

# **Appendix D to Tender Specifications**

## **SEG Technical Requirements for implementation**

## Appendix D – Technical requirements for implementation

The functional requirements for the SEG are included in Appendix B. This document provides the key technical requirements for the implementation of the SEG.

The main underlying products and technologies currently, that are part of IMDatE, CSN (also referred to as EO DC), SSN, EU-LRIT-DC are the following:

- VMware
- RedHat Enterprise Linux
- Oracle DBMS
- Apache
- Weblogic
- MySQL
- Oracle Identity Manager
- Oracle Entitlement Server
- Tomcat JSP and Servlet engine
- Soap web service and SOAP engine
- Log4J
- Liferay
- Geoserver and/ or ArcGIS
- Degree

The existing web graphical user interfaces are based on (although the bidder may propose other technologies):

- AJAX
- HTML
- Javascript
- WebGL
- Facelets

The contractor shall comply with the EMSA technical landscape that is available in the draft contract (note this not provided as an appendix). Should the contractor propose a new technology it should be presented to EMSA for prior approval.

### 1. SEG INTEGRATION WITH BUSINESS SERVICES

The SEG shall integrate with a wide range of business services from SSN, CSN, IMDatE/STAR, LRIT DC and THETIS. The current interfaces for these business services are provided in Appendix E. A number of new business services, also identified in this Appendix will be implemented by EMSA and will be provided to the bidder either at the kick-off meeting or at the initiation phase of each release of Module 1.

An integration layer will be placed between the SEG and the backend components in order to support “independence and isolation” from the underlying Business Services provided by the Backend Components, thus supporting Business Data Mash-ups from different Backend Components and Modularity.

The integration layer will be the responsibility of EMSA however the contractor will be expected to review the business services in Appendix E and propose in the design phase the final interfaces that the integration layer should expose to the SEG; therefore the business service interfaces used by the SEG may be different from those indicated in Appendix E. The contractor may propose to connect in some cases directly to business services. Based on the proposed interfaces, which EMSA is required to approve,

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EMSA will be responsible to implement and deploy these interfaces exposed through the integration layer. The figure below provides the high level architecture.

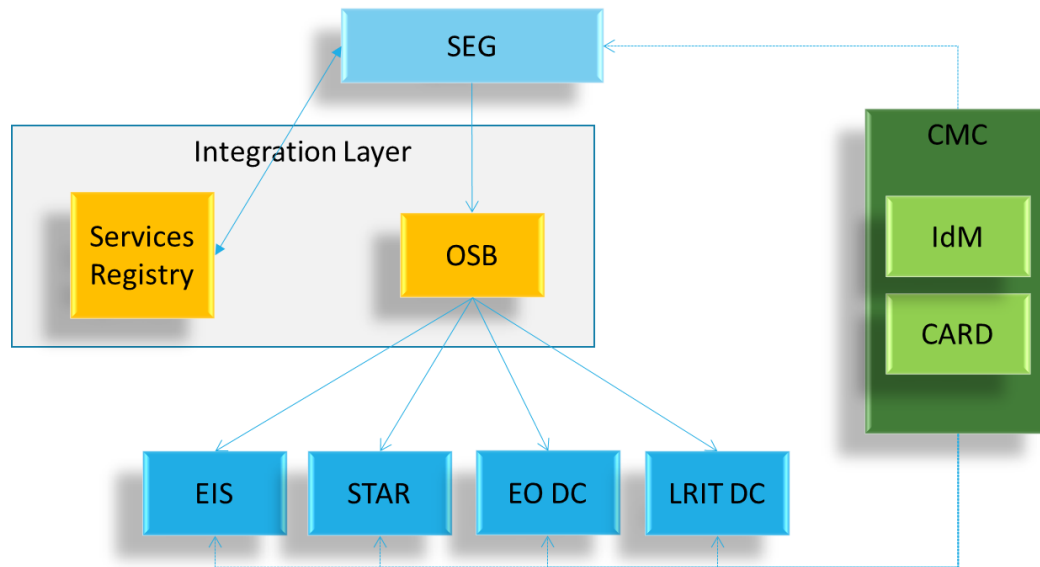


Figure 1: Architecture

### 2. SEG INTEGRATION WITH IDM

The contractor shall be responsible for integrating with the EMSA Identity Management System / Single Sign-On which support authentication and access to user details. Refer to Appendix F for the technical options.

