

Tasking and Ordering (TOR)

Earth Observation Provisioning (EO-Provisioning)

Appendix C to Tender Specifications

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1. Abbreviations

The following table includes a list of abbreviations commonly used in this Technical Specification.

Abbreviation	Definition
AIS	Automatic Identification System
API	Application Programming Interface
BCF	Business Continuity Facility
COTS	Commercial Off The Shelf
CTM	Criticality/Time Matrix
CSN	CleanSeaNet
CSNDC	CleanSeaNet Data Centre
CMC	Control Management Console
EICD	External Interface Control Document
EC	European Commission
EMSA	European Maritime Safety Agency
ENC	Electronic Nautical Chart
EO	Earth Observation
EODC	Earth Observation Data Centre
EU	European Union
FTP	File Transfer Protocol
FWC	Framework Contract
GIS	Geographic Information System
GML	Geography Markup Language
GUI	Graphic User Interface

Abbreviation	Definition
HTTP	Hypertext Transfer Protocol
ICD	Interface Control Document
ICM	Installation and Configuration Manual
ICT	Information and Communications Technology
IdM	Identity Manager (an Oracle application)
IHP	Incident Handling Procedures
INS	Installation Manual
IMDatE	Integrated Maritime Data Environment
IT	Information Technology
IPR	Intellectual Property Rights
LRIT	Long Range Identification and Tracking.
MAP	Maritime Application Portal
MARSURV	Maritime Surveillance
M5D	Message Digest Algorithm
MSS	Maritime Support Services
MSs	Member State(s)
NCA	National Competent Authority
NRT	Near Real Time
OMM	Operational and Maintenance Manual
RDF	Resource Description Framework
REST	REpresentational State Transfer
RPM	Red Hat Package Manager

Abbreviation	Definition
ROA	Resource Oriented Architecture
S2S	System to System
SO	Satellite Owner
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SP	Service Provider
SRS	Software Requirements Specifications
SSN	SafeSeaNet
STP	Software Test Plan
TDD	Technical Design Document
TF	TeamForge
TS	Technical Specification
UAV	Unmanned Aerial Vehicle
UML	Unified Modeling Language
VAS	Value-Added Service
VDS	Vessel Detection System
WWW	World Wide Web
XML	Extensible Markup Language

2. Glossary

2.1 Terms specific to Maritime domain

The following table includes a glossary of the relevant terms commonly used in this TS and specific to Maritime domain.

Term	Definition
AIS	The Automatic Identification System (AIS) is an automatic tracking system used on ships and by vessel traffic services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships, AIS base stations, and satellites.
CSN	CSN is a satellite based monitoring system for marine oil spill detection and surveillance in European waters. The service is operated by EMSA and provides a range of detailed information including oil spill alerts to Member States, rapid delivery of available satellite images and oil slick positions. More information at: https://csndc.emsa.europa.eu/homepublic
EMSA	EMSA provides technical assistance and support to the European Commission and Member States in the development and implementation of EU legislation on maritime safety, pollution by ships and maritime security. To do this, one of EMSA's most important supporting tasks is to improve cooperation with, and between, MSs in all key areas. In addition, the Agency has also been given operational tasks in the field of oil pollution response, vessel monitoring and in long range identification and tracking of vessels. As a body of the EU, the Agency sits at the heart of the EU maritime safety network and collaborates with many industry stakeholders and public bodies, in close cooperation with the EC. More info at: www.emsa.europa.eu
ENC	ENC means the database, standardized as to content, structure and format, issued for use with ECDIS on the authority of government authorized hydrographic offices. The ENC contains all the chart information necessary for safe navigation and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation (IMO resolution A.817 (19)).

2.2 Terms specific to the Earth Observation domain

The following table includes a glossary of the relevant terms commonly used in this TS and specific to Earth Observation domain.

Term	Definition
Coverage	Coverages represent digital geospatial information representing space/time-varying phenomena.
Dataset	Dataset is a collection of data, vector or raster.
Dataset series	Dataset series is a temporal collection of datasets.
Earth Observation	Earth observation is the gathering of information via remote sensing technologies supplemented by earth surveying techniques, encompassing the collection, analysis and presentation of geospatial data.
Geospatial	Geospatial are data and software components which deal with a geographic attributes.
Geospatial service	Geospatial service is a web service that delivers geospatial data.
GML	The Geography Markup Language (GML) is the XML grammar defined by the Open Geospatial Consortium (OGC) to express geographical features. GML serves as a modelling language for geographic systems as well as an open interchange format for geographic transactions on the Internet.
Metadata	A Metadata is a document, typically in XML format, that describes the content of a dataset or a geospatial service.
Process	A process is a software component that transforms data, provides services, or extracts information.
Raster	Raster dataset is a representation of the plant Earth as a surface divided into a regular grid of cells. Raster models are useful for storing data that varies continuously, as in an aerial photograph, a satellite image, a surface of chemical concentrations, or an elevation surface.
Satellite Operators	Satellite Operators are organizations that operate satellites.

Satellite Owners	Satellite Owners are organizations that operate satellites.
Near-real-time	In the context of its use in CSN the term "near-real-time" refers the delay between the download of satellite images and the availability of this information through the CSNDC web services. This delay shall be less than 30 minutes.
SAR	(As Synthetic Aperture Radar). SAR is a form of radar in which multiple radar images are processed to yield higher-resolution images than would be possible by conventional means. Either a single antenna mounted on a moving platform (such as an airplane or spacecraft or satellite) is used to illuminate a target scene or many low-directivity small stationary antennas are scattered over an area near the target area. The many echo waveforms received at the different antenna positions are post-processed to resolve the target. SAR can only be implemented by moving one or more antennas over relatively immobile targets, by placing multiple stationary antennas over a relatively large area, or combinations thereof. SAR has been extensively used in remote sensing and mapping. SAR images are used in VDS.
Sensors	Sensors Within the context of earth observation, sensors are satellite, UAV, in situ or airborne devices which collect geospatial data.
Service Providers	"Service Providers" are the organizations in charge to analyse an Earth Observation product in order to extract the information expected by the EMSA's EODC.
Spatial Data Infrastructure	A Spatial Data Infrastructure a set of Geospatial services orchestrated in order to provide a Service.
Vector	Vector dataset is a representation of the planet Earth using points, lines, and polygons. Vector dataset are useful for storing data that has discrete boundaries, such as features, cost lines.

2.3 Terms specific ICT or Project Management domain

The following table includes a glossary of the relevant terms commonly used in this TS and specific to ICT or Project Management domain.

Term	Definition
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API	In computer programming, an application programming interface (API) is a set of routines, protocols, and tools for building software applications. An API expresses a software component in terms of its operations, inputs, outputs, and underlying types
Application	An application is a software component designed to help the user perform specific tasks.
Building Blocks	A Building Block comprises a set of subsystem that can be configured to fit an application purpose.
Client	A client is a piece of computer hardware or software that accesses a service made available by a server.
Data Centre	A Data Centre is a facility used to house computer systems and associated components, such as telecommunications and storage systems.
JSON	JSON is a lightweight data-interchange format. It is based on a subset of the JavaScript Programming Language
Interfaces	An interface is a shared boundary across which two separate components of system exchange information.
Interoperability	Within this context is the ability of systems to exchange information and accept services from other systems, in order to enable them to operate effectively together.
MD5	The MD5 is a message-digest algorithm is a widely used cryptographic hash function producing a 128-bit (16-byte) hash value, typically expressed in text format as a 32 digit hexadecimal number. MD5 is utilized in this TS to verify data integrity.
Process	A process is a software component that transforms data, provides services, or extracts information.
RDF	RDF is a family of World Wide Web Consortium (W3C) specifications. It has come to be used as a general method for conceptual description or modelling of information that is implemented in web resources.
Server	A server is a running instance of an application (software) capable of accepting requests from a client and giving responses accordingly. Servers can run on any computer including dedicated computers, which individually are also often referred to as "the server"

Service	Service “Means of delivering value to the customer by facilitating the outcomes customer want to achieve, without the ownership of specific costs and risks” (ITIL definition).
System	A system is a set of interacting or interdependent building blocks forming an integrated whole.
System to System	System to system is a type of interaction between two systems governed by specified interfaces.
Solution	The solution is the system implemented by the contractor
Standard	A standard is an established norm or requirement in regard to technical systems. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes and practices.
Subsystem	A subsystem is a self-contained software component that provides a set of functionalities.
SWOT	A SWOT analysis is a structured method used to evaluate the strengths, weaknesses, opportunities and threats of topic to address.
User interface	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.
Web service	A web service a subsystem designed to support interoperable machine-to-machine interaction over internet.
Workflow	A workflow consists of an orchestrated and repeatable pattern of processes.
XML	XML is a markup language that defines a set of rules for encoding documents in a format which is both human-readable and machine-readable. It is defined by the W3C's XML 1.0 Specification and by several other related specifications, all of which are free open standards.

3. Introduction

The scope of this document is to define the requirements, hereafter ‘Technical Specifications’ (TS), which the Earth Observation Provisioning (EO-Provisioning) contractor shall implement through a specific contract within the context of Lot2 of the Earth Observation Data Centre procurement.

In this document, each requirement is given a reference number and a priority: higher priority “P1”, lower priority “P2”. “Informative” is used to create a context for the requirements.

This document is structured in Functional and Technical requirements. These sections are introduced by the Architecture chapter and completed, at the end of the document, by the Tests specification and Documentation chapters.

For the Earth Observation Data Centre overall architecture the contractor shall make reference to the background section of the Tender Specification.

4. Background

The EO-provisioning covers the components and the workflow regarding which sensors (currently satellite and in the future also other type of Earth Observation sensors as UAV, in situ, etc. ...) must be implemented so that the desired EO products (datasets) can be ordered, using the “tasking and ordering” subsystem, from the operator/service provider. This building block also monitors service provider deliveries within the context of invoicing and associated contract budget execution (*financial and journaling subsystems*).

The EO-provisioning includes two building blocks:

1. The **Satellite Data Sourcing** which comprising three functional components:
 - a. The Tasking and ORdering (TOR) component (ex-Planning and Ordering component) is used by EMSA, EO Providers and Coastal States for ordering EO services to source to the EODC satellite datasets (images and satellite derived products). It is used following a feasibility analysis phase (currently using the MDA tool APT) that is performed by a tool (Savoir) that is it not part of the EODC.
 - b. The JOUrnaling component (JOU), which includes its own GUI, records information on products and services delivered. It is used by EMSA and Service Providers to monitor completeness, timeliness and quality of products delivered as per contract services. The Product Delivery Reports generated by the JOU (once agreed between EMSA and Service Providers), are the basis for invoicing.
 - a. The FINancial SYStem (FINSYS), which includes its own GUI, is used by EMSA to configure the contractual details (product class, price, reduction coefficients etc.) and to monitor budget consumption under individual specific contracts. It contains the rules regarding which EO elements are needed for a specific product delivery by service providers. Based on those rules, the system calculates delivery timeliness, completeness and price of EMSA orders.

