

Annex A

of the Tender Specifications

attached to the

Invitation to tender N° EMSA/NEG/16/2014 for the

implementation of Mobile applications for integrated maritime

services

TABLE OF CONTENTS

1.	Introduction.....	3
1.1.	Background	3
1.2.	Objectives.....	3
1.3.	Work breakdown.....	3
1.4.	Requirements for the contractor.....	4
1.5.	Software development methodology.....	4
1.6.	Applicable definitions.....	4
1.7.	Global requirements.....	5
2.	WP1 – Mobile application requirements.....	6
2.1.	General requirements.....	6
2.2.	Functional requirements.....	8
2.2.1.	General requirements	8
2.2.2.	Use Cases.....	9
2.2.3.	Symbology.....	11
2.2.4.	Background map layers / Electronic Nautical charts	12
2.2.5.	Configuration requirements	12
2.3.	Graphic design requirements.....	13
2.4.	User Authentication	15
2.5.	EMSA services interfaces.....	16
2.6.	Mobile application deployment.....	18
2.7.	Non-Functional requirements.....	19
2.8.	Project delivery requirements	20
3.	WP2 – Development of service side business logic	21
3.1.	Functional requirements.....	21
3.2.	Non-Functional requirements.....	22
3.3.	Testing & Deployment	22
4.	WP3 – Assessment and implementation of cloud based digital storage and management service	24
4.1.	Cloud storage service	24
4.2.	Digital content: create, describe and upload.....	25
5.	WP4 - maintenance	27

6.	Project planning requirements.....	29
7.	Summary of deliverables (Informative)	30
	Appendices to Annex (A)	33

1. INTRODUCTION

1.1. BACKGROUND

The European Maritime Safety Agency (EMSA) was established under Regulation 1406/2002/EC of the European Parliament and of the Council to contribute to the enhancement of European maritime safety.

Among its tasks, the Agency should progress on the Integrated Maritime Data Environment (IMDatE), data integration (the exchange of data between information systems) and data fusion (combining data from different sources). Mobile applications can play a significant role in terms of allowing new usage occasions of EMSA maritime applications as well as expand the range of users of EMSA systems.

1.2. OBJECTIVES

The objectives of the Integrated Maritime Services Mobile Applications (IMS App) project are:

1. Development of a IMS mobile application for multiple platforms
2. Development of server side business logic components
3. Assessment and implementation of a cloud based storage and management for digital content
4. Maintaining and correcting, when needed, relevant IMS App elements.

1.3. WORK BREAKDOWN

In this respect it is anticipated that the project plan shall include the following work-packages as per table 1. The offer should detail further the specific activities to be executed under each work-package and the milestone events associated with the activities.

Ref	Work package name	Work package description
WP1	Development of IMS application for multiple platform	<ul style="list-style-type: none"> ▪ Development of IMS mobile application for iOS (2 separate iPad versions, iPhone) and Android (1 version Tablet and larger size phones)
WP2	Development of service side business logic	<ul style="list-style-type: none"> ▪ Development of server side business logic component using the RESTful technology that serve as a single point of contact for all existing services (implemented in SOAP, GET and POST)
WP3	Assessment and implementation of cloud storage for geo-referenced digital content	<ul style="list-style-type: none"> ▪ Assessment of existing cloud based solutions (cost benefit analysis) for uploading, management and visualization of mobile digital content ▪ Implementation and configuration of the selected solution ▪ Shall include the procedures required for transferring this content to a different cloud supplier or to EMSA internal storage at the end of the contract with the selected cloud provider.
WP4	Maintenance	<ul style="list-style-type: none"> ▪ Provide two years of maintenance and support for the developed

Ref	Work package name	Work package description
		solutions

1.4. REQUIREMENTS FOR THE CONTRACTOR

After contract signature, the contractor of IMS App shall follow, during the implementation and maintenance of the project, EMSA's standards in terms of system landscape, project delivery requirements, working procedures and service requirements. These are included in Appendices A, D and E of this technical Annex.

1.5. SOFTWARE DEVELOPMENT METHODOLOGY

It is expected that the contractor will follow an agile-based approach for implementing the project, with multiple iterations of the solutions presented, to ensure that EMSA's staff can follow-up closely/review, comment and interact with the software and graphic design experts throughout all phases of project implementation. Each sprint linked with WP1 should last a maximum of 10 days.

1.6. APPLICABLE DEFINITIONS

Ref: IMS_DEF_01	Nature: Informative
Application	
Application is a computer program or set of computer programs designed to help people perform a predefined set of activities.	
Ref: IMS_DEF_02	Nature: Informative
Interface	
The communication boundary between: <ul style="list-style-type: none"> IT entities such as: IT systems, applications, software modules within an application, software or hardware devices, Users and IT systems (i.e. graphical interface) 	
Ref: IMS_DEF_03	Nature: Informative
Service	
(OASIS definition) Service is a mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description	
Ref: IMS_DEF_04	Nature: Informative
User	
A human being or an Authority accessing one or more EMSA applications using a web – based interface..	
Ref: IMS_DEF_05	Nature: Informative
User Interface	
User interface is everything designed into an IT system which includes one or more applications which a human being may interact with -- this includes, but is not restricted to: display screen, keyboard, mouse, light pen, desktop	

appearance, illuminated characters, help messages, and how an application program or a Web site invites interaction and responds to it.

1.7. GLOBAL REQUIREMENTS

Ref: IMS_GEN_01	Nature: Mandatory
General requirement	
All the requirements formulated with the terms “shall”, “must” and “has to” are mandatory to fulfil. All requirements formulated with the term “should” will be considered an advantage if fulfilled.	
Ref: IMS_GEN_02	Nature: Mandatory
General requirement	
If the bidder has to deviate from the requirements set out in this document, then the bidder must present equivalent requirements and must justify the deviation(s). EMSA reserves the right to disagree with the deviation and the proposed solution.	
Ref: IMS_GEN_03	Nature: Mandatory
General requirement	
References in this document like “Chapter”, “Section” or “Paragraph” are referring to this document unless other reference documents are identified explicitly.	

2. WP1 – MOBILE APPLICATION REQUIREMENTS

2.1. GENERAL REQUIREMENTS

Ref: IMS_WP1_01	Nature: Mandatory
General description	
<p>The aim of the IMS App project is to build upon the lessons learned from the IMS proof of concept application and deploy an operational mobile solution to EMSA users of integrated services. The project will include:</p> <ul style="list-style-type: none"> ▪ Development of iOS and Android application to address a set of use cases, including: <ul style="list-style-type: none"> ○ Vessel position & detail information ○ Area centric query ○ Incident reporting ○ Oil spill monitoring and feedback ○ Fisheries control and reporting ▪ Development a server side business logic component on the IMDATE platform to cater to the mobile application ▪ Integration with the EMSA's single sign on via mobile access gateway ▪ Display of background nautical charts initially using current EMSA ENC's. In the future the application should be able to use other ENC solutions, when available. ▪ Assessment of available solutions for service that will allow uploading and managing of photos, videos, text information, as well as relevant geographical meta-information associated with the abovementioned digital content. The service should ensure that uploaded content also abides to the necessary access permissions 	
Ref: IMS_WP1_02	Nature: Mandatory
Versions required and devices supported	
<p>The contractor shall implement separate versions adjusted to the following platforms:</p> <ol style="list-style-type: none"> 1) WP1.1 iOS (iPad) 2) WP1.2 iOS (iPhone) 3) WP1.3 Android (Tablet / Large screen phone) 	
Ref: IMS_WP1_03	Nature: Mandatory
WP1 requirements scope	
<p>All the WP1 requirements are applicable for the three versions of the mobile application:</p> <p>WP1.1 IMS App for iPad</p> <p>WP1.2 IMS App for iPhone</p> <p>WP1.3 IMS App for Android (tablet/Phone)</p>	
Ref: IMS_WP1_04	Nature: Mandatory
Harmonized experience	
<p>The bidder should follow OS guidelines in terms of generic functionalities (multi-gestures, zoom, etc.). For the implementation of specific functionalities of the IMS App the bidder should try to provide an harmonized user experience between platforms.</p>	
Ref: IMS_WP1_05	Nature: Mandatory
Technology selection	

