifiers from the Central Ship Database (CSD) and other vessel databases registries.	2	
SSN_ECOSYS_GUI_REQ_53	Presentation of the ship at certain scale	4	
SSN_ECOSYS_GUI_REQ_54	General Arrangement (GA) plans – file upload by the Member States and sharing	4	
SSN_ECOSYS_GUI_REQ_55	LOCODES Background information	1	
SSN_ECOSYS_GUI_REQ_56	Display of THETIS data	1	
SSN_ECOSYS_GUI_REQ_57	Usability, ergonomics	1	
SSN_ECOSYS_GUI_REQ_58	Public Version	4	
SSN_ECOSYS_GUI_REQ_59	Colour coding and symbols	1	
SSN_ECOSYS_GUI_REQ_60	Panels, side panels	1	
SSN_ECOSYS_GUI_REQ_61	Accessibility and tool tips	2	
SSN_ECOSYS_GUI_REQ_62	Basic view of the ship details	1	
SSN_ECOSYS_GUI_REQ_63	Presentation of the specific information/options/functionalities (detailed, grid, origin)	1	
SSN_ECOSYS_GUI_REQ_64	Additional usability dynamics (EMSA corporate identity elements)	1	
SSN_ECOSYS_GUI_REQ_65	Layer management	1	
SSN_ECOSYS_GUI_REQ_66	Management of information in tables	2	
SSN_ECOSYS_GUI_REQ_67	On the screen and auditory warnings	4	
SSN_ECOSYS_GUI_REQ_68	Video/ Photo record of the screen	4	
SSN_ECOSYS_GUI_REQ_69	Map interaction functions	1	

SSN_ECOSYS_GUI_REQ_70	Map projection and coordinate systems	2	
SSN_ECOSYS_GUI_REQ_71	Compass mode	n.a.	Only related to tablet devices
SSN_ECOSYS_GUI_REQ_72	Follow-up mode for a ship	4	

## Appendix B.I - Links with Directives and EMSA strategic documents

The following section lists the topics and functionalities taken into consideration for the SEG and the links with the relevant Directives and other EMSA strategic reference documents.

Topics / Functionalities of the SSN Ecosystem GUI	Directives, regulations, resolutions
Development of the SSN Ecosystem GUI	IFCD Document, 2.5.2, III, Graphical Interface (of the Central SSN) - This [ <i>interface</i> ] uses geographical information system technology to provide access to ship positions enriched with the data in the central SSN system [...] thus creating a vessel traffic image showing movements in near-real time. SafeSeaNet ecosystem major developments (2014/2016) – Version 1.5 - 19 September 2014 – Chapters 5.3, 5.4, 5.7
Provision of Integrated Maritime Services	EMSA revised mandate: Regulation (EC) No. 1406/2002 as amended by Reg. 1644/2003; 724/2004; 2038/2006; 100/2013. Article 2, Paragraph 4, point (b).
Integration of electronic messages  AIS data collected by satellite	Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III, 2.1.2.- Central SafeSeaNet System- [...] In accordance with Regulation (EC) No 1406/2002, the European Maritime Safety Agency, in cooperation with the Member States and the Commission, is responsible for:  — the technical implementation and documentation of SafeSeaNet;  — 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 and as referred to in point 3. [Comment: Point 3 below speaks about the relevant EU legislation]
Interface to other systems	Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III.3 - The system shall use industry standards and be able to interact with public and private systems used to create, provide or receive information within SafeSeaNet. [...]
Reference databases	Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III 2.3. [...] Technical documentation related to SafeSeaNet, such as standards for data exchange format, interoperability with other systems and applications, users' manuals, network security specifications and reference databases used to support reporting obligations, shall be developed and maintained by the Agency in cooperation with the Member States [...]
SSN Enrichment information Port+	Directive 2010/65/EU , Annex III.3 [...] —of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States in so far as Article 6 thereof applies; [...]  Annex III.3 [...] — Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues, as regards Article 12 (3) thereof; [...]