2. The EO Product Distribution

The purpose of this building block, as currently implemented, is to deliver added value services such as “Oil Spill Alerting”, “Oil Spill Drifting” and “Vessel Detection” services both to EMSA’s maritime applications (see the SSN ecosystem) and European Union Member State services, enabling also system to system communication.

5. Scope

The TOR shall provide the functionalities and associated GUI for tasking and ordering EO products (image and value added services) using “Service Elements”, “Grouped Service Elements”, and “Service Types” for all possible planning modes as defined further in the document.

The two high level functionalities provided by the TOR are:

- Service configuration;
- Tasking and ordering of EO images and added value products.

The GUI of the TOR shall be used by:

- b. EMSA to configure service types;
- c. EMSA to configure service access rights;
- d. EMSA to place the order with Service Providers;
- e. EO Providers to confirm their availability to provide the image/service;
- f. Users in the Coastal States for imagery allocation;
- g. EMSA Ordering process (financial verification and authorization).

6. Architecture Requirements

6.1 Earth Observation Data Centre Architecture

REQ-1	Reference Architecture	informative
<p>The following simplified UML component diagram (see Figure 1 – EODC reference architecture) shows the Reference Architecture for the EMSA's EODC.</p> <p>The EO-Provisioning's contractor is not in charge to maintain the reference architecture, nevertheless is in charge to implement and integrate components that shall be compliant with this architecture.</p>		

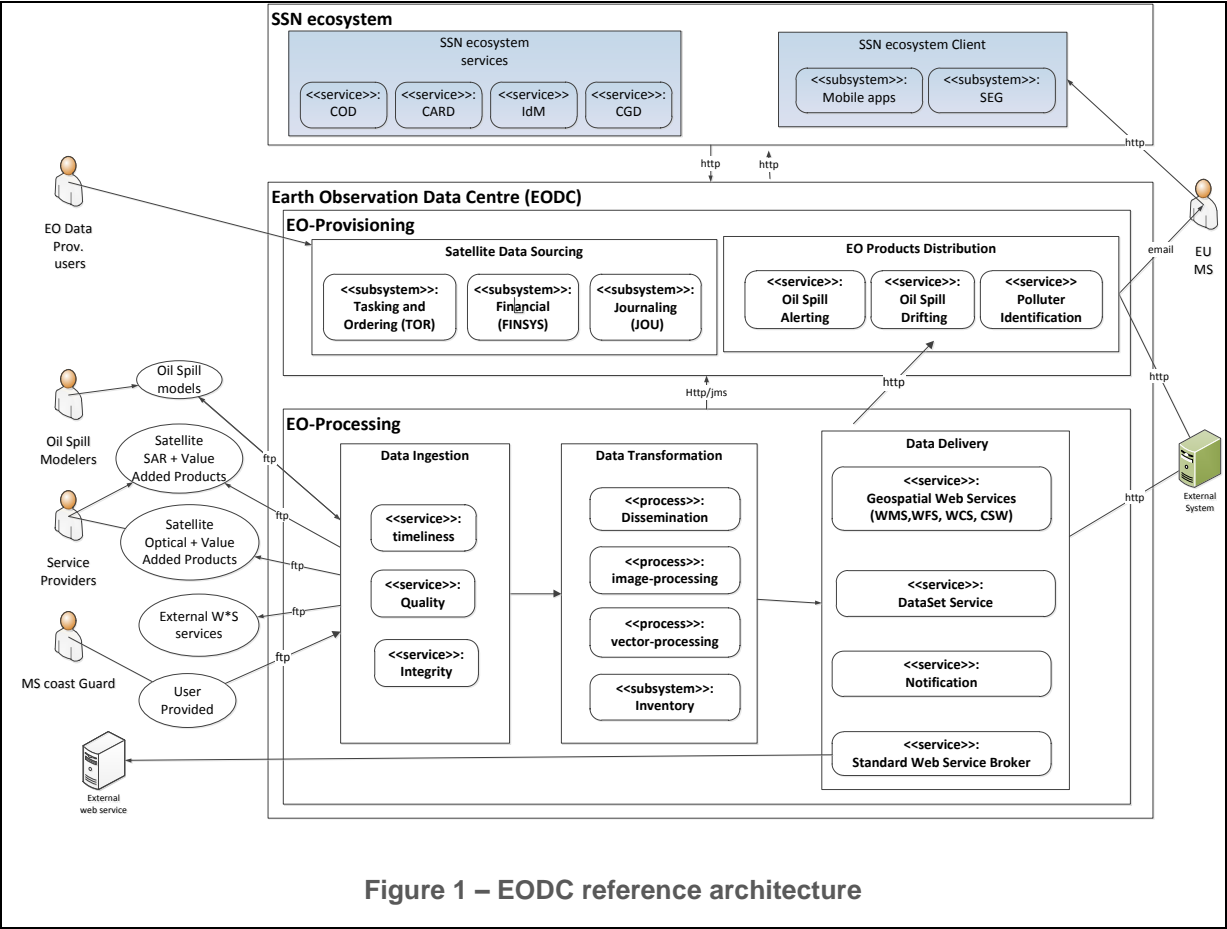


Figure 1 – EODC reference architecture

REQ-2	EODC standard workflows	P1
<p>The overall workflow of the EODC is presented in Figure 2 EODC workflow.</p> <p>The contractor is responsible for editing, updating and maintaining the EO-Provisioning workflows.</p> <p>The contractor is not in charge to maintain the overall EODC workflow, nevertheless is in charge to implement and integrate components that shall be compliant with this workflow.</p>		

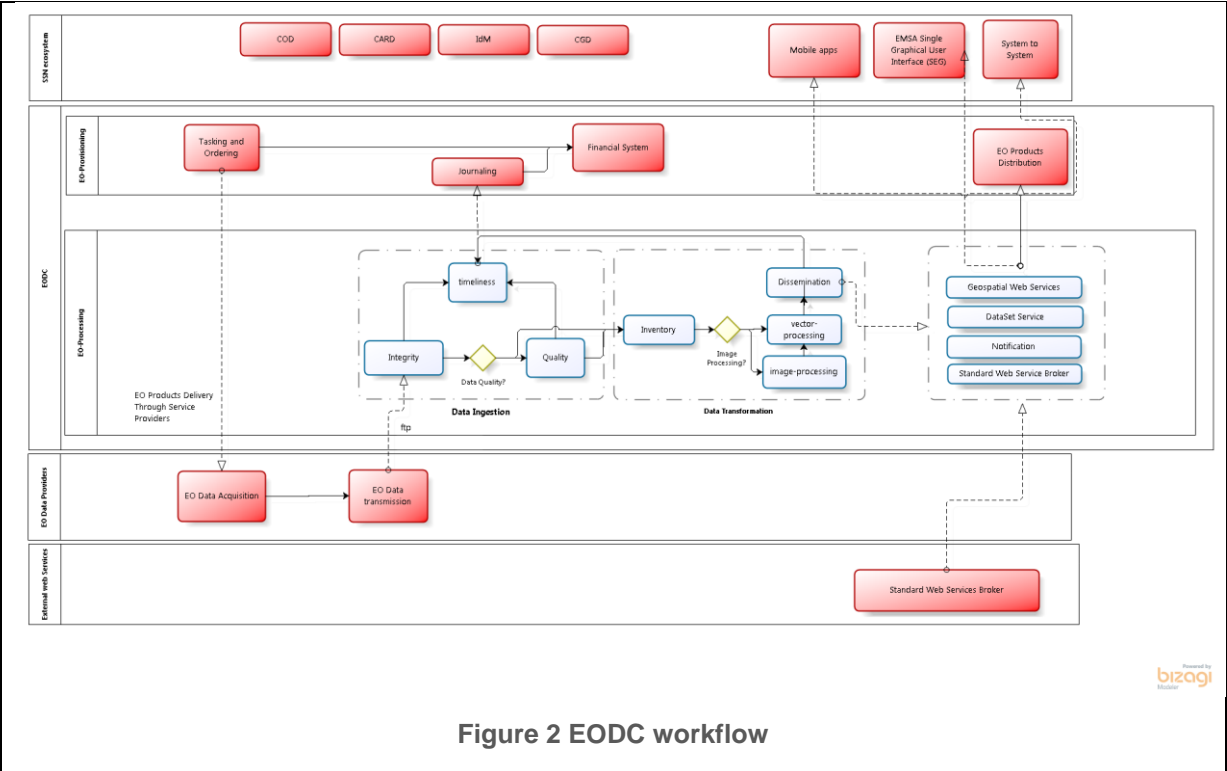


Figure 2 EODC workflow

REQ-3	Service Oriented Architecture	P1
The contractor shall implement a solution following the Service Oriented Architecture approach.		

REQ-4	Integration	P1
<p><i>Requirements</i></p> <p>When new EO-Provisioning component is deployed in one of the EMSA environments, the contractor is in charge to integrate it within the EODC.</p> <p>The integration of the EO-Provisioning with the EODC is governed by the ICD.</p> <p>The integration is considered completed when the component implemented provides all the expected functionalities.</p> <p>The functional requirements specified in this TS have an impact on the following EODC subsystems:</p> <ul style="list-style-type: none">- FINSYS;- JOU;- EO-Processing;		

The integration plan shall include information in order to integrate the TOR with these components.

The integration tasks include also:

- Analyse issues reported by EMSA and provide a solution.
- Identify bottleneck and troubleshooting issues.
- Perform tests to verify the interoperability among the EODC components.
- Integration plan

Acceptance Criteria

- i. End to end test is conducted in order to assess if the integration took effect (see **REQ-17**).

REQ-5	Integration plan	P1
<p><i>Requirements</i></p> <p>In order to replace the current CSNDC POR component with the new EODC TOR component (as described in this Technical Specification), the strategy shall be based on “phased adoption” instead of “big-bang adoption”.</p> <p>Phased adoption means that the adoption of the new component will happen in phases, so after each phase new EODC component will be incrementally deployed into the SSN ecosystem.</p> <p>To phase-in the TOR and replace the POR shall require two phases, therefore two releases. Within release 1.0 the TOR will replace the functionalities currently implemented in the POR, within the release 2.0 the TOR will implement the functionalities described in this Technical Specification that are not yet implemented in the POR. During the Design phase the contract shall propose the list of the requirements that will be part of release 1.0 and release 2.0.</p> <p>The contractor shall guarantee the continuity of the business provided by the EODC.</p> <p>The contractor is in charge to provide an “Integration Plan” taking into account the requirements of this TS.</p> <p><i>Expected Deliverables</i></p> <ol style="list-style-type: none">i. Integration Plan. <p><i>Acceptance Criteria</i></p> <ol style="list-style-type: none">i. An end-to-end test is conducted in any phase of the plan (see REQ-17).		

REQ-6	CARD	P1
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Requirements

When an EO-Provisioning component requires to be authorized to perform a functionality it shall send a request to the “Authorization service” exposed by the Central Access Rights Database (CARD).

In case the request is not authorized an answer shall be provided to the EO-Provisioning component stating the unavailability of the data requested. Otherwise if the access is granted, the EO-Provisioning component shall receive the information requested.

For additional information the bidder shall make reference to the Appendix “CARD”.

Expected Deliverables

- i. A package to deploy this subsystem.
- ii. A test cases with a combination of possible criteria.