The bidder shall justify the type of technology used to deploy the abovementioned versions (HTML5 vs Hybrid App vs Native App). The bidder shall provide a comparative SWOT analysis of the selected technology (when comparing to all others).	
Ref: IMS_WP1_06	Nature: Mandatory
iOS version	
The developed application shall be compatible with version 7 of iOS (or above). The contractor shall be responsible for updating the mobile application to any iOS changes for the duration of the project (development + 2 years of maintenance).	
Ref: IMS_WP1_07	Nature: Mandatory
Android version	
The developed application shall be compatible with version 4.1 of Android (or above). The contractor shall be responsible for updating the mobile application to any Android changes for the duration of the project (development + 2 years of maintenance).	
Ref: IMS_WP1_08	Nature: Mandatory
Battery autonomy	
The application should take into account the battery drainage of the devices and implementation should aim to balance the use of battery with good performance.	
Ref: IMS_WP1_09	Nature: Mandatory
Connectivity	
The application should work on Wi-Fi, 3G and 4G.	
Ref: IMS_WP1_10	Nature: Mandatory
Interruptions	
<p>The application shall manage interruption due to:</p> <ul style="list-style-type: none"> ▪ Incoming SMS/MMS ▪ Incoming calls ▪ Alerts for push mails/chats/updates ▪ Low battery alerts ▪ Alarm clocks ▪ Force the application to minimize to access the menu or home screen ▪ Device restart (as result of either crash or user action) ▪ interruption of WiFi /3G communications 	
Ref: IMS_WP1_11	Nature: Mandatory
Documentation	
<p>The bidder is in charge to maintain and update the following documents during the lifetime of the project;;</p> <ul style="list-style-type: none"> ▪ Installation manual ▪ Operating and maintenance manual (OMM) ▪ Incident procedures <p>The bidder is also responsible to update any of the abovementioned documents on request by EMSA. Further details on documentation are provided in Appendix D and Appendix E on service and project delivery.</p>	
Ref: IMS_WP1_12	Nature: Mandatory
Application Architecture	

While EMSA is accountable, the bidder is responsible for the architecture of the IMS App. Based on the Reference Model of Open Distributed Processing methodology, the design of the application shall include the following viewpoints::

- Information
- Computational
- Engineering
- Technology.

Ref: IMS_WP1_13

Nature: Mandatory

Privacy and data access on the device

The application shall not require any permissions other than those needed for implementing the specified requirements (e.g. no need to access the user's contacts list or stored emails on the client side)

2.2. FUNCTIONAL REQUIREMENTS

2.2.1. GENERAL REQUIREMENTS

Ref: IMS_WP1_14

Nature: Mandatory

Basic functionality

The contractor should implement the following basic functionality in the IMS app

- Use the GPS on-board the device to report the current position and use it in multiple functionalities associated with the different use cases
- Use built in camera for capturing video + audio + photography
- Associate metadata with captured information
- Use of symbology layers from IMDATE desktop application
- Use of symbology linked with specific operations
- Caching/storing of acquired digital content (when operating outside of network coverage) to be previously uploaded.

Basic functionalities shall be available for all use cases.

Ref: IMS_WP1_15

Nature: Mandatory

Time slider

The contractor shall implement, associated with the relevant use cases, a times slider that allows the user to visualize information along a timeline (vessel positions, oil spills, incidents, etc.). Elements for the configuration of the time slider will be provided by EMSA at the Kick-Off Meeting (KOM).

Ref: IMS_WP1_16

Nature: Mandatory

Area centric query

By interacting with the area centric query service of IMDATE, the contractor shall implement in the mobile application a functionality that displays a complete maritime and oceanographic picture of a selected area, built-up from different layers of information, such as ship traffic data (full range of available ship position reports), satellite SAR picture of the defined area, optical image of the area, weather forecast associated to the area, oceanographic data (currents, waves, sea temperature, algae, etc).

This functionality shall be available for all use cases.

Ref: IMS_WP1_17

Nature: Mandatory

Feature search

The contractor shall implement, associated with the relevant use cases, a search functionality that can be used and configure to search through the following features:

- Vessels
- Oil spills
- Feedback
- Incidents

An advanced search functionality, that can be launched from the options / configuration screen should allow the refining of the search using area and time..

Ref: IMS_WP1_18	Nature: Mandatory
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Favourite vessel list

The contractor shall implement the following functionalities linked with a list of favourite vessels:

- List of favourite vessels available and configurable (add / delete from list) from the configuration
- Support to multiple vessels (over 100)
- Enable / disable display of favourite vessels

Ref: IMS_WP1_19	Nature: Mandatory
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Notifications and alerts

The contractor shall implement alerts / notifications generated by the IMDatE alert service. These alerts are generated by automatic behaviour algorithms (also known as “surveillances”) configured in the desktop application. The IMS mobile app shall poll this service on a regular basis to receive new alerts.

Ref: IMS_WP1_20	Nature: Mandatory
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Vessel clustering

Taking into account that the average number of vessels at a given moment in Europe is over 20 000, and to avoid performance issues, the contractor shall implement vessel clustering on the client side. The clustering will display the number of vessels in a certain area until a certain zoom level. After this point, the individual vessels will be shown.

The clustering will be aligned in terms of design (colours, number of clusters, etc.) to the IMDATE desktop application and further information on the clustering configuration will be provided at the KOM.

Ref: IMS_WP1_21	Nature: Mandatory
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Offline usage and caching

The contractor shall take into account that the implementation of the use cases required the storage of data on the device (background layers, latest position of vessels, etc.). Furthermore, and in case of offline usage, content to be uploaded (photos, reports, videos, and all associated metadata) shall be stored on the device and uploaded when connectivity is available.

2.2.2. USE CASES

Ref: IMS_WP1_22	Nature: Mandatory
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General description

Information to be provided in all the use cases (Vessel information, incident information)

Ref: IMS_WP1_23	Nature: Mandatory
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Use case 1 – Vessel position and information

The contractor shall implement Use Case 1 – Vessel position and information.