### 3. SEG INTEGRATION WITH LIFERAY

EMSA envisages SEG to be integrated in the EMSA's Liferay Portal, by selecting one of these options:

- 1) Develop application following Liferay portlet specification:
  - Application will be tight integrated with Liferay and can take advantage of the out-of-the-box functions provided by Liferay;
  - Front-End portlets will run inside Liferay using Liferay infrastructure.
- 2) Develop application as an external application and run it inside an IFrame portlet:
  - Front-End application will be an external application running outside Liferay in its own infrastructure but the content will be displayed inside an IFrame portlet;
  - Depending on the needs, the IFrame portlet can be the out-of-the-box IFrame portlet or extended version with custom development.
- 3) Develop application as an external application and configure Liferay to call an external URL:
  - Front-End application will be an external application running outside Liferay in its own infrastructure.
  - Liferay will be configured only to call external URLs.

The bidder should select the technical integration option to be used and is free to suggest any other integration option that is considered more advantageous than the ones presented. In case a different integration option is selected, it needs to be justified.

EMSA's Liferay Portal will be the entry point and the system responsible for the authentication.

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In the configurations of Liferay, it will be necessary to specify the details of the authorizations to be implemented in order to provide to the end-users the correct functionalities. These details will be provided by the contractor during the project development phase.

Lastly, EMSA has implemented the MAP (Maritime Application Portal) in the Liferay portal which is the single entry point for all maritime applications. After a user enters their access credentials they are directed to the MAP which provides access to all the services that the user is authorised to use. Here they will click on the link for the SEG which will then open.

### 4. SEG INTEGRATION WITH CARD (CENTRAL ACCESS RIGHTS DATABASE)

The Central Access Rights Database (CARD) is the repository of the policies that govern the access to EMSA Maritime information.

The typical user of a Maritime Application has limited access to data or functions (“resources”). An example of data is a ship position at a given moment in time. An example of function is the possibility to change the transmission rate of an LRIT equipment on board a ship. Restrictions on access rights (“limitations”) are related to the characteristics of the resource to be protected, like for instance the data provider or the geographical area in the case of geo-spatial data.

Some examples of access rights limitations are:

- a user with profile “EFCA and FMC - Atlantic” has access to VMS data on the Atlantic Ocean only
- a user with profile “PSC” has access to the Port Call messages of ships bounded to the port associated to his/her Organization
- a user with profile “Pollution Control” can only report Incident Reports of type POLREP.

Access rights limitations are stored in the CARD and made available to Maritime Applications for enforcement. Limitations are based on the user’s profile and may be dependent on the attributes of the user, like Country and Organization.

CARD provides to Maritime Applications a service (system to system interface) to receive the description of the limitations applied to a resource according to the following schema:

Limitation Type	Description	Example
No Access	User has no access to the resource	
Full Access	User can access the resource with no limitations	
Source	User has limited access to the resources depending on the Data Provider	Data provider is a country that belongs to EU EFTA
Location	User has limited access to the resources depending on his/her Country or Organization	Access of Port Authorities to Port Calls information is limited to ships bound to their port
Area	User has access only to the resources within the geographic area	Access limited to ship positions in the Baltic Sea
Operation	User has access only to the resources that are available for the specific operation	Access to Earth Observation images limited to the SAFEMED resources
Data type	User has access only to	Access to Incident Reports of

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	resources of a certain type	type POLREP
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The details of the CARD system to system service (protocol, format) and will be available by the end of 2015. The contractor shall integrate the SEG with the CARD interface in order to allow the relevant authorisation.