Acceptance Criteria

- i. All the tests cases created shall succeed.

REQ-7	Access and Identity Management (IdM)	P1
<p><i>Requirements</i></p> <p>The EMSA Access and Identity Management system provides the authentication capabilities for all the EMSA systems.</p> <p>Whether it is necessary to include this type of information within an EO-Provisioning workflow, the contractor is in charge to integrate the EO-Provisioning building blocks with the EMSA Identity Management system, additional information is provided in the Appendix “Access and Identity management Guide”.</p> <p>The contractor shall integrate the IdM with the EO-Provisioning.</p> <p><i>Acceptance Criteria</i></p> <ol style="list-style-type: none">i. The end-to-end test is successfully conducted (see REQ-17).		

REQ-8	Central Geo-Reference Database (CGD)	P1
<p><i>Requirements</i></p> <p>The EMSA geoRegistry service provides through an OGC-WFS interface several types of Area of Interest implemented for the EMSA’s use cases. Whether it is necessary to include this type of information within an EO-Provisioning workflow, the contractor shall make use of the geoRegistry service.</p>		

For additional information the bidder shall make reference to the Appendix "CGD".

Acceptance Criteria

- i. The end-to-end test is successfully conducted (see **REQ-17**).

REQ-9	Central Organizations Database (COD)	P1
<p><i>Requirements</i></p> <p>The COD is the repository of the Maritime Organizations that are EMSA's stakeholders. Whether it is necessary to include this type of information within an EO-Provisioning workflow, the contractor shall make use of the COD service.</p> <p>For additional information the bidder shall make reference to the Appendix "COD".</p> <p><i>Acceptance Criteria</i></p> <ul style="list-style-type: none"> ii. The end-to-end test is successfully conducted (see REQ-17). 		

REQ-10	COTS	Should
<p><i>Requirements</i></p> <p>The contractor shall provide a list of the COTS that will be included in the solution as part of the Reference Architecture proposed by the contractor.</p> <p>For each of the COTS included in the solution the bidder shall provide the following information: (i) the type of licence, (ii) reference documentation, (iii) the experience using the COTS in terms of projects that the contractor have implemented, and (iv) potential changes at the COTS that will be necessary to implement the EO-Provisioning requirements.</p> <p>During the EODC FWC whereas a new version of COTS is available, the contractor shall provide a technical assessment in order to evaluate the impact to upgrade the COTS deployed into the EO-Provisioning. EMSA within the context of the technical assessment can request to perform a test to verify the analysis performed by the contractor. If the new version of the COTS can be deployed without changes in the EO-Provisioning, within the context of the corrective maintenance of this FWC, EMSA can request to the contractor to upgrade the system with a new version of the COTS.</p> <p>Whereas changes of the COTS code are needed to implement EO-Provisioning capabilities, the contractor shall provide a plan to include those changes in one of the future releases of the COTS.</p> <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none"> i. COTS report. ii. Technical Assessment. iii. Package to be installed. <p><i>Acceptance Criteria</i></p>		

- | |
|--|
| i. An end-to-end test is conducted (see REQ-17). |
|--|

7. Functional Requirements

Figures are included in this document to facilitate the understanding of the requirements. However, they shall not be considered as mock-ups of the future GUIs.

7.1.1 Service Configuration

SERVICE_CONFIG_REQ_1	Informative
<p>EO based services are provided using external contractors (providers). These providers offer a portfolio of licenses and added value products called “Service Elements”.</p> <p>When placing an order, EMSA requests specific providers (licence and/or value added products) to deliver a set of “Service elements” under certain conditions (e.g. some Service Elements must be delivered in NRT, others not). When a “Service Element” is requested to be delivered in Near Real Time (NRT), EO products have to be delivered within a pre-selected time period.</p> <p>Current list of NRT “Service Elements” :</p> <ul style="list-style-type: none">• Licence;• Satellite Data Downlink; Satellite Image Processing; EO Image Delivery;• Oil Spill Detection; Oil Spill Warning;• Vessel Detection; Activity Detection;• Quality Report; <p>Current list of Non-NRT “Service Elements” are:</p> <ul style="list-style-type: none">• Emergency Programming Service;• On Board Recorder Usage;• Retrieve from Archive; <p>The content of these two lists is subject to change in accordance with EMSA capabilities e.g. It is foreseen to have a new “Service Element” for Change Detection.</p> <p>For efficiency reasons, EMSA will apply pre-configured “Service Types”. A “Service Type” is a pre-selected combination of Grouped Service Elements (GSE), each GSE containing a number of “service elements” and specific time condition parameters.</p> <p>The definition of the “Service Type” includes:</p> <ul style="list-style-type: none">• The Service Type name and description;	

- For each GSE, the selection of the EO provider and the associated NRT and non-NRT “Service Elements”.
- The time condition parameters:
 - Maximum Downlink Time (minutes): maximum time in minutes between acquisition stop time and downlink time (e.g. if the acquisition is made when not in the ground station visibility)
 - Maximum Delivery Time (decimal hours): maximum additional time for the delivery of any value added analysis to be undertaken by the EO provider (e.g. in operational cases where complex analysis is needed).

Define Service Type

Service Name CleanSeaNet

Service Type Description Standard CleanSeaNet service

Max Downlink Delay (minutes) 0 **Notification Threshold (decimal hours)** 0

Provider-1 Service Definition

Provider Name Automatic

service elements

- ☒ License
- ☐ Data Downlink
- ☐ Image Processing
- ☐ Image Delivery

additional service elements

- ☐ Emergency Programming Service
- ☐ On Board Recorder Usage
- ☐ Archive Image

Max Delivery Delay (decimal hou...) 0

Provider-2 Service Definition

Provider Name Automatic

service elements

- ☒ Data Downlink
- ☒ Image Processing
- ☒ Image Delivery
- ☒ Oil Spill Detection
- ☒ Vessel Detection
- ☐ Activity Detection
- ☒ Oil Spill Warning (optional)
- ☒ Quality Report

Max Delivery Delay (decimal hou...) 0

Save Close

Figure 3 Example of a Current Service Type: Ordering standard CleanSeaNet products composed of two GSEs.

SERVICE_CONFIG_REQ_2	Priority: P1
<p>Implement a “Service Element” configuration GUI that will be used for:</p> <ul style="list-style-type: none"> • Creating, updating, and deleting “Service Elements”. • Search for the “Service Elements” based on the following criteria: <p>The attributes of a “Service Element” to be filled via the GUI are:</p> <ul style="list-style-type: none"> • Service Element Name; • Service Element Description; • Framework Contract to be selected from the list of Framework Contracts available in the FINSYS. • Indication if the service element is subject to Near Real Time conditions; • Indication if the service element is subject to a volume discount. <p>For example, two distinct vessel detection service elements will be created if more than one Framework contract is available.</p>	
SERVICE_CONFIG_REQ_3	Priority: P1
<p>Implement a “Service Element – EO Provider” for defining which service elements each EO provider is able to deliver per Framework Contract. This functionality requires to implement a GUI for:</p> <ul style="list-style-type: none"> • Creating, updating, and deleting “Service Elements – EO Providers” associations. <p>Service Elements are created as defined in SERVICE_CONFIG_REQ_1. There is no limit in the number of service elements that may be created in the system and in the number of associations between service elements and EO providers.</p> <p>EO providers are listed in the EMSA Central Organisation Database (COD) as private organisations. EO providers are created, updated, and deleted by EMSA EODC administrators using the COD GUI. Consequently:</p> <ul style="list-style-type: none"> • The EODC shall be able to access the list of EO providers from the COD. • If the EO provider information needs to be stored in the EODC (wherever it is stored TOR, JOU, FINSYS) it shall be automatically synchronised with COD. It shall not be possible to remove an EO provider from the COD if this provider is used by the EODC. 	
SERVICE_CONFIG_REQ_4	Priority: P1
<p>Implement a “Service Element – Data Product Packages” association GUI for:</p> <ul style="list-style-type: none"> • Displaying the list of available data product packages (as defined in the EICD) from which specific package(s) can be associated with specific “Service Elements”; • Selecting which data product package(s) are required to validate that a service element has been delivered e.g. an image is considered delivered by the EO provider when the EOP and the QNO packages (as defined in the EICD) have been ingested by the EODC. 	

SERVICE_CONFIG_REQ_5	Priority: P1
<p>Implement a “Grouped Service Elements” (GSE) configuration GUI that will be used for:</p> <ul style="list-style-type: none"> • Creating, updating, deleting of GSE. There will be no limit on the number of GSE that can be established; • Creating, updating the name and description of any GSE; • Selecting the associated Framework Contract from the list of Framework Contracts in the FINSYS; • Defining the following parameters for each GSE: <ul style="list-style-type: none"> ○ “Maximum Downlink Time”; • Defining the EO Provider for each “Grouped Service Element” by: <ul style="list-style-type: none"> ○ Selecting the appropriate automatic rule (see SERVICE_CONFIG_REQ_6) for selecting the EO Provider <p>OR</p> <ul style="list-style-type: none"> ○ Selecting the EO Provider from the list of EO Providers. • Selecting the relevant Service Elements which are available for the selected framework contract and defining the “Maximum Delivery Time” for each selected Service Element. Since the list of service elements per contractor is defined in the relevant Framework Contract, the GUI shall impose that the Framework Contract is selected before relevant service elements are selected. <p>Currently the Maximum Delivery Time applies to all “Service Elements” assigned to a service provider. With the development of new maritime surveillance services more flexibility, is needed. Accordingly, it is requested to have the Maximum Delivery Time defined per individual Service Element. Consequently, information passed to the JOU and the FINSYS must be adapted / aligned appropriately. The new implementation shall remain compatible with the current implementation.</p>	
SERVICE_CONFIG_REQ_6	Priority: P1
<p>Implement an “Automatic Assignment to EO provider” configuration tool that will be used via a GUI for:</p> <ul style="list-style-type: none"> • Creating, updating, deleting draft & test automatic assignments rules based on a range of parameters including but not limited to Framework contract, satellite platform, sensor, 	

<p>operational mode, geographical areas (in principle this information, the geographic area, will be made available to the TOR through the EMSA's Central Geo-reference Database.</p> <ul style="list-style-type: none"> • EMSA shall be able to manage/arrange/add such rules in-house using the tools available in the EODC i.e. without external contractor intervention. <p>The tool shall allow automatic assignment rules to be created including cascade mechanisms. When a cascade mechanism is applied, if the first EO provider declines the requested tasks (EO provider rejects the task as specified in TOR _REQ_38), the GSE is automatically assigned to the next EO provider in cascade.</p> <p>Examples of automatic assignment rules:</p> <ul style="list-style-type: none"> • "Licence GSE" consisting of licence and other fees associated with the licence: RADARSAT-2 would be assigned to MDA, Sentinel-1 to ESA, TerraSAR-X to AIRBUS and Cosmo-Skymed to EGEOS. • "CleanSeaNet Added value services" consisting of image downlink, image processing, image delivery oil spill detection, and vessel detection: would be assigned to service providers based on OP15 Framework Contract and the associated CleanSeaNet tasking areas. If the first ranked service provider is not able to perform the service (see confirmation phase in TOR _REQ_37), the service is automatically available for confirmation by the next ranked EO Provider depending on the area where the image will be acquired. 	
SERVICE_CONFIG_REQ_7	Priority: P1
<p>Implement a "Service Type" configuration GUI that will be used for:</p> <ul style="list-style-type: none"> • Creating, updating, deleting of "Service types". There will be no limit on the number of Service Types that can be established. • Creating, updating the name and description of any "Service Type". • Selecting appropriate GSE. • Defining for each GSE the "Confirmation by EO providers timeout" in days. • Defining the "Allocation by End users timeout" in days. 	
SERVICE_CONFIG_REQ_8	Priority: P1