This use case is focused on the provision of vessel oriented information, focusing on the geographical components (vessel position on the map). Information linked with this use case includes:

<ul style="list-style-type: none"> ▪ Display of last know position from all data sources ▪ Display of vessel tracks (last 6, 12, 24 and 48 hours) ▪ Timeline of vessel position information ▪ Display of vessel track with specific vessel position points and interpolation ▪ Display of vessel information (ship details) ▪ Display of recent port of calls ▪ Display of notifications/alerts generated by specific “Surveillances” generated by the vessel behaviour algorithms 	
Ref: IMS_WP1_24	Nature: Mandatory
Use case 2 – Fisheries control	
<p>The contractor shall implement Use Case 2 – Fisheries reporting.</p> <p>This use case includes:</p> <ul style="list-style-type: none"> ▪ Display of symbology associated with fisheries control ▪ Display of existing fisheries reports ▪ Provision of new fisheries reports (digital content and metadata to be uploaded to the cloud service referred in WP3 – structure / content of the report to be provided in the design phase of the project) ▪ Display of notifications/alerts generated by specific “Surveillances” generated by the vessel behaviour algorithms 	
Ref: IMS_WP1_25	Nature: Mandatory
Use case 3 – oil pollution monitoring	
<p>The contractor shall implement Use Case 3 – Oil pollution monitoring.</p> <p>This use case includes:</p> <ul style="list-style-type: none"> ▪ Display of CSN detections ▪ Display of CSN feedback information (web service available from version 1.7 of the CSN DC) ▪ Provision of feedback reports (digital content and metadata to be uploaded to the cloud service referred in WP3 - structure / content of the report to be provided in the design phase of the project) ▪ Display of notifications/alerts generated by specific “Surveillances” generated by the vessel behaviour algorithms and also by the CSN DC alerting tool (PDF document). 	
Ref: IMS_WP1_26	Nature: Mandatory
Use case 4 –Coast Guard use case	
<p>The contractor shall implement Use Case 4 – Coast Guard use case.</p> <p>This use case includes:</p> <ul style="list-style-type: none"> ▪ Display of existing incidents, vessel positions, information and tracks ▪ Provision of position of non-reporting vessels ▪ Provision of oil spill feedback information ▪ Provision of pictures / movies linked with incidents ▪ Reporting of new incidents (description / incident type) ▪ Display of notifications/alerts generated by specific “Surveillances” generated by the vessel behaviour algorithms 	
Ref: IMS_WP1_27	Nature: Mandatory
Implementation approach	
<p>The bidder shall provide a short description (this may include draft mock-ups, wireframes, ideas or others) that allows EMSA to understand how the bidder intends to implement the different user cases.</p>	

2.2.3. SYMBOLOGY

Ref: IMS_WP1_28	Nature: Mandatory														
Vessel Symbology															
The default symbology for vessel positions shall follow the IALA standard.															
Ref: IMS_WP1_29	Nature: Mandatory														
Symbology Configuration															
<p>It shall be possible for the user to select from a set of configured symbologies. A symbology is a consistent set of icons and symbolizers to be applied to the display of different objects in the WUP.</p> <p>Map objects displayed using this approach shall include:</p> <ul style="list-style-type: none"> ▪ Vessels ▪ Tracks ▪ Incidents ▪ Oil spills <p>Symbolizers are to be used for creating and managing specific set of symbols. It is based on files written in Javascript, following a certain set of rules explained hereafter..</p> <p>The symbolizer is an object which allows to define any symbology with any combination of the following criteria:</p> <ul style="list-style-type: none"> ▪ Fixed values ▪ Values depending on combinations of the values of any attributes of the entities to be displayed ▪ Modifications of predefined symbols (e.g. a png defining the standard ship shape, which changes colours according to the values of the attributes of the element to display) <p>The application shall retrieve the latest symbolizer configuration when a session is started.</p> <p>It shall be possible for EMSA to define new symbologies by configuration. For each symbology, it shall be possible to define a symbolizer as a configuration file defining the display rules.</p>															
Ref: IMS_WP1_30	Nature: Mandatory														
Vessel Symbology Configuration															
<p>It is possible to use predefined symbols for the display on the map. These can be implemented by a png file that could be stored into a directory of the configuration tree and called up by the configuration file of the symbolizer. Other implementation approaches are allowed.</p> <p>The following tables provide some examples of icons that may be used as symbols for vessel positions.</p> <table> <tr> <th></th><th>Usage</th></tr> <tr> <td></td><td>Pirasat symbology AIS source</td></tr> <tr> <td></td><td>IALA symbol equilateral triangle</td></tr> <tr> <td></td><td>IALA banned symbol</td></tr> <tr> <td></td><td>IALA symbol isosceles triangle</td></tr> <tr> <td></td><td>Vessel track symbol</td></tr> <tr> <td></td><td>Fishing vessel (green)</td></tr> </table>			Usage		Pirasat symbology AIS source		IALA symbol equilateral triangle		IALA banned symbol		IALA symbol isosceles triangle		Vessel track symbol		Fishing vessel (green)
	Usage														
	Pirasat symbology AIS source														
	IALA symbol equilateral triangle														
	IALA banned symbol														
	IALA symbol isosceles triangle														
	Vessel track symbol														
	Fishing vessel (green)														
Ref: IMS_WP1_31	Nature: Mandatory														
Vessel Symbology Configuration															
<p>Symbols have more than one colour. The colour mapping scheme is such that specific colours refer to the following attributes:</p> <ul style="list-style-type: none"> ▪ Fill colour: mapped in green 															

<ul style="list-style-type: none"> ▪ Border colour: mapped in red ▪ Secondary border colour: mapped in blue <p>According to the configuration files, it is possible to define rules for automatically replacing these 3 colours dynamically when displaying the data.</p>	
Ref: IMS_WP1_32	Nature: Mandatory
Vessel Symbology Configuration	
<p>It shall be possible for the user to select from the set of configured symbologies using a preferences option. The symbology option shall present a symbology legend.</p>	
Ref: IMS_WP1_33	Nature: Mandatory
Vessel Symbology Configuration	
<p>It shall be possible for the user to select from the set of configured symbologies using a preferences option. The symbology option shall present a symbology legend.</p>	
Ref: IMS_WP1_34	Nature: Mandatory
Symbology Configuration	
<p>Appendix I provides a reference for the symbolizer architecture that shall be supported by the mobile application and some sample symbolizers.</p>	

2.2.4. BACKGROUND MAP LAYERS / ELECTRONIC NAUTICAL CHARTS

Ref: IMS_WP1_35	Nature: Informative
Electronic Nautical chart service	
<p>EMSA provides an Electronic Nautical Chart (ENC) service based on OGC Web Map Service (WMS) version 1.3.0 to be consumed by all the EMSA's maritime applications. By default the IMS App shall make use of this service as background map. Nevertheless the bidder shall also consider the possibility to configure a set of different map services as defined the associated configuration requirements. Appendix F includes detailed technical specifications on the current version of the ENC</p>	
Ref: IMS_WP1_36	Nature: Mandatory
Electronic Nautical chart service – Client side caching	
<p>To increase performance in terms of visualization the contractor shall implement on the client side a caching system. Overall global size of the cache should be configurable.</p>	
Ref: IMS_WP1_37	Nature: Mandatory
Electronic Nautical chart service – caching configuration	
<p>The user should be able to configure via a menu a specific area for which all nautical chart information should be stored on the client side. This will allow visualization of nautical chart data even when the device is offline.</p>	

2.2.5. CONFIGURATION REQUIREMENTS

Ref: IMS_WP1_38	Nature: Mandatory
General requirement	
<p>IMS App configuration interface is intended to be used by users with a non-technical background. This requirement of simplicity and usage by non-technical personnel shall be reflected in the design and implementation of the configuration interface.</p>	
Ref: IMS_WP1_39	Nature: Mandatory