Topics / Functionalities of the SSN Ecosystem GUI	Directives, regulations, resolutions
BlueBelt ships	<p>Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III.3 [...] The operation of the SafeSeaNet system should support the facilitation and establishment of the European Maritime Transport Space without Barriers. [...]</p> <p>BlueBelt concept - The topic was discussed under Belgian Presidency at the Informal Transport Council in Antwerp on 15-16 September 2010 and resulted in Council Conclusions of 2 December 2010 on the <i>"Full integration of waterborne transport into the EU transport and logistics chains"</i>.</p> <p>Commission Of The European Communities - Brussels, 21.1.2009 COM(2009) 10 final - Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions - Communication and action plan with a view to establishing a European maritime transport space without barriers.</p>
LRIT information	<p>Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III.3 [...] Where internationally-adopted rules allow routing of LRIT information concerning third country vessels, SafeSeaNet networks shall be used to distribute amongst Member States, with an appropriate level of security, the LRIT information received in accordance with Article 6b of this Directive.</p> <p>Council Resolution concerning the EU LRIT Data Centre of 9 December 2008 states that 'Invited the Commission and the Member States, in the context of the EU Master Plan for AIS, to continue working to achieve the availability of integrated LRIT and AIS data through the SafeSeaNet system and to report on this work and on the use of the SafeSeaNet system for sharing of information'</p> <p>Resolution MSC.202(81), adopted on 19 May 2006, adoption of amendments to the International Convention for the Safety of Life at Sea, 1974, as amended, which includes Regulation 19-1 for the Long-range identification and tracking of ships.</p> <p>Resolution MSC263(84) Revised Performance Standards and Functional Requirements for the Long Range Identification and Tracking of Ships, as amended.</p>
CleanSeaNet information	<p>Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III.3 [...] The central SafeSeaNet shall be used for the distribution of electronic messages and data exchanged or shared in accordance with this Directive and relevant Union legislation, inter alia: [...]—Directive 2005/35/EC of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties, including criminal penalties, for pollution offences, as regards Article 10 thereof; [...]</p>
PSC / THETIS information	<p>Directive 2002/59/EC (as amended by the Directive 2014/100/EU), Annex III.3 [...]The central SafeSeaNet shall be used for the distribution of electronic messages and data exchanged or shared in accordance with this Directive and relevant Union legislation, inter alia: [...]— Directive 2009/16/EC of the European Parliament and of the Council (4) of 23 April 2009 on port State control, as regards Article 24 thereof,</p>

Topics / Functionalities of the SSN Ecosystem GUI	EMSA Reference documents
Development of the SSN Ecosystem GUI	SafeSeaNet Ecosystem Major developments (2014/2016), Version 1.5, September 2014 as approved by the EMSA ICT Steering Group on 19 September 2014.
Development of the SSN Ecosystem	Further evolution of SSN – IMDatE within the SSN ecosystem - Notes on System architecture and a technical development roadmap for 2014/2015" as approved by the ED on 28 April 2014.

## Appendix B.II - Meteorological and Ocean data requirements

Requirements	In-Situ data	HF Radar data	Forecast	Earth Observation Products
Ocean parameter/variable	- Sea surface current speed - horizontal (m/s) and direction (deg).	- Surface current direction (deg) and magnitude (m/s).	- Sea currents (speed in knots and direction) [0 m and vertical depth intervals of 5 m, 20m, 50m, 100m].	- Total Sea currents (speed and direction) at surface and at -15m.
	Sea tidal current speed (m/s) and direction (deg).	- North-South surface currents (m/s).		- Geostrophic sea currents component (speed and direction) at surface and at -15m
		- East-West surface current (m/s).		- Tidal sea currents component (speed and direction) at surface and at -15m
	- Sea water temperature (deg C).		- Gap free maps of sea temperature (deg C) [0 m and at vertical depth intervals 5 m, 20m, 50m, 100m].	- Gap free maps of sea surface temperature (deg C).
	- Sea water salinity (PSU).		- Sea salinity (PSU) [0 m and at vertical depth intervals 5 m, 20m, 50m, 100m].	- Sea surface salinity (PSU).
	- Significant wave height (m).		- Wave height (m).	- Wave height (m).
	- Mean wave period (s).		- Wave period (s).	- Wave period (s).
			- Wave direction (deg?).	- Wave direction (deg?).
	- Sea level (m).			Sea level (m)
	- Chlorophyll-a (mg/m <sup>3</sup> ).		- Chlorophyll-a concentration (mg/m <sup>3</sup> ).	- Chlorophyll-a concentration (mg/m <sup>3</sup> ).
	-			