Service Types

Service Name	Service Type Description	License Provider	Service Provider	Created by	Created on
SAFEMED-MDA-EGEOS	Standard RS2 Service for Safemed	MDA-SAFEMED	EGEOS-SAFEMED	SCHMUSI	2015-06-17 16:34:05
SAFEMED-MDA-CLS	Standard RS2 Service for Safemed	MDA-SAFEMED	CLS-SAFEMED	SCHMUSI	2015-06-17 16:33:54
TRACECA-MDA-KSAT	On-board CSN Service assigned to KSAT	MDA-TRACECA	KSAT-TRACECA	SANTOSO	2015-06-17 09:52:03
TRACECA-MDA-EGEOS	Standard RS2 Service for Traceca	MDA-TRACECA	EGEOS-TRACECA	SANTOSO	2015-06-17 09:38:27
CSN V3 - EGEOS	Standard CSN service assigned to EGEOS	Automatic	EGEOS	PELIZZO	2015-04-30 08:59:21
CSN V3 - EDI EMERG	Standard CSN Service assigned to EDI for emergency	Automatic	Edisoft	PELIZZO	2015-04-16 10:50:56
CSN V3 - KSAT EMERG ONBOARD	Standard CSN Service assigned to KAT emer onboard	Automatic	Ksat	PELIZZO	2015-04-16 10:48:54
CSN V3 - KSAT	Standard CSN service assigned to KSAT	Automatic	Ksat	PELIZZO	2015-04-16 10:48:37
GREENLAND V3 MDA-CLS	Standard Service V3 MDA CLS Greenland	MDA-G	CLS-G	PELIZZO	2015-01-08 12:23:47
GREENLAND V3 MDA-KSA DMAX	Onboard Rec service V3 for MDA and KSAT Greenland	MDA-G	KSAT-G	PELIZZO	2015-01-08 12:20:19
GREENLAND V3 MDA-KSAT	Standard service V3 MDA and KSAT Greenland	MDA-G	KSAT-G	PELIZZO	2015-01-08 12:18:18
CSN V3 - CLS	Standard CSN service assigned to CLS	Automatic	CLS	JOURNIMA	2014-12-10 15:49:31
CSN Standard V3	Standard CSN + OSW and QUA	Automatic	Automatic	SANTOSO	2014-12-08 15:06:36
CSN Standard	Standard CleanSealnet service in NRT	Automatic	Automatic	SCHMUSI	2014-11-10 19:53:31
GREENLAND MDA-KSAT	Standard service for V3 for MDA and KSAT for Greenland	MDA-G	KSAT-G	JOURNIMA	2014-09-25 18:41:26
GREENLAND MDA-CLS	Standard service for V3 for MDA and CLS for Greenland	MDA-G	CLS-G	JOURNIMA	2014-09-25 18:39:59
CSMDC 1.6 CSK	Default values for CSK old framework contract	EGEOS-L	EGEOS	JOURNIMA	2014-09-08 09:11:29
CSMDC 1.6 Standard	Default value for 1.6 version	Automatic	Automatic		2014-09-03 16:56:33

Figure 4 List of example Service Types

The Service Type configuration GUI will be used:

- To display the list of service types as a table similar to the one in the figure above.
- By EMSA EODC admin users for:
 - Configuring the columns to be displayed and order of information within each column, configuration shall be kept per user. E.g: 2 different users with the same profile may have a different configuration at login.
 - Filtering the information displayed based on the content of each column.
 - Exporting the full or a filtered list in Excel, xml or pdf format.
 - Selecting a record from this list for deletion or editing

SERVICE_CONFIG_REQ_9

Priority: P1

When updating “Service Elements”, GSE, and “Service Types”, the following rules shall be enforced:

- No updating or deleting of any “Service Elements”, GSE or “Service Types” if there are orders in the system that have already been confirmed by at least one EO provider responsible for delivering one of the Service Elements. This applies even if the order has not yet been approved by the Authorising Officer (See workflow in TOR_REQ_1);
- No deleting of a “Service Element” if is associated to an existing GSE;
- No deleting of a GSE if it is associated to an existing “Service Type”.
- Historical data:
EMSA EODC Admin users, EOS Service Providers users, and EOS Licence Providers users will always be able to retrieve full “Service Type” information, e.g. all GSEs and related service elements and EO providers, associated with historical EO product orders and deliveries.
“Service Type” related information presented shall be the one defined at the time of the order

as approved by the Authorising Officer. Consequently, if the definition of a “Service Type” has changed after an order has been approved, “Service Type” information presented shall be the one before “Service Type” definition was modified.	
SERVICE_CONFIG_REQ_10	Priority: P1
All mentioned GUIs/interfaces will be accessible by “EMSA EODC Admin” users (defined in the CMC profiles list) see Appendix.	
SERVICE_CONFIG_REQ_11	Priority: P1
<p>EMSA shall be able to add additional attributes to Service Elements, GSEs, and Service types as appropriate using internal tools i.e. without external contractor intervention.</p> <p>Additional attributes shall be when relevant dynamically available in all GUIs described in this document without contractor intervention.</p> <p>It shall be possible to make active or inactive Service Elements, GSEs and Service Types.</p> <p>The GUI shall include tool that allows transparent over view of all Service Elements, GSEs and Service Types in order to facilitate comparison and consistency checking.</p>	

7.1.2 Tasking and ordering of EO images and added value products

TOR_REQ_1	Priority: Informative
<p>Phase 1: Feasibility Analysis and Planning (Undertaken outside of the EODC using a dedicated tool)</p> <p>In order to meet operational needs for EO services, a feasibility analysis of envisaged EO acquisitions is jointly performed by EMSA and satellite operators. This analysis is conducted with a specific tool (currently MDA's APT, will be SaVoir), which is not part of the EODC. The results of this feasibility analysis is a planning file. The planning file consists of a list of groups of satellite acquisitions. Planning file format is described in the EMSA EICD.</p> <div data-bbox="225 1664 1197 1816"> <pre> graph LR A[/Request for EO images and/or added value products/] --> B[Feasibility analysis performed by EMSA or EO providers] B --> C[/1 to n planning files in EMSA EICD format/] </pre> </div> <p style="text-align: center;">Figure 5 : Generating Planning Files</p> <p>Phase 2: Tasking and Ordering (Undertaken inside the EODC)</p>	

a) Tasking

Tasking refers to the process of assigning tasks to satellite operators/service providers for the acquisition of satellite data and the provision of added value services. It consists of several steps as listed below:

- Import of planning files into the EODC;
- Cart creation: tasks associated with the service type selected are assigned to EO providers;
- Confirmation phase: EO providers (satellite operators and service providers) commit for the requested tasks;
- Allocation phase: end users confirm their interest for envisaged tasks.

The allocation phase closes the tasking process. Then EMSA initiates the ordering of tasks allocated by the end users.

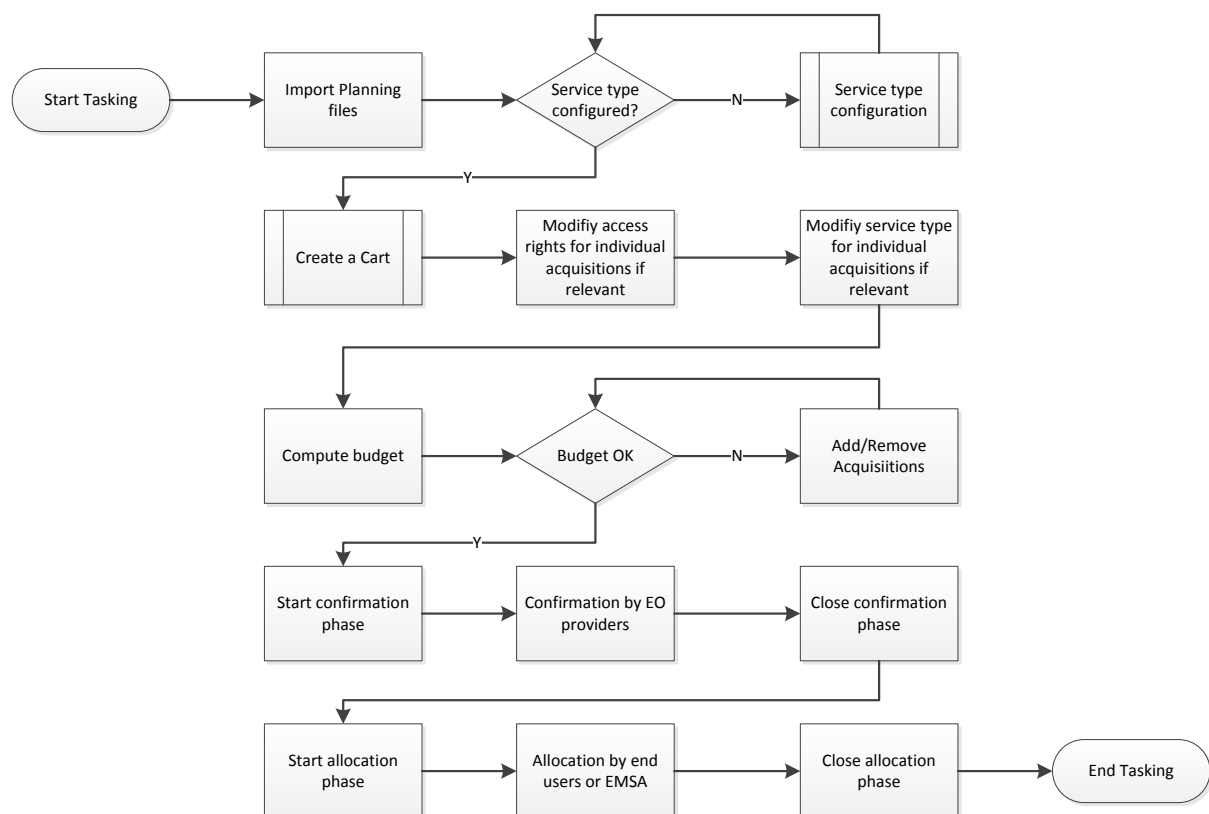


Figure 6 : Tasking Step by Step

The tasking process results in a cart containing a list of EO products in allocated status ready to be ordered.

b) Ordering

Ordering process refers to the process for checking and authorisation of the tasking process by: (1) financial cross-check by the Financial Officer regarding contract budget availability and that order amounts are calculated correctly and (2) approval by the Authorising Officer. The Ordering process

has as output Task Forms digitally signed by the entitled Authorising Officer.