Background map	
<p>At least the following maps services shall be configurable as background map:</p> <ul style="list-style-type: none"> ▪ EMSA ENC map service; ▪ Google maps (https://maps.google.com/); ▪ ESRI ocean base map (http://services.arcgisonline.com/ArcGIS/rest/services/Ocean_Basemap/MapServer); ▪ Any OGC-WMS 1.3.0 end point; <p>When a background map is configured at server side all the IMS App shall make use of it.</p> <p>The performance requirements for the background maps are only applicable to the ENC.</p> <p>Configurable parameters</p> <p>Endpoints (i.e URL) as well as path folders encoded by the IMS App shall be configurable at server side.</p>	
Ref: IMS_WP1_40	Nature: Mandatory
Client side configuration - layers	
<p>The contractor shall include the following configuration options:</p> <ul style="list-style-type: none"> ▪ Change units ▪ Change background layers. Users can configure one of the aforementioned background maps (IMS) at client side. In this case, regardless the server side background configuration, the IMS App will consume the background map configured by the user. ▪ Enable / disable layers ▪ Configure caching of layers (vessels, background charts, etc) 	
Ref: IMS_WP1_41	Nature: Mandatory
Configuration and management of uploaded content	
<p>The contractor shall implement, in the configuration interface, functionalities that allow the users to:</p> <ol style="list-style-type: none"> 1) Visualize a list of their previously uploaded information (video, photos, text) 2) Edit / Delete the uploaded information 	
Ref: IMS_WP1_42	Nature: Mandatory
Configuration and management of uploaded content – EMSA administrator access	
<p>The contractor shall implement, in the configuration interface, functionalities that allow the EMSA authorized administrators to:</p> <ol style="list-style-type: none"> 1) Visualize a list of previously uploaded information (video, photos, text) for all users 2) Edit / Delete the uploaded information for all users 	

2.3. GRAPHIC DESIGN REQUIREMENTS

Ref: IMS_WP1_43	Nature: Mandatory
Generic requirements	
<p>The graphic design of the IMS App shall be object driven (objects being text, photos, images, still or animated graphics or videos) and customisable utilising the configuration interface). The level of customization will be defined by EMSA during the KO meeting of the project.</p>	
Ref: IMS_WP1_44	Nature: Mandatory
Specific requirements	
<p>In the initial stages of WP1, the contractor shall provide at least 3 distinct design options for each of the necessary</p>	

application screens, implementing the abovementioned use cases. These proposals shall include:

- Graphical elements to be used
- Wireframes of all the application pages
- Proposal for the workflow between the pages

At a meeting with the EMSA team the different graphical design approaches will be presented by the contractor towards deciding the way forward in terms of graphic design. The different design approaches shall be adaptable to all the requested versions (iPad, iPhone and Android).

Ref: IMS_WP1_45

Nature: Mandatory

EMSA Corporate image

The contractor shall abide EMSA's corporate identity design elements, as included in Appendix J. This includes fonts, colours, distinctive elements, logos and others. Any deviation from the image requirements needs to be agreed upon with EMSA.

Ref: IMS_WP1_46

Nature: Mandatory

Iconography consistency

The contractor shall implement the icons and other symbols on the IMS App ensuring, as much as possible, consistency with the IMDatE desktop application. This will ensure that users can establish points of parity between both applications.

Ref: IMS_WP1_47

Nature: Mandatory

Primary Screen - Map

The map is considered the primary screen for most of the defined use cases. This means that the contract shall:


- designed the map to support as many actions as possible, always guaranteeing a good user experience and user friendly navigation.
- Implement top or side navigation menus so users do not need to leave the map screen to perform several actions, including: search, define map layers or view their favourite vessels' positions.
- Implement a menu that is easy to understand, facilitates the access to the functionalities and at the same time reduces the amount of area used in the screen



Figure X – Example of a vessel function menu

2.4. USER AUTHENTICATION

Ref: IMS_WP1_48	Nature: Informative
Oracle Mobile Access Gateway	
<p>EMSA will develop a Mobile Access Gateway for the mobile application to interact with the existing IdM. The Mobile Access Gateway will:</p> <ol style="list-style-type: none"> 1) Provide user authentication 2) Allow access to EMSA resources 3) Provide login / logout functionalities 4) Identify the user's role 5) Provide "change password" functionality 	
Ref: IMS_WP1_49	Nature: Informative
Roles	
<p>Roles are used to define access to a particular function or functions associated with each user, according to a particular scope. As an example, a role named INSPECTOR is likely to have access definitions relevant to the specific options delegated to it.</p>	
Ref: IMS_WP1_50	Nature: Mandatory
Oracle Mobile Access Gateway - Interaction	
<p>The contractor will implement the authentication of the mobile application using a EMSA's Mobile Access Gateway, that will ensure that only EMSA authorized users will be able to access EMSA's resources and properly use the application. This IdM access point will allow:</p> <ul style="list-style-type: none"> ▪ Login ▪ Logout ▪ Change password 	

<ul style="list-style-type: none"> ▪ “Forgot password” feature ▪ Identify the specific role of a user <p>Documentation on the Mobile Access Gateway will be provided to the contractor during the project.</p>	
Ref: IMS_WP1_51	Nature: Mandatory
Authentication during development	
<p>Taking into account that the mobile access gateway will be under development at the start of the IMS App project, for the initial phases of development authentication of the prototype versions will be done based on a certificate installed on the device / application.</p>	
Ref: IMS_WP1_52	Nature: Mandatory
Mobile Access Gateway – Integration	
<p>The contractor is responsible for the integration with EMSA’s mobile access solution. The contractor shall also be asked to document any issues it encounters in terms of this integration, towards being communicated to the Mobile Access Gateway contractor.</p>	
Ref: IMS_WP1_53	Nature: Mandatory
User authentication – graphical implementation	
<p>The contractor shall implement a login screen that includes the functionalities all the functionalities defined in 2.4 User Authentication.</p>	
	
Figure X – Example of the login screen of the application	
Ref: IMS_WP1_54	Nature: Informative
Current IdM and Access management	
<p>The bidder should take into account the current implementation of IdM and the EMSA Maritime Applications Access management in the development of their bid. (Appendices B and C)</p>	

2.5. EMSA SERVICES INTERFACES

Ref: IMS_WP1_55	Nature: Informative
Authorisation	

All services require the consumer to specify the username in order to enforce authorisation on the data. The result will only contain information that the specified user is entitled to see.

Ref: IMS_WP1_56

Nature: Mandatory

Vessel position service

This service shall be used to query the vessel the last received position for each ship. It is used for the real time display of ship data. The position service implements a REST service providing the following operations:

Name	Description
getCurrentVesselPosition	This method returns the current ship position for a given vessels ID.
getPositions	This method returns the current ship positions for a given bounding box and time window.
getPositionsCount	This method returns the count of vessel current positions for a given bounding box and time window.
getPositionsGrid	This method returns the count of vessel current positions each cell in a grid

Ref: IMS_WP1_57

Nature: Mandatory

Vessel track service

This service is used to get the ship positions tracks from the IMDatE internal database. Ship tracks can be composed by any combination of the various data sources managed by the IMDatE (e.g. T-AIS, S-AIS, LRIT, etc.).

The tracks can be returned with the original positions points and/or interpolated and smoothed and/or extrapolated.

The service is used internally by the IMDatE applications, e.g. by the WUP and by all business processes that need to retrieve ship position. data, but it is also exposed externally to other applications.

The service returns ship positions in CDF format. All complex types and simple types of the CDF are not described here, as they refer to the CDF documentation.