Requirements	In-Situ data	HF Radar data	Forecast	Earth Observation Products
	-			
				- Sea ice (concentration, boundary).
				- Iceberg detection (location, size).
Meteo/Atmospheric parameter/variable	- Wind speed - horizontal (m/s). - Wind direction (deg).		- Wind speed and direction in degrees at 10m above sea level in knots; - Wind gust (Beaufort scale);	- Wind speed and direction <sup>2</sup>
	- Air temperature (degC).		- Air temperature (deg C).	
	- Air pressure at sea level (bar).		- Mean sea level pressure (hPa or mB at sea level).	
	- Air pressure (bar).			
			- Precipitation amount (mm).	
			- Cloud cover in %;	
	- Dew point temperature (degC).			
			- Wind chill (deg C);	
			- Visibility in km	
	- Nitrogen oxides (mg/m <sup>3</sup> or ppmv). <sup>3</sup>			- Nitrogen oxides (mg/m <sup>3</sup> or ppmv). <sup>3</sup>

<sup>3</sup> In the context of monitoring the emissions from Maritime transport. The Directive 2005/33/EC designated the Baltic Sea, the North Sea and the English Channel as sulphur emission control areas (SECAs).

Requirements	In-Situ data	HF Radar data	Forecast	Earth Observation Products
	- Sulphur oxides (mg/m <sup>3</sup> or ppmv). <sup>3</sup>			- Sulphur oxides (mg/m <sup>3</sup> or ppmv). <sup>3</sup>
Temporal resolution	- NRT, Hourly.	- NRT, Hourly.	- 1-3 hour intervals.	- Daily.
Temporal coverage	- Time-series with 30 day coverage.	- Maps (vectors) and Time-series with 30 day coverage.	- 5 day forecast (from now to 5 days ahead).	- 1 map per day with access to previous 30 days.
Spatial resolution	N/A.	- 0.5-1 km.	- TBC	- 1 km x 1km
Geographical coverage	- Main focus European sea and coastal areas but also Global coverage.	- Main focus European sea and coastal areas but also Global coverage.	- Primarily Europe and also Global	- Europe High resolution, Global Low resolution (spatial resolution to be defined).
Update frequency	- Hourly update.	- Hourly update.	- Frequency 3 hours	- Daily update
Availability	- 24/7, online access.	- 24/7, online access.	- 24/7, online access	- 24/7, online access
Access	- Discovery and View via Standard Web Services (WMS, WFS, CSW, WMTS).	- Discovery and View via Standard Web Services (WMS, WFS, CSW, WMTS).	- Discovery and View via Standard Web Services (WMS, WFS, CSW, WMTS)	- Discovery and View via Standard Web Services (WMS, WFS, CSW, WMTS)
Data permission				
Data quality	N/A.	N/A.	N/A.	N/A.
Comments	The paradigm is to have access to a service, which provides the discovery and view of these met-ocean parameters. EMSA is not seeking to have access to the "raw" data and to process this internally.			