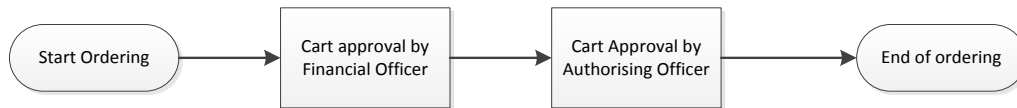


Figure 7 : Generating Orders

In addition to the Task forms, the output of the planning, tasking and ordering process consists of a list of orders assigned to EO providers. This list is available to EMSA and EO providers in the JOU. It contains detailed information on tasks to be carried out by EO providers and is used as a contractual reference. The TOR is responsible for passing appropriate information to the JOU and the FINSYS.

The TOR shall also send automatic notifications to relevant users at EMSA, at EO providers and to end users. For example, digitally signed task forms are automatically sent to relevant EO providers once approved by the authorising officer.

Ordered services may be cancelled in the TOR by EMSA or by one of the EO providers at any time before acquisition, and shall identify the reason. Cancellation information is communicated to the JOU.

When EO products are not delivered for technical reasons, EO providers shall indicate via the TOR which GSE could not be provided, indicate the cause of the failure, and describe the corrective and/or preventive actions taken (See TOR _REQ_48).

TOR _REQ_2	Priority: Informative
<p>Implement a TOR component that:</p> <ul style="list-style-type: none"> • provides all necessary functionalities and GUIs to complete the tasking and ordering processes as described in TOR _REQ_1; • sends notification emails as specified further in the document (See TOR _REQ_49); • Exchange relevant information with JOU and FINSYS. 	
TOR _REQ_3	Priority: Informative
<p>Information contained in the planning files to be imported in the EODC depends on the planning mode selected for the feasibility analysis. The following planning modes are envisaged:</p>	

- “Standard Planning”: This mode consists of ordering an EO image and added value products derived from analysis of the ordered image. The exact acquisition date and location of each acquisition are known.
- “Multi mission planning”: A request for “Multi Mission Planning” results in a number of feasibility analysis received from one or more providers in EMSA EICD planning file format. As the exact date and location are known for each individual item contained in the various planning files, the “Standard Planning Mode” can be used for Multi Mission Planning.
- “Data Take Opportunities (DTO) Planning”: Several images are tasked within one limited area and time window but only one is requested to be delivered. Each possible acquisition is called a DTO. The exact time and location of each DTO are known. The DTO that will be actually delivered is not known in advance. Planning files resulting from the feasibility analysis will contain a list of acquisitions consisting of 1 to n DTOs. The use of DTO’s has the advantage that the success delivery rate is increased. By tasking all possible satellites in a constellation, the EO provider maximizes the probability that at least one of the satellite acquisitions is not cancelled. The EO provider only knows precisely if an acquisition can take place or is cancelled at satellite operator level some hours before the acquisition. An example, using two satellites of the CosmoSkyMed (dual: military/civil) constellation. At the moment that the EO provider knows which acquisition will take place, the remaining DTO’s must to be cancelled. Only one acquisition per placed order will be delivered.
- “Flexible time and/or Area Planning”: the development of maritime surveillance activities requires increased flexibility and responsiveness as regards the ordering of EO products, in particular EO optical images and in future EO videos. Several use cases are envisaged:
- “Flexible Time”: The user is interested in obtaining a satellite acquisition over a defined area but with some flexibility regarding the acquisition time. The user will indicate a time interval (example one week) during which the image can be acquired at any time. This can be used for example to get a cloud free image.
- “Pinpointing”: The user is interested in having a satellite acquisition on a specific day/time, but has some flexibility on the exact area to be imaged, within the boundaries of an Area of Interest (AOI). Example: a SAR detection or information coming from intelligence services arrives some hours before an ordered optical image, and is used to ‘pinpoint’ the target of interest. The term ‘Pinpointing’ refers to the shift of the originally planned footprint of the ordered image to another location, keeping the same image characteristics (polygon, area, mode...) and just changing the centre coordinates. The AOI is limited in practice by the satellite time window available and corresponds at the maximum to the area within which the shift is possible. Pinpointing is performed on a best effort basis and only at last minute it is possible to know if a shift can take place or not. If pinpointing to a different location is not possible, the original ordered footprint can be delivered or cancelled. If pinpointing is successful, the new area is delivered. For contractual reasons, the size of the image must be included in the initial order.

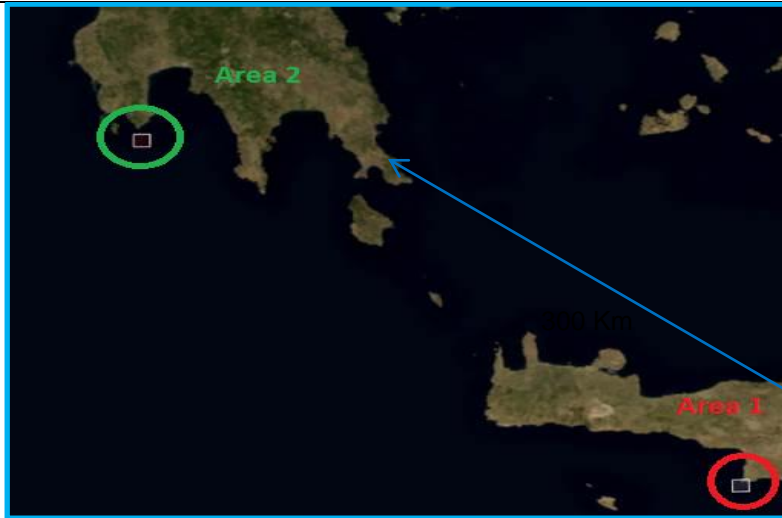


Figure 8: Area Of Interest

In light blue (external rectangle around all figures), the area of interest. In red, Area 1 – the rectangle inside the circle is the initial footprint of the ordered optical image. In green, Area 2 – the rectangle inside the circle is the final footprint of the received image. The two areas are approximately 300 km distant from each other. The footprint shape and size are kept, only the centre position is changed. It is complex to predict at the time of ordering, the extent of the area of interest corresponding to the area within pinpointing range. Therefore, the area of interest shall not be managed in the EODC. The planning file will just contain information that the service is open for pinpointing.

- “Flexible Time and Area”: The user needs to have the flexibility to request an image at any time during a time interval and anywhere within the boundaries of an area of interest. This is a combination of the two previous cases. For contractual reasons, the size and the type of the image must be included in the initial order.

Planning file resulting from the feasibility analysis will contain the information that the planning is subject to flexible time and area. They will in particular contain the time interval and the area of interest as a polygon.

- “Stereo/Persistent Planning”: This mode is based on the acquisition of multiple images over the same area in one satellite pass. As a result, for a single order, several images will be acquired. The planning file will indicate for each persistent stereo/persistent order a group of 2 or more acquisitions over the same area.
- “Satellite Formation Planning”: This mode consists of using 2 satellites flying in close formation such as TanDEM-X and TerraSAR-X, to obtain specific added value products such as digital elevation model or course and speed of mobile targets. The TOR shall include functionalities for ordering as part of a single order two acquisitions from different satellite platforms and a number of added value products. This mode is similar to the “Stereo/Persistent Planning” except that it is using more than one platform.
- “SAR Aligned Planning”: This mode is designed for planning optical images in combination with SAR images in order to benefit from the synergies that may arise from using two different imaging systems. Information on the initial acquisition needs to be exposed to providers performing the feasibility analysis for additional images. Then additional orders will be placed

via the “Standard Planning Mode” or through the “Event Triggering Mode” described below. Like for Multi-Mission Planning, the management of the request and the association between acquisitions and the initial request will be addressed through the 3 Tier approach mentioned earlier.

- “Event Triggered Planning”: Maritime surveillance operations often require a fast response on a 24/7 basis and there is the need to acquire an image triggered by an external event sometimes shortly before satellite pass. Three examples of possible use cases are presented below:
 - In the case of SAR aligned planning, the detection of a target of interest might trigger the acquisition of a high resolution optical image centred on the target.
 - The acquisition of a high resolution SAR image centred on a target of interest is a possible variation of “SAR Aligned Planning”.
 - Intelligence received requires the fast ordering of a satellite image on a target of interest. This is the reason why “Pinpointing” was introduced.

The TOR shall be able to issue (automatic) orders based on clearly identified triggering events. Such event can be the result of an abnormal behaviour monitoring process in another EMSA application or a manual entry by an entitled operator. Note that any “automatic” ordering or changes in an existing order requires the pre-agreement of the Authorising Officer regarding the implementation of the relevant procedure.

- “Change Detection Planning” This mode consists of ordering a reference image followed by one or several additional images over the same area of interest in order to identify the changes. The reference image may be an image ordered (archive or new acquisition) from one provider or an image existing at EODC. It shall possible via the TOR to specify which reference image available at EODC shall be used or to order reference image from a provider and then to order additional images from one or several providers using Standard Planning procedures.
- “Archived Image Planning” This mode consists of ordering already acquired by the EO provider. The planning file will be provided like for a future acquisition.
-

Note that new planning modes may arise in the future (See TOR _REQ_32).

TOR_REQ_4

Priority: P1

The format of the planning file in the EICD shall be upgraded in order to be able to cope with planning modes described in SERVICE_CONFIG_REQ_2.

The planning files shall contain:

- 1 to n groups of image acquisitions

Each group of image acquisitions shall contain:

<ul style="list-style-type: none"> the planning mode from the list above; the time window; the area of interest; the total number (t) of acquisitions contained in the group; The list of acquisitions numbered from 1 to t. <p>The time window limits will be:</p> <ul style="list-style-type: none"> acquisition start time and acquisition stop time for “Standard”, “Multi-Mission” and “Archived Image planning”; the start time of first acquisition and stop time of last acquisition for “DTO”, “Stereo/Persistent”, “Satellite Formation planning”, and “Change Detection planning”; The time window within which the acquisition should take place for “flexible time and/or area planning”, and “event triggered planning”. It can range from some minutes for “pinpointing” to several days for flexible time when a cloud free image is requested. <p>The Area of Interest will be the area within which the user is interested in receiving an image. It is not the area that the satellite is able to reach when passing inside the mask of the receiving ground station.</p>	
TOR_REQ_5	Priority: P1
The TOR shall be able to import planning files both in the new format resulting from TOR_REQ_4 and in the format of the EICD currently used for the provision of EO services via the EODC.	
TOR_REQ_6	Priority: P1
<p>Each time a planning file is imported, the TOR shall assign to each group of acquisitions a unique “Reference ID” in the following format YYYYMMDDXXX where XXX is a sequential number from 001 to 999. For example, the identifier of the third group of products to be acquired on 14 July 2015 shall be 20150714003. If within a group, acquisitions are not all the same day, the date to use shall be the date of the earlier acquisition date of the group.</p> <p>The identifier of an individual acquisition shall be the combination of the Reference ID, the number of the acquisition within the group, the code for the planning mode followed by ACQ and a sequential number. For example: 20150714003-DTO-ACQ2 or 20150714003-STD-ACQ1.</p> <p>If the planning file already contains a Reference ID, this Reference ID will be forced into the system. If the planning file doesn't contain Reference IDs, the lowest sequential number available even if a higher number is already in use.</p>	
TOR_REQ_7	Priority: P1

Implement a “Group of Acquisitions List” GUI that will be used to:

- Import 1 to n planning files;
- Display detailed information on groups of acquisitions and associated acquisitions;
- Edit the Reference ID of a group of acquisitions;
- Change the planning mode of a group of acquisitions;
- Remove individual acquisitions from groups;
- Move an acquisition from one group to another group (drag and drop). Sequential numbers and total number of acquisitions in each of the modified groups shall be changed accordingly;
- Remove groups of acquisitions from the list;
- Save/Load/Delete “Group of Acquisition Lists” (currently, this list is called “Planning list” and it cannot be saved). The saved acquisition list shall contain the Reference IDs. Reference IDs contained in Saved acquisition Lists are not available for assignment unless the list has been deleted.
- Assign EO provider to an acquisition by application of automatic assignment rules configured in the system (see SERVICE_CONFIG_REQ_6);
- Select relevant groups of acquisitions and launch the “Create cart” process for selected groups of acquisitions.