Ref: IMS_WP1_58

Nature: Mandatory

Vessel track service - operations

The track service implements a REST service providing the following operations:

Name	Description
getTracksByBoundingBox	This method gets the ship positions tracks defined by a bounding box area and by a time window.
getTracksByVesselId	This method gets the ship positions tracks defined by a ship ID and by a time window.
getTracksByWkt	This method gets the ship positions tracks defined by a polygon and by a time window.

Ref: IMS_WP1_59

Nature: Mandatory

Operational Vessel Registry (OVR) service - operations

This service is used to get Get Ship Particulars for a given vessel.

The OVR service implements a REST service providing the following operations:

Name	Description
ovrInfo	Retrieve Ship particulars from Imdate OVR

Ref: IMS_WP1_60

Nature: Mandatory

Incidents service – operations

<p>This service returns the currently active incidents. This service provides the following operations:</p> <ul style="list-style-type: none"> ▪ getActiveIncidents ▪ getIncidentDetail.do ▪ getIncidentsInAreaByBB.do 	
Ref: IMS_WP1_61	Nature: Mandatory
CSN Satellite images	
<p>The EMSA satellite based monitoring service (Clean Sea Net – CSN) provides satellite images through:</p> <ul style="list-style-type: none"> ▪ type of service: OGC – Web Map Service (WMS) 1.1.1 ▪ service request methods: HTTP-GET <p>within the context of the maintenance contract the bidder shall update the IMS App in case a new version of this service will be deployed by CSN.</p>	
Ref: IMS_WP1_62	Nature: Mandatory
CSN Oil spill detections	
<p>The EMSA Oil Spill detection service (Clean Sea Net – CSN) provides Oil Spill polygons based on GML 3.1.1. The service Features are:</p> <ul style="list-style-type: none"> ▪ type of service: OGC – Web Feature Service (WFS) 1.1.0 ▪ service request methods: HTTP-POST ▪ within the context of the maintenance contract the bidder shall update the IMS App in case a new version of this service will be deployed by CSN. 	
Ref: IMS_WP1_63	Nature: Mandatory
CSN vessel detections	
<p>The EMSA vessels detection service based on satellite images (Clean Sea Net – CSN) provides vessels positions based on point GML 3.1.1 features. The service Features are:</p> <ul style="list-style-type: none"> ▪ type of service: OGC – Web Feature Service (WFS) 1.1.0 ▪ service request methods: HTTP-POST ▪ within the context of the maintenance contract the bidder shall update the IMS App in case a new version of this service will be deployed by CSN. 	
Ref: IMS_WP1_64	Nature: Mandatory
CSN metadata	
<p>The EMSA through Clean Sea Net – CSN service provides a satellite catalogue service based on eBRIM profile:</p> <ul style="list-style-type: none"> ▪ type of service: OGC – Catalogue Service Web (CSW) 2.0.0 ▪ service request methods: HTTP-POST ▪ within the context of the maintenance contract the bidder shall update the IMS App in case a new version of this service will be deployed by CSN. 	

2.6. MOBILE APPLICATION DEPLOYMENT

Ref: IMS_WP1_65	Nature: Informative
Mobile device management solution	

<p>EMSA will acquire the Mobile Device Management solution AirWatch (www.air-watch.com/) . This solution allows:</p> <ul style="list-style-type: none"> ▪ Support to “bring your own device” (BYOD) ▪ Deployment of apps both in iOS and Android ▪ Mobile browsing management, including configure of mobile access gateway ▪ App wrapping ▪ Establishment of development workflows (split the application development into steps and assign them to different users). When a development step is completed, users assigned to next step are automatically notified. The entire workflow process can be repeated for each new version of the application. 	
Ref: IMS_WP1_66	Nature: Informative
Mobile device management solution - configuration	
<p>The contractor shall be responsible to configure the AirWatch MDM solution purchased by EMSA in the scope of the deployment of the IMS App.</p>	
Ref: IMS_WP1_67	Nature: Informative
Mobile device management solution – Management of deployment	
<p>For the duration of the project, (including maintenance phase) the contractor shall be responsible for the management of AirWatch MDM. EMSA can decide to take over this process at any stage during the duration of the project.</p>	
Ref: IMS_WP1_68	Nature: Informative
Mobile device management solution - configuration	
<p>The contractor shall be responsible to configure the AirWatch MDM solution purchased by EMSA in the scope of the deployment of the IMS App.</p>	

2.7. NON-FUNCTIONAL REQUIREMENTS

Ref: IMS_WP1_69	Nature: Mandatory
Generic non-functional requirements	
<p>IMS App architectural design and implementation shall be fully in-line with requirements included in the technical landscape document in Appendix A.</p>	
Ref: IMS_WP1_70	Nature: Mandatory
Sizing requirements	
<p>IMS App architectural design and implementation shall take into consideration that EMSA’s users are growing at a moderate yearly rate (less than 10%) and that the following sizing requirements should be met:</p> <ul style="list-style-type: none"> ▪ Expected maximum number of users: 5000 ▪ Expected maximum number of concurrent users: 200 <p>Bidders shall consider the current EMSA PRODUCTION infrastructure as a baseline.</p>	
Ref: IMS_WP1_71	Nature: Mandatory
Scalability, Resilience and High Availability	
<p>Bidders shall address how the system responds to the several non-functional characteristics, namely:</p> <ul style="list-style-type: none"> ▪ Scalability, ▪ Availability ▪ Resilience. 	

Ref: IMS_WP1_72	Nature: Mandatory
Electronic Nautical chart service - Performance	
Any user interaction with map, as for example: zoom in/out, pan, toggle layers, etc ... shall provide immediate user feedback and fully complete its work within 2 seconds. . In order to achieve these performance requirements the bidder shall take into account a client side caching solution.	

2.8. PROJECT DELIVERY REQUIREMENTS

Ref: IMS_WP1_73	Nature: Informative
General Project delivery requirements	
<p>The contractor shall abide the requirements set forth in Appendix D Project delivery when concerns the main project phases:</p> <ul style="list-style-type: none"> ▪ Design ▪ Development and testing ▪ Deployment ▪ Go-Live 	

3. WP2 – DEVELOPMENT OF SERVICE SIDE BUSINESS LOGIC

3.1. FUNCTIONAL REQUIREMENTS

Ref: IMS_WP2_01	Nature: Mandatory
Overview	
The IMS App shall rely on the IMDatE and CSN services in order to implement the functional requirements. In order to combine (orchestrate) these services the bidder shall implement a set of business logic components to deploy on the EMSA infrastructure.	
Ref: IMS_WP2_02	Nature: Mandatory
Enterprise Service Bus	
The service shall be coupled with EMSA's Enterprise Service bus (ESB). EMSA's current ESB software is the Oracle Service Bus (OSB).	
Ref: IMS_WP2_03	Nature: Mandatory
Mobile Façade	
<p>The bidder shall design and implement the "Mobile Façade" in order to aggregate internal service endpoints (SOAP, POST, GET) into a single contact point for the mobile application. This facade will isolate the mobile devices from changes within the enterprise.</p> <p>It is recommended that the "Mobile Façade" is implemented using REST services, and delivering data in JSON (or GeoJSON) format. Furthermore EMSA recommends considering the OGC-geo-package specifications.</p> <p>This facade will isolate the mobile devices from changes within the enterprise, thereby reducing the number of required mobile application updates. The facade can also implement some business logic to aggregate multiple internal service calls into a single mobile call for the purpose of simplifying the mobile application and improving the customer experience.</p> <p>Additionally any content uploaded from the mobile application can also be directed to this service. The web service will then direct the uploaded data (digital content, metadata and other textual information) to a specific location (in the EMSA infrastructure or outside). Assessment of the type of data to be uploaded via the mobile façade will be defined during implementation (i.e. if all data, if just specific metadata, if just a specific identifier)</p>	
Ref: IMS_WP2_04	Nature: Mandatory
Architecture	
Within the context of the "architecture" documents the bidder shall provide a deployment diagram where the server features needs to be detailed.	
Ref: IMS_WP2_05	Nature: Mandatory
Incident reporting – Interaction with the Oracle Service Bus (OSB)	
The contractor shall setup this service with the functionality to forward incident information to IMDatE (internal end-point) using the OSB. This information includes the fisheries report data mentioned in use case 3, as well as oil spill feedback information mentioned in use case 2.	