## Appendix B.III – Elements and data types

Service	Data types	Type	Functionalities																	
			Display	Layers	Intelligent search	Search-by Identifier (Advanced Search)	Area Centric Query with Playback/Reply	Integrated Ship Profile	Targets of Interest	Risk categorization	Filter	ISD - Integrated Ship Profile Database	Export / Download / Email	Alerting	Request additional details	SAR/URPIC	Display and upload of video data streams	Density maps	LRIT requests	LRIT Coastal Stanning Order (CSO)
	TOI		X	X	X	X	X	X	X	X	X	X	X	R			X			
Reference Databases Services																				
CSD	Ships (Common Ship Database)				X	X	X	X	X	X	X	X	L	X	X					
	IMO				X															
	MMSI				X															
	Call sign				X															
	Name				X															
	Flag				X															
	IR (EU fishing vessels)				X															
	External number (fishing vessels and small vessels)				X															
	General Arrangement (GA) plan																			
CLD	Locations	Static position	X	X		X			X		X	X	L	X						
	LOCODE				X															
	Name				X															
COD	Organisations	Static position	X	X		X					X	X	L		X					
	Name				X															
	Contacts		X										X							
	Function					X														
	Area	Area	X	X		X								R						
	STMD Duty					X														
CSB	Countries		X	X																
	Code																			
	Name																			
SSN Service																				
SSN	SSN enriched information	SSN enrichment	X	X		X	X	X		X	X	X	L	X	X					
SSN	Voyage information	Track, SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Hazmat information	SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Security notification	SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Waste notification	SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Crew and Passengers information	SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Exemption	SSN enrichment	X			X	X	X		X	X	X	L	X	X					
SSN	Incident Report	SSN enrichment or Static po	X			X	X	X		X	X	X	L	X	X		X	X		
SSN	MIS Report	Ship position	X	X		X	X	X		X	X	X	L	X	X					
SSN	T-AIS	Ship position	X	X		X	X	X		X	X	X	L	X	X	X	X	X		
SSN	SSN Accident Module - Incident and accident	Static position	X	X		X	X	X		X	X	X	L	X	X	X	X	X		
IMS Service																				
IMS	S-AIS	Ship position	X	X		X	X	X			X	X	L	X	X	X	X	X		
IMS	Meteorological and ocean data	External	X	X							X									
LRIT Service																				
LRIT	LRIT position	Ship position	X	X		X	X	X			X	X	L	X		X	X	X	X	
LRIT	LRIT Sensitive Area Monitoring	Area	X	X										X						
IMS-EFCA Service																				
IMS-EFCA	VMS position	Ship position	X	X		X	X	X			X	X	L	X	X	X	X	X		
IMS-EFCA	Fishing vessels registry file	EFCA enrichment	X			X					X				X					
IMS-EFCA	Fisheries incidents	EFCA enrichment	X	X		X	X	X	X	X			L	X				X		
IMS-EFCA	All enrichment elements	EFCA enrichment				X					X	X	X	X	X					
IMS-EFCA	Fisheries areas	Area	X	X	X		R		X		X			R						X
IMS-EUNAVFOR Service																				
IMS-EUNAVFOR	Ship register	EUNAVFOR enrichment	X			X	X	X			X	X			X					
IMS-EUNAVFOR	Piracy incidents	EUNAVFOR enrichment	X	X		X	X	X	X				L		X			X		
IMS-MS Service																				
IMS-MS	Encrypted patrol vessel data	Ship position	X	X			X	X			X		L	X	X		X	X		
IMS-MS	SafeTrx	Ship position	X	X			X	X					L	X	X	X	X	X		
Earth Observation Services																				
EO	EO image	EO Product	X	X	X	X	X				X		I		X		X	X		
EO	EO video (skybox)	EO Product	X	X	X	X	X		X				V						X	
EO	EO footprints (catalogue)	EO Product	X	X	X	X	X				X		L/G				X			
EO	Area of interest (alert area, sensitive area)	Area	X	X	X	X	X				X		G							
EO	Possible spill detected	Area	X	X	X	X	X		X				L/G	X	X		X	X		
EO	Possible spill forecast and backtrack	Area	X	X		X	X				X		G					X	X	X
EO	Activity detection	EO enrichment	X		X	X	X				X		L/G	X	X		X			
EO	Vessel detection (VDS)	Ship position	X	X		X	X	X	X				L/G			X	X	X		
EO	EO alert report	EO enrichment	X			X			X				P/E	X	X					
EO	MS feedback	EO enrichment	X	X		X					X		L/E	X						
EO	SAR wind, SAR swell	EO enrichment	X	X		X					X		M							
THETIS Service																				
THETIS	THETIS public data	THETIS enrichment public	X			X				X	X		L							X
THETIS	THETIS private data	THETIS enrichment private	X			X				X	X		L		X					