This “Group of Acquisitions List” GUI shall consist of a map view and a tabular view.

It shall be possible to import planning files by dragging the files from the file explorer and dropping them into the GUI.

The figure below displays the current GUI used for importing planning files. It is shown to facilitate the understanding of the business requirements but should not be considered as a mock-up of the future GUI.

It shall be possible to save a “Group of Acquisitions List”.

It shall be possible to load previously saved “Group of Acquisitions List” whether in the same environment or in a different environment. E.g. Opening in PREPROD an acquisition list saved in PROD. If opened in a different environment, Reference IDs shall be kept identical.

HOME

GIS VIEWERS

PLANNING

ALERTING

COMMUNICATION

JOURNALING

FINANCIAL

USER MANAGEMENT

HELP

RELEASE NOTES

Map of Europe with tasking areas

Layers: EPSG:3395

- Grayscale
- Topography
- Land features
- Man-made features
- Water features
- SST Standard
- Coverage Req.
- Tasking
- Planning

60 rows retrieved

Planning List

Tasking List

Package Ingestion Checks

Tasked Summary

File Import

Coverage Requirements

Alert regions

Tasking Areas

ID	Platform	Instrument	Begin Position	Operational Mode	Polarisation Channels	Tasking Area
201505363	RADARSAT-2	US	2015-05-23 05:19:06	US	HH	Tasking Area 2
201505364	RADARSAT-2	US	2015-05-23 05:19:09	US	HH	Tasking Area 2
201505365	RADARSAT-2	US	2015-05-23 05:19:12	US	HH	Tasking Area 2
201505368	SENTINEL-1	CSAR	2015-06-23 06:04:28	EWS	VV	Tasking Area 5
201505367	SENTINEL-1	CSAR	2015-06-22 18:13:16	EWS	VV	Tasking Area 5

TOR_REQ_8

Priority: P1

The “Group of Acquisitions List” tabular view shall display information related to the Group of acquisitions starting with the Reference ID column followed by attributes related to the group of acquisitions.

Within each group, there shall be one sub-row per acquisition starting with the identifier of the acquisition within the group followed by attributes specific to individual acquisitions. The table below illustrates the requirement but should not be considered as a mock-up of the tabular view.

Reference ID	Plannin g mode	Time window		Acquisition Identifier	Acquisitio n attribute 1	Acquisitio n attribute 2	Acquisitio n attribute 3
		Start	Stop				
20150714001	DTO			20150714001-DTO-ACQ1			
				20150714001-DTO-ACQ2			
				20150714001-DTO-ACQ3			
20150714002	STD			20150714002-STD-ACQ1			

Using a configuration GUI, EMSA EODC admin users shall be able to select from the list of fields

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<p>available in the planning files, acquisition attributes that shall be displayed in the tabular view.</p> <p>EMSA EODC admin users shall be able to modify the order of the columns by dragging and dropping the columns to their new position.</p> <p>In the tabular view, it shall be possible to navigate easily between groups of acquisitions and between acquisitions inside a group for example by pressing the up and arrow keys to browse through the groups of acquisitions and the right or left key to browse through acquisitions within a group or by using the mouse scroll down and up functionalities. Corresponding footprints shall be highlighted in the map view. Centre positions of the highlighted footprints shall be displayed (e.g. a cross).</p> <p>It shall be possible to open the tabular in another browser tab or window than the one used for the map view.</p>	
TOR_REQ_9	Priority: P1
<p>The “Group of Acquisitions List” map view shall display the footprints of all acquisitions listed in the tabular view.</p> <p>When clicking on a footprint in the map view, the corresponding acquisition in the tabular view shall be highlighted and the centre position displayed (e.g. a cross). If two or more footprints are overlapping, it shall be possible to toggle easily (for example by pressing a key on the keyboard) between overlapped acquisitions footprints.</p> <p>When available, the map view shall display on request the area of interest for the selected group of acquisitions.</p> <p>See also TOR_REQ_50.</p>	
TOR_REQ_10	Priority: P1
<p>Full information about the group of acquisitions selected from the “Group of Acquisitions List”, whether by navigating in the tabular view or by clicking on a footprint in the map, shall be displayed simultaneously in a “Detailed Information” panel. It shall be possible to display the Detailed Information” panel in another browser tab or window. User shall be able to relocate the panel on the window.</p>	
TOR_REQ_11	Priority: Informative
<p>The “Create cart” refers to the process assigning tasks to EO providers after selecting the appropriate groups of acquisitions from the “Planning List GUI”.</p>	

Rules for assigning tasks to providers, specific conditions regarding the delivery of the products, and the contractual framework are all contained in pre-configured “Service Types”.

The business requirements for the configuration of service types are described above in 7.1.1. The creation of a cart starts with the call to the “Create Cart” function after selecting relevant groups of acquisitions via the Planning List GUI as specified in TOR_REQ_7.

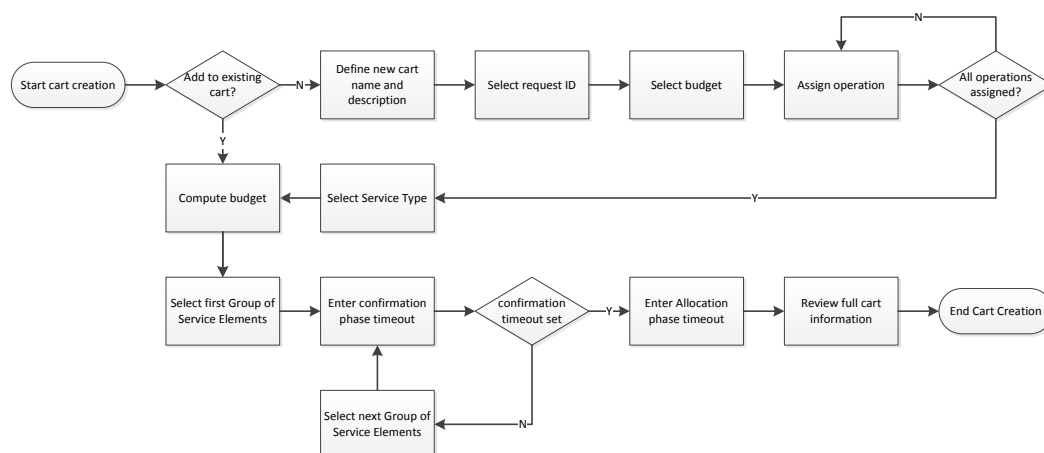
Consequently and as indicated in the planning workflow in TOR_REQ_1, the configuration of service types is a pre-requisite to the creation of carts.

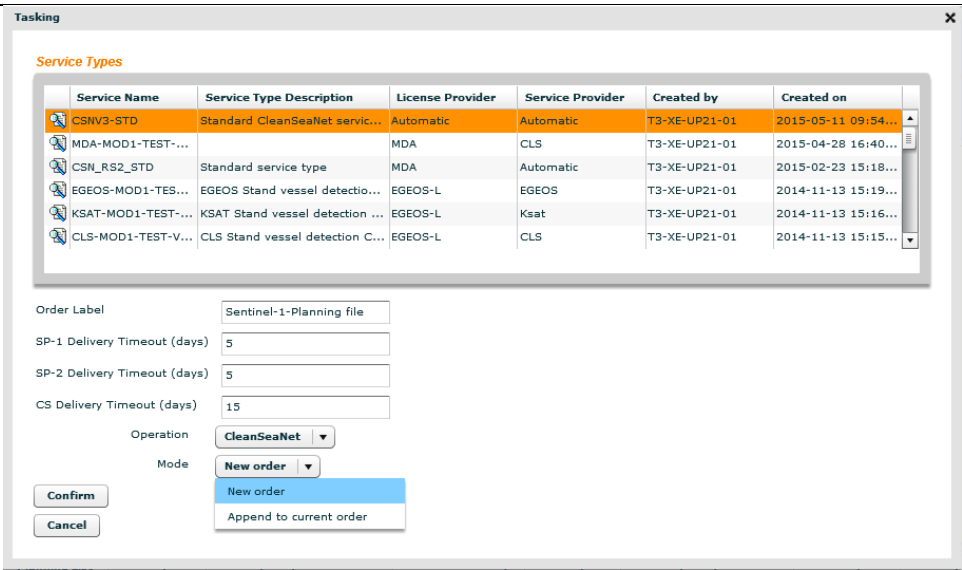
For example, before creating carts for CleanSeaNet, the “CleanSeaNet Service Type” needs to be configured. In that case, it consists of 2 GSE; namely “CleanSeaNet Licence” and “CleanSeaNet Added value services”. The licence service element is assigned to the appropriate licence provider by application of the automatic rule for licence provision (e.g. Radarsat-2 to MDA and Sentinel-1 to ESA). Added value services (oil spill and vessel detection are assigned to relevant service provider(s) by application of the CleanSeaNet contractual rules (assignment to service providers per tasking area).