3.2. NON-FUNCTIONAL REQUIREMENTS

Ref: IMS_WP2_06	Nature: Mandatory
Generic non-functional requirements	
The REST Service developed shall be fully in-line with requirements included in the technical landscape document in Appendix A.	
Ref: IMS_WP2_07	Nature: Informative
Sizing requirements	
<p>IMS REST Service shall take into consideration that EMSA's user are growing at a moderate yearly rate (less than 10%) and that the following sizing requirements should be met:</p> <ul style="list-style-type: none"> ▪ Expected maximum number of users: 5000 ▪ Number of concurrent users: 200 <p>Bidders shall consider the current EMSA PRODUCTION infrastructure as a baseline..</p>	
Ref: IMS_WP2_08	Nature: Informative
Scalability, Resilience and High Availability	
<p>Bidders shall address how the system responds to the several non-functional characteristics, namely:</p> <ul style="list-style-type: none"> ▪ Scalability, ▪ Availability ▪ Resilience. 	

3.3. TESTING & DEPLOYMENT

Ref: IMS_WP2_09	Nature: Mandatory
Test plan	
The contractor should present, for each release of the IMS REST service a comprehensive test plan to EMSA. This test plan should include functional and non-functional tests. EMSA reserves the right to request changes to the proposed test plan	
Ref: IMS_WP2_10	Nature: Mandatory
Corrections	
The contractor of IMS App project shall perform all the essential corrections to the software delivered taking into account the reports of the functional and non-functional site acceptance tests.	
Ref: IMS_WP2_11	Nature: Mandatory
Releases	
The contractor shall provide during the implementation one release. The release should abide to all testing requirements (functional and non-functional) as well the relevant requirements defined the Project Delivery Appendix linked with development and testing (Appendix D)	
Ref: IMS_WP2_12	Nature: Mandatory
Functional testing	
Functional tests shall be designed, implemented, executed and the results documented by the contractor within the	

context of factory acceptance tests prior to any delivery to ensure compliance with requirements here-in.

Bidders shall describe in detail how they plan to execute Functional Tests and what tools will be used.

The Contractor shall deliver a complete set of Test Documentation, including Test Strategy, Test Cases, Test Scripts, Test Data, and Test Results.

The Contractor shall deliver a full and working test environment (including tools, configurations, test scripts, test data, execution instructions); This Test environment shall be deployed at EMSA and will be used during Site Acceptance and in any for future runs. Further technical details on the test environment will be provided at K.O.

Ref: IMS_WP2_13

Nature: Mandatory

Functional testing – detailed test plan

Upon delivery of a release, a detailed test plan shall be provided to be approved by EMSA. The test plan shall include complete description of the test and details on the necessary actions to perform it. The plan should also specify the category of each test. Categories include:

- Regression test of previous approved functional elements
- Corrected bugs and defects from previous versions
- New functionalities
- Known bugs / errors in release (if any)

Ref: IMS_WP2_14

Nature: Mandatory

Non-functional testing

Non-functional tests shall be designed, implemented, executed and the results documented by the contractor within the context of factory acceptance tests prior to any delivery to ensure compliance with requirements here-in.

Site acceptance non-functional tests shall be executed in the scope of the project by a test contractor chosen by EMSA as well as by EMSA staff.

Non-functional tests shall include:

- Load Tests
- Stress Tests,
- Availability/Resilience Tests
- Security Tests,

Bidders shall describe in detail how they plan to execute Non-Functional Tests and what tools will be used.

The Contractor shall deliver a complete set of Test Documentation, including Test Strategy, Test Cases, Test Scripts, Test Data, and Test Results for the tests types specified above.

The Contractor shall deliver a full and working test environment (including tools, configurations, test scripts, test data, execution instructions); This Test environment shall be deployed at EMSA and will be used during Site Acceptance and in any for future runs.

Ref: IMS_WP2_15

Nature: Mandatory

Go Live

The contractor shall be responsible for defining the Go Live strategy to be applied in PRODUCTION and PRE-PRODUCTION.

Go Live strategy shall address the deployment, Migration (, all configurations and post-Production support for applicable IMS App related developments (WP1, WP2 or WP3). Bidders shall propose the Go Live strategy and Planning.

The contractor shall adhere to the general EMSA requirements linked with project delivery and service requirements, presented in Appendix D and Appendix E, when it concerns to Go Live issues.

4. WP3 – ASSESSMENT AND IMPLEMENTATION OF CLOUD BASED DIGITAL STORAGE AND MANAGEMENT SERVICE

4.1. CLOUD STORAGE SERVICE

Ref: IMS_WP3_01	Nature: Informative
Overview	
Information generated from the mobile devices, linked with specific use cases, needs to be managed in the scope of this project. This includes the development of mobile services to upload and manage geo-referenced digital content (photos + videos + text). This can be done via re-using an existing cloud solution to upload, manage and share digital content and its metadata. .	
Ref: IMS_WP3_02	Nature: Mandatory
General requirements	
The contractor shall provide an assessment of existing cloud based solutions for the upload and management of all digital content.	
Ref: IMS_WP3_03	Nature: Informative
Acquisition costs	
EMSA will be responsible for the acquisition and maintenance costs of the cloud storage and management solution.	
Ref: IMS_WP3_04	Nature: Informative
Cloud based service – Software as a Service	
EMSA will consider advantageous solutions that can be acquired under a framework Software as a Service (per user license type of approach)	
Ref: IMS_WP3_05	Nature: Mandatory
Cost / Benefit analysis	
The contractor shall provide a detailed assessment of the solutions available in the market and recommend a solution. The assessment should include at least 3 existing solutions and provide: <ol style="list-style-type: none"> 1) Detailed information on the capabilities 2) Detailed information on the underlying costs 3) Necessary adaption costs for the EMSA infrastructure 4) SWOT analysis for each of the solutions 5) Clear recommendation for one of the solutions based on the assessment provided. 	
Ref: IMS_WP3_06	Nature: Mandatory
Implementation	
The contractor shall be responsible for the configuration and integration of the solution with the mobile applications developed in WP1 and web services developed in WP2. The contractor shall also be responsible for delivering content migration procedures to different cloud storage provider or to EMSA internal storage.	
Ref: IMS_WP3_06a	Nature: Mandatory
Support	

The contractor shall be responsible for providing maintenance support to integration aspects of the abovementioned solution.