Object types	
Type	Definition
Ship position	Ship ID (according to data sources) + Lat/Long + timestamp + different data depending on the source (AIS-T, AIS-S, LRIT, MRS, VMS, VDS, Encrypted patrol vessel data, SafeTrx, Reported positions) + Enrichment (see several types)
Static position	ID + Lat/Long
Track	Several ship positions for the same Ship ID
Area	Georeferenced feature (e.g. spills, Fisheries areas, Authorities areas (MRS, EEZ, etc.))
EO Product	Satellite image, EO footprints (catalogue)
External data sources	From a web service (e.g. Meteorological and ocean data)
Enrichment types	
Type	Definition
SSN enrichment	Voyage information, Hazmat Y/N, Security Y/N, Waste Y/N, Incident Y/N, Crew&Pax Y/N
Voyage Information	Previous Port, Last Port, Destination (Port of Call), ATA, ETA, Next Port
Port enrichment	List of Expected calls, List of Arrivals, List of Departures
EFCA enrichment	Fishing authorisation, Gears, Incidents (reported by EFCA), ID RFMOs (ICAA, NAFO-NEAFC, EIR data, ERS data, CATCH Report), EU or 3rd country yes/no, Home Port, LOA, KW, VMS yes/no, gross tonnage (GT)
EUNAVFOR enrichment	EUNAVFOR information, EUNAVFOR piracy incidents
EO enrichment	Activity detection, Meteo measurement (SAR wind, SAR swell), MS feedback (report activity, report spill, report possible source, follow-up actions), Additional EO service (to be defined)
THETIS enrichment public	THETIS Port State Control Public data (Details of inspection reports; List of detained ships, and; List of banned vessels),
THETIS enrichment private	THETIS PSC restricted data following the THETIS systems access right rules. Ship particulars and details; Ship Risk Profile (SRP); Inspection reports; Priority for inspection and reason for priority, and; Ships selected for inspection.

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**Appendix B.IV - Export and import data types**

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Export/Download/Email types	
Type	Definition
List format (L)	txt, csv, xls, pdf
Image format (I)	png, jpg, pdf
PDF format (P)	pdf
Geographical format (G)	shp, gml, kml, csv
Video (V)	TBD
EO Metocean (M)	netcdf
Import/Upload types	
Type	Definition
List format (L)	txt, xls, csv
Geographical format (G)	shp, gml, kml, csv

## Appendix B.V - Indicative symbols

**Order of priority once multiple symbols are selected**

- 1 Standard
- 2 SSN Enrichment
- 2 Risk
- 2 TOI
- 3 Data Source - but (1) in the historical track
- 4 AIS vessel type

**Standard**

**Risk**

- High
- Medium
- Low

**SSN Enrichment**

- Normal
- Alert
- SHT
- Banned
- Hazmat
- Idle

**Data Source**

- T-AIS
- Ship-AIS
- Sat-AIS
- LRIT
- VDS
- Radar
- VMS
- FS
- EX

**TOI, selected ship or selected event/ area**

**AIS vessel Types**

- Unknown
- Shipping
- Special Craft
- Cargo
- Other
- Wing In Ground
- High Speed Craft
- Passenger
- Tanker
- Fishing

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**Appendix B.VI - Indicative user preference configuration list**

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Colour schemes
Vessel Symbols
Track layer preferences - opacity, colour, width
Dead Recognizing
Labelling and tooltips - (TBD)
Visual preference (day/night view)
Time Zone and format, position timestamp format
Units (Measurement, coordinates)
Map projection and layers
Map grid (including grid spacing)
Geographical area, centre of the display and zoom level at login
EO products- (TBD)
Oil spill layer- opacity, position
Map overview
Other layers (for example density maps, or EEZ, fishery lines, SRR)- opacity
AOI(s) and POI(s) -save the AOI(s) and POI(s) colour, names, symbology
TOI(s) - save selected targets, names of the TOI(s), symbology and colours
Risk Categorization - saved configuration and symbology