TOR_REQ_12

Priority: P1

Implement a “Create Cart” wizard that will be used to perform the steps of the cart creation workflow:









	
TOR_REQ_13	Priority: P1
<p>Cart Creation – Add to existing cart or Create new cart</p> <p>If a cart is already created, the EMSA EODC admin user shall be able to append the new acquisitions to the current cart or to create a new cart.</p> <p>If it is decided to append new acquisitions to the current cart, all steps until “Compute Budget” are skipped.</p> <p>It shall only be possible to append acquisitions to a cart in “Tasking Status” (See Cart status list in TOR_REQ_23).</p> <p>If a new cart is created, the user shall enter a name and a description, e.g. “CleanSeaNet routine planning for July 2015”.</p>	
TOR_REQ_14	Priority: P1
<p>Cart Creation - Select Request ID</p> <p>It is envisaged in the future to manage in the system EO service requests received from end users. The purpose of this step is to associate a cart to a corresponding request ID.</p> <p>For the time being, information shall not be selected from a list but entered manually during the cart creation process. E.g.: FTX-2015-993.</p>	

TOR_REQ_15	Priority: P1
<p>Cart Creation - Select Budget</p> <p>Different EO services are covered by different budget resources. This information is required in order to be able to complete the ordering process and to assign the Task forms to the appropriate budget.</p> <p>The user shall be able to select the budget from the list of budgets available in the FINSYS</p>	
TOR_REQ_16	Priority: P1
<p>Cart Creation – Assign “Operations”</p> <p>Access rights to EO services are managed through the “Operation” concept. The access is restricted to data related to the selected operations managed in the CMC.</p> <p>Example: The CleanSeaNet service and EO services delivered to Frontex are defined as two different operations (CleanSeaNet and Frontex). Frontex services are not visible to members of the CleanSeaNet operation unless they are also part of the Frontex operation.</p> <p>Restrictions apply to all EO products associated with one group of acquisitions including information related to orders. This rule must be enforced by all maritime applications including the TOR component. Association between users and operations is managed by the CMC.</p> <p>The purpose of the “Assign operations” step is to define at ordering stage the list of operations entitled to see the EO products that will be ordered via this cart.</p> <p>It shall be possible to assign 1 to n operations selected from the list of operations available in the CMC.</p>	
TOR_REQ_17	Priority: P1
<p>Cart Creation – Select “Service type”</p> <p>As already mentioned above, rules for assigning tasks to EO providers, specific conditions regarding the delivery of the products, and the contractual framework are all contained in pre-configured “Service Types”.</p> <p>It should be noted that the selection of the appropriate framework contract is done through the selection of the appropriate service type. For example, it can happen that 2 different specific contracts are used in parallel each one depending of a different framework contract with different service prices. In that case, 2 service types must be created. E.g.: CSN-OP10 and CSN-OP15.</p> <p>It shall be possible to select the service type from the list of service types configured in the EODC.</p> <p>The list shall display relevant information to facilitate the selection of the service type by the EODC</p>	

admin user.

The table below illustrates the current implementation of the interface for the service type selection. This is not suitable anymore as the new implementation will allow more than 2 EO providers.

Service Types

	Service Name	Service Type Description	License Provider	Service Provider	Created by	Created on
	CSNV3-STD	Standard CleanSeaNet servic...	Automatic	Automatic	T3-XE-UP21-01	2015-05-11 09:54...
	MDA-MOD1-TEST-...		MDA	CLS	T3-XE-UP21-01	2015-04-28 16:40...
	CSN_RS2_STD	Standard service type	MDA	Automatic	T3-XE-UP21-01	2015-02-23 15:18...
	EGEOS-MOD1-TES...	EGEOS Stand vessel detectio...	EGEOS-L	EGEOS	T3-XE-UP21-01	2014-11-13 15:19...
	KSAT-MOD1-TEST-...	KSAT Stand vessel detection ...	EGEOS-L	Ksat	T3-XE-UP21-01	2014-11-13 15:16...
	CLS-MOD1-TEST-V...	CLS Stand vessel detection C...	EGEOS-L	CLS	T3-XE-UP21-01	2014-11-13 15:15...

Instead, using a configuration GUI, EMSA EODC admin users shall be able to select the fields to be displayed.

EMSA EODC admin users shall be able to modify the order of the columns by dragging and dropping the columns to their new position.

It shall be possible to navigate easily between the different service types for example with the up and down arrow keys. Simultaneously full information about the service type shall be displayed in a “Detailed Information” panel. It shall be possible to display the Detailed Information” panel in a floating window. It shall be possible to display this floating window on another screen.

TOR_REQ_18

Priority: P1

Cart Creation – Compute Budget

The purpose of this step is to check that, for each concerned EO provider, budget resources are available to cover the costs associated with envisaged orders assigned to this provider.

Information generated by the FINSYS is presented to the EODC admin user in a separate window. The same information is presented to the Financial Officer and the Authorising Officer during the approval phase. Business requirements for this window will be defined together with the approval phase further in this document.

The user shall have the possibility to skip this step.

TOR_REQ_19

Priority: P1

Cart Creation – Enter “Confirmation phase timeout”

Default timeout values for confirmation by EO providers are defined in the service type per group of

<p>service elements.</p> <p>Default values shall be displayed and the user shall have the possibility to skip this step or to change the values.</p> <p>It should be noted that these values are communicated to EO providers in notification emails sent when the confirmation phase is started.</p>	
TOR_REQ_20	Priority: P1
<p>Cart Creation – Enter “Allocation phase timeout”.</p> <p>Default timeout values for allocation by end users are defined in the service type.</p> <p>Default values shall be displayed and the user shall have the possibility to skip this step or to change the values.</p> <p>It should be noted that these values are communicated to EODC national Planner users in notification emails sent when the allocation phase is started.</p>	
TOR_REQ_21	Priority: P1
<p>Cart Creation – Review full cart information and Confirm</p> <p>It shall be possible to navigate back and forth through the various steps of the allocation phase process to correct information previously entered. Unless corrected, information entered shall remain available throughout the steps as initially entered. At the end of the process, the user shall be prompted to confirm the submission of the cart.</p> <p>Confirming the submission of the cart will open the “Tasking list” window to display the content of the cart. The “Tasking list” window is described below in this document.</p>	
TOR_REQ_22	Priority: P1
<p>The full service associated to the Reference ID is provided by assigning the required GSEs to the appropriate providers.</p> <p>The “Cart creation” process shall result in the creation of one individual order per GSE assigned to a single EO provider.</p> <p>Each individual order shall be automatically associated to one or several acquisitions depending on GSE and planning mode. For example, the Licence GSE is always associated to one acquisition. The Change Detection is associated to at least 2 acquisitions.</p>	

Since Task forms issued by the FINSYS for each concerned EO provider at the end of the ordering process will contain the list of GSE orders assigned to the provider, each GSE order shall have a unique identifier.

The identifier of individual GSE orders shall be the combination of the Reference ID, the code for the planning mode followed by "GSE" and a sequential number for each GSE to be provided for this service. For example: 20150714003-DTO-GSE-1 or 20150714003-STD-GSE-1.

Automatic rules for associating GSEs and acquisitions are detailed below in TOR_REQ_32.

Until the FINSYS and the JOU are upgraded to cope with multiple providers, the TOR shall ensure that information communicated to these 2 components is compliant with the current implementation.

TOR_REQ_23

Priority: P1

Carts possible statuses:

- a) Tasking.
- b) Pending Confirmation.
- c) Confirmed.
- d) Pending Allocation.
- e) Allocated.
- f) Pending FO approval.
- g) Pending AO approval.
- h) Approved.

All carts remain in status "Tasking" from the time they are created until the confirmation phase is initiated by the EMSA EO Administrator. Changes to other statuses are automatic following actions and rules described below in the document.

The list of cart statuses shall be configurable.

TOR_REQ_24

Priority: P1

Reference IDs possible statuses:

- i) Planned.
- j) Pending confirmation.
- k) Confirmed.
- l) Not confirmed.
- m) Pending allocation.
- n) Allocated.

- o) Not Allocated.
- p) Tasked.
- q) Pending.
- r) Delivered.
- s) Cancelled.
- t) Anomaly.

All Reference IDs remain in status “Planned” until the confirmation phase is initiated by the EMSA EODC Admin user. Changes to other statuses are automatic following actions and rules described below in the document.

The Group of Acquisitions goes automatically to “Confirmed” status as soon as all providers involved have “Confirmed” their ability to provide the requested service elements contained in the Group of Service elements assigned to them.

The list of Reference IDs statuses shall be configurable.

TOR_REQ_25

Priority: P1

Individual GSEs within a Reference ID may have the following statuses:

- u) Planned.
- v) Pending confirmation.
- w) Confirmed.
- x) Rejected.
- y) Tasked.
- z) Pending.
- aa) Delivered.
- bb) Cancelled.
- cc) Anomaly.

All GSEs remain in status “Planned” until the confirmation phase is initiated by the EMSA EODC Admin user. Changes to other statuses are automatic following actions and rules described below in the document.

The list of GSEs statuses shall be configurable.

TOR_REQ_26

Priority: P1

Individual acquisitions may have the following statuses:

- dd) Planned.
- ee) Confirmed.
- ff) Tasked.
- gg) Pending.
- hh) Delivered.
- ii) Cancelled.
- jj) Anomaly.

All new acquisitions remain in status “Planned” until the confirmation phase is closed by the EMSA EODC Admin user.

Reference IDs may include acquisitions that have already been tasked or delivered as described in TOR _REQ_34. E.g. Use of an image previously delivered as the reference image for change detection. The “Tasked” or “Delivered” status is kept for these acquisitions throughout the whole process. Changes to other statuses are automatic following actions and rules described below in the document.

TOR _REQ_27

Priority: P1

Implement a “Tasking List” GUI interface that will be used by:

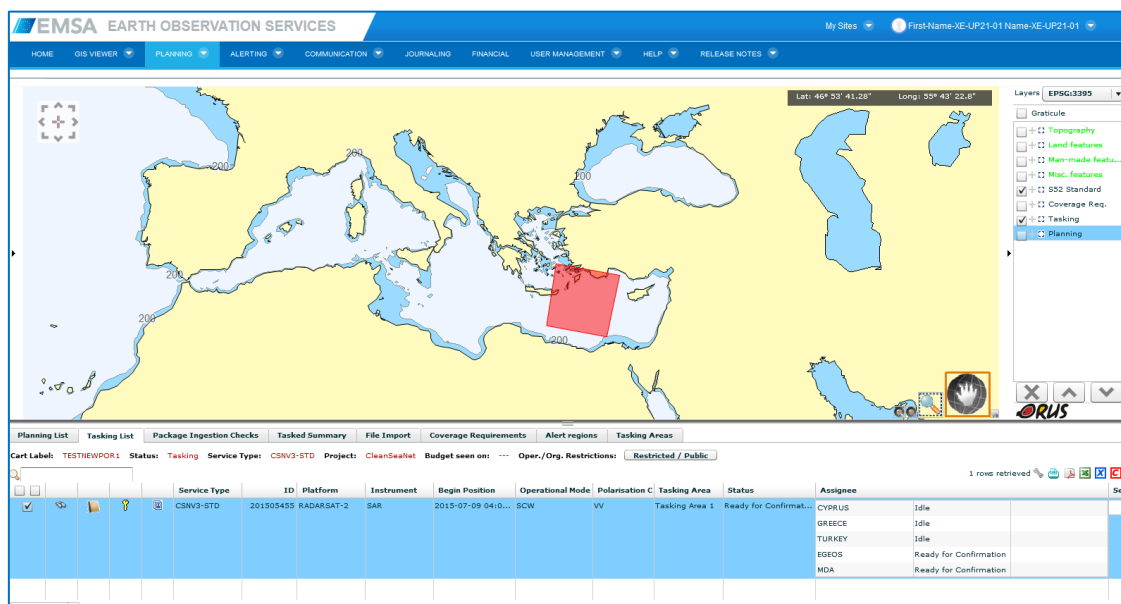
a) “EMSA EODC Admin” users to:

- Manage carts (search, load, delete).
- Display detailed information on GSEs and associated acquisitions contained in the loaded cart. Only one cart at a time can be loaded in the ‘Tasking List’ window.
- Select 1 to n “Reference ID” to perform the following operations in bulk:
 - Modify access rights.
 - Modify service type.
- Compute budget.
- Add extra Reference ID.
- Remove Reference ID. All GSEs and associated acquisitions are removed.
- Remove individual acquisition from acquisitions associated with this Reference ID. GSEs associated to this acquisition are removed.
- Start the “Confirmation by EO providers” phase; Cart status goes automatically into “Pending Confirmation”.
- Close the “Confirmation by EO providers” phase; Cart status goes automatically into “Confirmed” status;

- Start the “Allocation by end users” phase. Cart status goes automatically into “Pending Allocation”;
 - Optionally allocate acquisitions (on behalf of end user or when no end user is involved);
 - Close “Allocation by end users” phase; Cart status goes automatically into “Allocated”;
 - Select relevant Reference IDs and launch the “Approval phase” process for selected groups of acquisitions.
- b) EO providers, users with roles “EOS Licence Provider” or “EOS Service Provider” to:
- Confirm EO providers’ commitment to provide the requested service elements under specific time conditions. E.g.: “Maximum Delivery Time”;
- c) End users with role “EOS National Planner” to:
- Allocate acquisitions proposed by EMSA and confirmed by EO providers.