4.2. DIGITAL CONTENT: CREATE, DESCRIBE AND UPLOAD

Ref: IMS_WP3_07	Nature: Mandatory
Upload multimedia contents	
<p>The contractor shall implement a solution that it is capable to upload the following multimedia contents:</p> <ul style="list-style-type: none"> ▪ video ▪ audio ▪ photography (or picture) ▪ text (or feedback) ▪ Aggregated datasets (as per requirement IMS_WP3_10) 	
Ref: IMS_WP3_08	Nature: Mandatory
Metadata	
<p>For each of the multimedia content uploaded a document describing the content itself needs to be created (i.e. metadata). At least the following information that describe the multimedia content shall be recorded:</p> <ul style="list-style-type: none"> ▪ Identification (unique resource identifier, resource title, resource description, resource type, resource language); ▪ Resource Keywords; ▪ Geographic Location (preferable Latitude and Longitude in EPSG 4326 as coordinate reference system), ▪ Temporal Reference (described in ISO 19108 for example) ▪ Responsible Party (identification of the organization, identification of the user, identification of the device, user role); ▪ Resource locator (which point to the location (URL) where the multimedia content can be located). <p>The contractor shall as much as possible create the aforementioned metadata in automatic way, therefore without the needs for users to fill-in information.</p> <p>EMSA suggests to use standards metadata for describing the content of the digital document uploaded by the users (for example ISO 19115 and the INSPIRE metadata for datasets), and when and if it is necessary, the contractor shall extends the metadata with additional information.</p>	
Ref: IMS_WP3_09	Nature: Mandatory
Catalogue	
<p>The contractor shall implement a catalogue service to inventory all the multimedia contents metadata. EMSA requires to use standard catalogue service that provides standard interfaces as Open Geospatial Consortium Catalogue Services (OGC-CSW) and compliant with INSPIRE discovery service.</p>	
Ref: IMS_WP3_10	Nature: Mandatory
Creation of aggregated datasets	
<p>The contractor shall implement functionality for creating a dataset based on the information that users are displaying on the mobile. For examples a user is monitoring an oil spill on spot, he/she is accessing to vessels information, oil spill features, and he/she is uploading pictures. The user needs to create a dataset in order to share his/her findings.</p> <p>The contractor shall implement a functionality that aggregates this information into a datasets and uploaded as a new product (IMS_WP3_07 “upload multimedia contents”). Furthermore the contractor shall create a metadata according the specification IMS_WP3_08 “metadata”, and the metadata needs to be catalogued as specified in the IMS_WP3_09 “catalogue” requirement.</p>	
Ref: IMS_WP3_11	Nature: Mandatory

Approach to digital content management	
<p>The bidder shall describe possible implementation scenarios for the digital content, creation and upload, including:</p> <ul style="list-style-type: none"> ▪ Approach to the service implementation ▪ Proposal of metadata formats (and standards used) ▪ Description of data packaging and catalogue 	
Ref: IMS_WP3_12	Nature: Mandatory
Upload and share of an aggregated dataset	
<p>The contractor shall implement a functionality that allows the user to share with other authorize users the context of the current screen. This functionality shall be implemented by creating a dataset of the information that the user is displaying. Thus multimedia contents (video, audio, text and picture), and the information that the users is accessing through EMSA services (i.e. vessels position, oil spills) shall be packaged in a dataset and can be uploaded/shared as an addition multimedia content.</p> <p>The contractor shall create and store the metadata of this dataset, and the metadata shall be managed as described for the multimedia contents.</p>	
Ref: IMS_WP3_13	Nature: Mandatory
Upload and share of an aggregated dataset - information	
<p>The bidder shall provide information on how this uploading and sharing of the aggregated dataset can be implemented.</p>	
Ref: IMS_WP3_14	Nature: Mandatory
Catalogue - information management	
<p>The contractor shall take into account the configuration requirements presented in 2.2.5 regarding the management of uploaded information. Specifically:</p> <ol style="list-style-type: none"> 1) Users shall be able to manage the data they upload (edit / delete) 2) EMSA authorized administrators shall be able to manage (edit/update/delete) of all existing users 	

5. WP4 - MAINTENANCE

Ref: IMS_WP4_01	Nature: Mandatory
Warranty	
<p>The contractor shall provide warranty support to all elements of IMS App that are part of the requirements in WP1, WP2. Any defects linked with functionalities that are part of the abovementioned requirements shall be promptly rectified by the contractor as part of the warranty support. There shall not be any cost to EMSA linked with warranty related actions. Warranty shall be provided up to two years for all deliverables.</p>	
Ref: IMS_WP4_02	Nature: Mandatory
General requirements	
<p>Maintenance is deemed to comprise of all operations necessary to maintain the system in perfect working order, or to restore a defective system or one of its components to perfect working order, inclusive of the costs of travelling and labour, if necessary.</p> <p>Corrective maintenance is the reactive modification of a software product performed after delivery to correct discovered problems.</p> <p>Preventive maintenance is the modification of a software product after delivery to detect and correct latent faults in the software product before they become effective faults. The system has to be updated to the most recent versions of the underlying software implemented.</p> <p>Once WPI, WP2 are concluded the Contractor will provide the corrective and preventive maintenance of the system necessary to ensure the required level of operational performance. Maintenance shall be provided up to two years after WP1 and WP2 are concluded.</p> <p>The contractor shall adhere to the general EMSA requirements linked with project maintenance, presented in Appendix E.</p>	
Ref: IMS_WP4_03	Nature: Informative
Main deliverables	
<p>The main deliverables that are to be produced in the context of maintenance activities are:</p> <ul style="list-style-type: none"> ▪ Monthly Maintenance Reports and Statistics on maintenance activities described in the context of Service Level Management. ▪ Change Management Documents for each change submitted to the Change Management Process. It must include at least, Change Request Form, Evaluation of the Change, Planning and Acceptance ▪ Updated versions of the system deliverables (design documentation, test documentation, user documentation, system documentation, software releases and release notes) for each change implemented and submitted to the Release Management Process. 	
Ref: IMS_WP4_04	Nature: Informative
Service levels	
<p>Occurrences (Incidents/Defects or Findings) considered as blocking (no service being provided) will have Priority = Highest. A dedicated phone line shall be available 24x7 for handling this type of occurrences.</p> <p>Occurrences (Incidents/Defects or Findings) significantly impacting the one or more components causing a partial loss of the service provided or foreseen to be blocking during the next 2 days will have Priority = High.</p> <p>Occurrences (Incidents/Defects or Findings) significantly impacting the one or more components with reduction of service provided (e.g. affecting performance) or foreseen to be blocking during the next week will have Priority = Medium.</p> <p>Service levels for corrective maintenance (Incidents/Defects) shall be:</p>	

Priority	Acknowledge time	Solve time
Highest	Immediately, 24/7 basis	Immediately
High	3 working hours, 7/5 basis	1 working day
Medium	2 working days, 7/5 basis	7 working days

Ref: IMS_WP4_05	Nature: Informative
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Processes and management plans <p>The contractor shall abide to the requirements present in Appendix E regarding service delivery. Occurrences (Incidents/Defects or Findings) considered as blocking (no service being provided) will have Priority = Highest. A dedicated phone line shall be available 24x7 for handling this type of occurrences. In order to support the services for maintenance, at least the following Processes and Management plans must be in place:</p> <ul style="list-style-type: none"> ▪ Change management ▪ Release management ▪ Incident management ▪ Problem management ▪ Service level management <p>Requirements on these plans are included in Appendix E.</p>