### 5. MODULAR AND EXTENSIBLE IMPLEMENTATION

The Ecosystem sub-systems are increasingly designed as extensible and scalable platforms thus allowing the plug-in of new operational services. The contractor shall therefore implement the SEG in modular and extensible approach that allow new information layers, panel content, data objects and queries to be easily added.

The SEG should be implemented with a pluggable framework with well defined extension points. This would allow new features to be able to added and updated on a more modular fashion.

EMSA shall at least be able to configure the following elements of the GUI:

- Symbolizers (vessels, incidents etc)
- Labels of panels/sub-panels
- Content of panels/sub-panels
- Data filters with multiple grouping levels
- Fonts
- Visibility of specific sub-panels, panels, and functionality

Where possible such configuration should be restricted to a small number of files to ensure maintainability by EMSA staff. The contractor shall provide the necessary tools that allow the such customisation to be performed by EMSA. The contractor shall provide the relevant documentation concerning the API or extension points for supporting SEG customisation.

The GUI implementation shall at least be compatible with Version 1.3 of the OGC WMS specification in order to allow the display of the CSN products as well as external information layers.

As per Appendix B, the contractor will also implement a mobile friendly version (optimised for use on tablets) of the SEG. This will re-use as much as possible the components implemented for the full desktop version.

IMDatE uses the concept of 'operation' which allows the GUI layout, available functionality and data to a group of users to be tailored. The same concept shall be applied to the SEG, where EMSA is able to define the panel configuration, symbolisers, layers and available functionality for a specific 'operation'.

Every user shall have a unique SEG user profile. This shall include the possibility of configuring the view of the SEG in terms of: start-up centre map geographical position, level of map zoom; type of activated layers; visibility of tabular data and product information; etc.

The SEG shall have a number of default map navigational tools including (but not limited to): zoom in/out, zoom factor, zoom history, map size, pan, centre, reference map, selection of region of interest by introduction of coordinates and interactive drawing of polygon; go to coordinate lat-long; cursor lat-long; distance measurement. The user shall be able to use a "pan" tool to navigate around the map.

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The SEG coordinate system shall be WGS84 and the default map projection shall be Mercator. The WUP shall be able to support alternative projected Cartesian coordinate systems mentioned in the business requirement appendix.

Re-useable components will be stored in EMSA software component repository.

### **6. NON-FUNCTIONAL REQUIREMENTS**

The SEG layer shall be able to render 2500 objects (mainly vessel positions) within 1 second using a standard desktop PC. The contractor shall demonstrate it has met this performance requirement in the FAT and SAT phases.

The Contractor shall use accelerating techniques to improve the overall performance and the usability of the SEG. The Bidder shall describe their proposed accelerating techniques. Where appropriate techniques like AJAX may give the user the illusion of a much more performing application.

### **7. USER ACTIVITIES/BUSINESS STATISTIC TOOL**

The contractor shall provide a user activity statistic tool for collecting statistics on which functionality of the SEG are used more frequently. This will provide for EMSA a better understanding of functionality priorities (based on real usage) for enhancements, bug fixing and even decommissioning of non-used functionalities.

### **8. BROWSER COMPATIBILITY**

The SEG shall be compatible with Firefox (including ESR version) , Chrome, Internet Explorer and Microsoft Edge browsers. It should support the latest version of the relevant browsers, with a tolerance of the 2 minor versions back.

The SEG shall not require the installation of any browser plug-in or additional software on the client system. An exception to these requirements shall be justified by the Contractor and accepted by EMSA. The SEG potential users may have stringent requirements on the type of software that is deployed in their organisations.

Several different client/server or purely web mapping browser applications are available on the market to this date. EMSA emphasises that a web based thin client is the current preferred type of application.

The minimum screen size which has to be supported shall be 1024x768 pixels. However in most of the cases higher resolution monitors will be available at the user premises. The SEG shall calculate itself the available screen real estate.

Where identified in the functional requirements the SEG shall also support undocking of specific panels so that they can be used in a dual screen configuration.