6. PROJECT PLANNING REQUIREMENTS

Ref: IMS_PM_01	Nature: Mandatory
Project management tool – Team Forge	
TeamForge will be the main tool for managing issues, sharing documents, and posting meeting minutes. EMSA will setup an account for the contractor.	
Ref: IMS_PM_02	Nature: Mandatory
Agile methodology	
The contractor shall follow an agile-based approach for implementing the project (WP1 and WP2), with multiple iterations of the solutions presented, to ensure that EMSA's staff can follow-up closely/review, comment and interact with the software and graphic design experts throughout all phases of project implementation.	
Ref: IMS_PM_03	Nature: Mandatory
Meetings	
<p>There shall be at least 1 meeting every 10 days (phone conference or at EMSA's premises). In case the contractor or EMSA requires an additional meeting it has to be arranged within 2 working days. Regarding the minutes:</p> <ul style="list-style-type: none"> ▪ The contractor is in charge of the minutes of the meeting and provides them within 2 working days after the end of the meeting. ▪ The meeting minutes have to contain actions with deadline. ▪ The meeting minutes shall be uploaded to TeamForge and approved by EMSA. ▪ The contractor is responsible to upload to the TeamForge tracker any actions stemming from the meeting. 	
Ref: IMS_PM_04	Nature: Mandatory
Risk management	
The bidder shall identify the main risks and mitigating actions to reduce overall risk of project failure	
Ref: IMS_PM_05	Nature: Mandatory
Work breakdown structure, project activities and dependencies	
<p>The bidder shall present:</p> <ul style="list-style-type: none"> ▪ Work break down structure ▪ Gantt chart (per Work package) ▪ Person day effort per activity and allocated profiles for executing the work.. 	

7. SUMMARY OF DELIVERABLES (INFORMATIVE)

Ref: IMS_LIST_01	Nature: Informative
Overview	
This chapter summarizes the main deliverables expected from the contractor during the implementation of the project, linked with each of the work packages. Details on the content of each of the deliverables are provided in the above requirements or respective Appendices.	
Ref: IMS_LIST_02	Nature: Informative
Summary of main deliverables – WP1	
<ul style="list-style-type: none"> ▪ Wireframes produced, describing all the above mentioned elements linked with the 4 use cases ▪ Graphical elements, organized per page, used in the implementation of the of the IMS App (including versions excluded during sprints) ▪ Source code for iOS ipad version ▪ Source code for iOS iPhone Version ▪ Source code for Android Version ▪ Source code for server side developments ▪ Source code for automated tests ▪ Build scripts & manuals ▪ Installation manual ▪ Operating and maintenance manual (OMM) ▪ Incident procedures 	
Ref: IMS_LIST_03	Nature: Informative
Summary of main deliverables – WP2	
<ul style="list-style-type: none"> ▪ After Kick-off <ul style="list-style-type: none"> ○ Functional design specifications ○ Technical design specifications ○ Draft software test approach ▪ For final release <ul style="list-style-type: none"> ○ Full system documentation (updated) ○ User documentation (updated) ○ Test documentation (including software test plan) ○ final version of the system to be deployed in all 3 environments ○ Source code of the developed solution 	
Ref: IMS_LIST_04	Nature: Informative
Summary of main deliverables – WP3	
<ul style="list-style-type: none"> ▪ Report with analysis of cloud based storage and management services ▪ Documentation on any developments done in the implementation of WP3 (aligned with WP1 documentation requirements= 	
Ref: IMS_LIST_05	Nature: Informative
Summary of main deliverables – WP4	

- Monthly Maintenance Reports and Statistics on maintenance activities described in the
- Change Management Documents
- Updated versions of the system deliverables

ACRONYMS

Abbreviation	Definition
CISE	Common Information Sharing Environment
COTS	Commercial off the self
EO	Earth Observation
EU	European Union
FFI	Norwegian research institute
FMC	Fisheries Monitoring Centre
GUI / GI	Graphical (User) Interface
IdM	Oracle Identity Manager
IHS	IHS Fairplay
IVEF	Inter-VTS Exchange Format
LDAP	Lightweight Directory Access Protocol
LLI	Lloyds List Intelligence
MS	Member State
NPR proxy	Now renamed as SSN SI (Streaming interface)
OAM	Oracle Access Manager
OIM	Oracle Identity Manager
SAR	Satellite Aperture Radar / Search and Rescue
SHT	Single Hull Tanker
SSO	Single Sign On
SSO	Single Sign-On
UDDI	Universal Description Discovery and Integration

Abbreviation	Definition
UMC	User Management Console
VDS	Vessel Detection System
WFS	Web Feature Service
WMS	Web Map Service
WUP	Web User Portal

DEFINITIONS

Term	Definition
Application	<p>Application is a computer program or set of computer programs designed to help people perform a predefined set of activities. Applications could be implemented on custom-made code or commercial-off-the shelf software (COTS) such as Oracle database server, Oracle Identity management suite, Weblogic or Apache application servers, ArcGIS or Geoserver suites, Liferay portal server, Microsoft server, Active Directory, Open LDAP, etc.</p> <p>Maritime applications at EMSA include: CleanSeaNet, LRIT DC, LRIT Ship database, LRIT IDE, Thetis, STCW, IMDATE integrated services (MARSURV-1, MARSURV-3 and future VAS) and those included in the SSN system (currently EIS, STIRES, SSN Data warehouse).</p>
Interface	<p>The communication boundary between:</p> <ul style="list-style-type: none"> IT entities such as: IT systems, applications, software modules within an application, software or hardware devices, Users and IT systems (i.e. graphical interface)
Portlet	<p>Portlets are pluggable user interface software components that are managed and displayed in a web portal. Portlets produce fragments of markup code that are aggregated into a portal. Typically, following the desktop metaphor, a portal page is displayed as a collection of non-overlapping portlet windows, where each portlet window displays a portlet. Hence a portlet (or collection of portlets) resembles a web-based application that is hosted in a portal. Portlets are defined in JSR-000168 and JSR-000268 standards.</p>
Service	<p>(OASIS definition) Service is a mechanism to enable access to one or more capabilities, where the access is provided using a prescribed interface and is exercised consistent with constraints and policies as specified by the service description</p>
User	<p>A human being or an Authority accessing one or more EMSA applications using a web – based interface. The “Authority” could be understood as an account that allows a team of persons to access one or more applications.</p>
User interface	<p>User interface is everything designed into an IT system which includes one or more applications which a human being may interact with -- this includes, but is not restricted to:</p>

Term	Definition
	display screen, keyboard, mouse, light pen, desktop appearance, illuminated characters, help messages, and how an application program or a Web site invites interaction and responds to it.

APPENDICES TO ANNEX (A)

Ref	Content	Attached as document
(A)	EMSA technical landscape	Appendix_A_TechLandscape_vf.pdf
(B)	Access Management User Manual	Appendix_B_AccManUM_vf.pdf
(C)	IdM Technical document	Appendix_C_IdM_vf.pdf
(D)	EMSA requirements for Project delivery	Appendix_D_Project_delivery
(E)	EMSA requirements for Service delivery and working procedures	Appendix_E_Service_delivery
(F)	Technical specifications of EMSA's current ENC solution	Appendix_F_Electronic_Nautical_Chart_Specifications.pdf
(G)	IMDATE Interface Control Document	Appendix_G_IMDATE_ICD Interface Control Document.pdf
(H)	CSN DC IECD Interface control document	Appendix_H_CSN_IECD_External_Interface_Control_Document.pdf
(I)	Sample Symbology Configuration Files	Appendix_I_Symbology_configuration_files.pdf
(J)	EMSA Corporate identity design elements	Appendix_J_Corporate_identity_design_elements.zip



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