This GUI shall consist of a map view and a tabular view. Functions available will vary depending on the user’s role.

The figure below displays the current “Tasking List” GUI currently used by “EMSA EODC Admin” users. It is shown to facilitate the understanding of the business requirements but should not be considered as a mock-up of the future GUI.



Note that this interface shall also be used to set acquisitions to “Cancelled” or “Anomaly” as specified in TOR_REQ_48.

TOR_REQ_28

Priority: P1

For each Reference ID, the “Tasking List” tabular view shall make available all information related to:

- Reference IDs and status.
- Acquisitions characteristics.
- GSEs (details, associated acquisitions and status).
- Operations.

It is not possible to display all information in a single tabular view. Information shall be distributed between list of acquisitions in the tabular view and a “Detailed Information” panel displaying full information for the selected group of acquisitions.

The tabular view shall display a summary list organised by group of acquisitions and containing the following information:

- Reference ID;
- Planning Mode;
- Service type (may be different from the initial selected at cart creation);
- “List of Operations modified” flag; set if the initial list of operations selected at cart creation has been modified;
- “Service type modified” flag; set if some conditions as the “Maximum Downlink Time” or the “Maximum Delivery Time” have been changed and are different from the initial values resulting of the application of the service type.
- Reference ID Status as defined in TOR_REQ_24.
- Acquisition sequential number within the group of acquisitions associated with the Reference ID.
- Acquisition Platform.
- Acquisition Operational Mode.

The table below illustrates the requirement but should not be considered as a mock-up of the tabular view. For example, the flag is set to yes or no but is could as well be a colour indicator.

Cart Name: CleanSeaNet July 2015 Budget: CleanSeaNet Cart Status: Pending confirmation Service type: CSN STD Request ID: N/A Operation(s): CleanSeaNet, Safemed Cart description: Routine CleanSeaNet planning for July 2015								
Reference ID	Planning mode	Service type	List of Operations	Service type modified	Status	Acquisition Identifier	Acquisition Platform	Operational Mode

			modified					
20150714 001	DTO	CSN STD	No	No	Confirmed	2015071400 1-DTO- ACQ1	Cosmo- Skymed-1	HR
						2015071400 1-DTO- ACQ2	Cosmo- Skymed-3	HR
20150714 002	STD	CSN OSR	Yes	Yes	Pending Confirmation	2015071400 2-STD-ACQ1	Radarsat- 2	SCW

In the tabular view, it shall be possible to navigate easily between Reference IDs and between acquisitions within a Reference ID, for example by pressing the arrow keys to browse through the orders and the right or left key to browse through acquisitions. Corresponding footprints shall be highlighted in the map view.

It shall be possible to open the tabular in another browser tab or window than the one used for the map view.

TOR_REQ_29

Priority: P1

The "Tasking List" map view shall display the footprints of all acquisitions listed in the tabular view.

When clicking on a footprint in the map view, the corresponding acquisition in the tabular view shall be highlighted. If two or more footprints are overlapping, it shall be possible to toggle easily (for example by pressing a key on the keyboard) between overlapping acquisition footprints.

TOR_REQ_30

Priority: P1

Full information about the order selected from the "Tasking List", whether by navigating in the tabular view or by clicking on a footprint in the map, shall be displayed simultaneously in a "Detailed Information" panel. It shall be possible to display the Detailed Information panel in a floating window.

It shall be possible to open the tabular in another browser tab or window.

TOR_REQ_31	Priority: P1
<p>The following information shall be displayed in the “Detailed information” panel:</p> <ul style="list-style-type: none"> • Reference ID. • Planning Mode. • Service type. • Operations. • List of acquisitions displaying for each acquisition: <ul style="list-style-type: none"> ○ Acquisition identifier as defined in TOR_REQ_5 (E.g. : 20150714003-DTO-ACQ2). ○ Acquisition starts time. ○ Sensor type. ○ EMSA Product Class. ○ Acquisition platform. ○ Acquisition operational mode. ○ Acquisition area. ○ Other acquisition attributes depending on configuration by EMSA EODC Admin users. • List of GSE displaying for each GSE: <ul style="list-style-type: none"> ○ GSE Identifier. ○ GSE name. ○ GSE description. ○ Framework Contract used for this GSE. ○ Acquisitions to be used for this GSE. ○ Reference acquisition if relevant. ○ “Maximum Downlink Time”. ○ Notification type. ○ “Automatic Assignment to EO provider” rule and resulting EO Provider ○ GSE Status. ○ List of Service Elements and “Maximum Delivery Time” for each element. • The “Assignment to country/organisation” rule selected for the Reference ID (see TOR_REQ_40) and the list of countries/organisations resulting from the application of the rule. <p>The following figures show two different possible examples. They should not be considered as mock-</p>	

ups neither for the content nor for the layout. Some elements though required above are not displayed on these examples.

Reference ID	20150714001	Operations	CleanSeaNet TRACECA
Planning Mode	Standard		
Service Type	CleanSeaNet Standard		
Service type modified	No		

Acquisition list						
Acquisition Identifier	Start time	Sensor	Platform	Operational mode	Polarisation	Acquisition Area
20150714001-STD-ACQ-1	2015-07-14 03:37:17	Radar	Radarsat-2	SCW	VV	249,033 Km2

Grouped Service Elements (GSE) list										
GSE Identifier	GSE Name	GSE Description	Framework contract	Acquisitions	Reference Acquisition	EO Provider	GSE Status	Notification	Service element	Maximum Delivery delay
20150714001-STD-GSE-1	CSNSERVICE		OP15	20150714-STD-ACQ-1	N/A	KSAT	Pending confirmation	Routine	Image downlink	0
									Image processing	0
									Image delivery	0
									Oil spill detection	0
									Vessel detection	0
20150714001-STD-GSE-2	CSNLICENCE		NEG43	20150714-STD-ACQ-1	N/A	MDA	Confirmed	Routine	Quality report	0
									Licence	0

Reference ID	20150716001	Operations	Frontex
Planning Mode	Change Detection		
Service Type	Change Detection		
Service type modified	No		

Acquisition list					
Acquisition Identifier	Start time	Sensor	Platform	EMSA Product Class	Acquisition Area
20150716001-STD-ACQ-1	2015-07-16 11:37:23	Optical	Worldview-3	VHR2	50,21 Km2
20150612001-STD-ACQ-1	2015-06-14 11:22:17	Optical	Worldview-2	VHR2	49,53 Km2

Grouped Service Elements (GSE) list										
GSE Identifier	GSE Name	GSE Description	Framework contract	Acquisitions	Reference Acquisition	EO Provider	GSE Status	Notification	Service element	Maximum Delivery delay
20150716001-STD-GSE-1	CHANGE DETECTION		OP12	20150716001-STD-ACQ-1	20150612001-STD-ACQ-1	EUSI	Confirmed	Routine	Change detection	3
20150716002-STD-GSE-1	GETIMAGEFROMEDOC		OP12	20150612001-STD-ACQ-1	N/A	EUSI	Confirmed	Routine	Transfer from EDOC	0
20150716003-STD-GSE-1	ACQUIREOPTIMAGE		OP12	20150716001-STD-ACQ-1	N/A	EUSI	Confirmed	Routine	Licence	0
									Image downlink	0
									Image processing	0
									Image delivery	3

TOR_REQ_32

Priority: P1

The following automatic rules for associating GSEs and acquisitions shall be implemented:

- Standard planning: there is one acquisition per Reference ID. This acquisition shall be associated with all GSEs required for the Reference ID.
- Multi Mission Planning: As regards Tasking and Ordering, this mode is identical to Standard Planning and results as well in one acquisition per Reference ID. This acquisition shall be associated with all GSEs required for the Reference ID.
- DTO planning: All GSEs shall be associated with all acquisitions. E.g: if 3 DTOs are available for a standard CleanSeaNet service, there shall be 1 licence GSE associated with the 3 DTOs and 1 added value services GSE also associated with the 3 DTOs, as the service will be provided using only one out of the 3 possibilities.
- Flexible time planning: As regards Tasking and Ordering, this mode is identical to Standard Planning and results as well in one acquisition per Reference ID. This acquisition shall be associated with all GSEs required for the Reference ID.
- Stereo/Persistent planning: multiple acquisitions are used to provide a single added value

service. GSEs related to individual images such as image licence, image acquisition, image processing and image delivery shall be replicated as many times as the number of acquisitions foreseen for the Reference ID. Each of these individual image related GSEs shall be associated with one of the acquisitions. GSEs that are not image related shall be associated to all acquisitions. E.g.: it is planned to acquire 2 images over the same area to detect vessels and measure the course and speed of detected vessels, when the cart is submitted, the system shall generate one GSE (licence, downlink, processing) per acquisition and one GSE for Vessel Detection associated to the 2 acquisitions.

- f) Satellite formation planning: from a tasking and ordering perspective this mode is similar to e).
- g) SAR Aligned planning: this mode is by default considered as similar to Standard Planning. However, if the request would be to provide a unique service from the combined analysis of a SAR and an optical image, then this mode would be equivalent to e).
- h) Event triggered planning: this mode doesn't need specific rules. It can be any of the modes listed above but with a triggering element that will activate the order. The integration of the triggering element in the TOR workflow is not part of the current business requirements.
- i) Change detection planning: from a tasking and ordering perspective, the rule to implement is identical to e). However, the EODC Admin user before being able to launch the confirmation phase for Reference IDs with this planning mode shall select the image of reference.
- j) Archived planning: this mode doesn't need specific rules. Archived images can be used in a number of modes listed above. The acquisition, though in the past, will be handled like a future acquisition. There might be a need to include a specific Archive GSE depending on contracts signed with providers.

EMSA EODC Admin users shall have the possibility via a GUI to configure new planning modes, associated planning codes and description e.g. DTO and to define corresponding rules. Planning codes shall consist of 3 alphanumeric characters.

TOR_REQ_33

Priority: P1

Tasking List GUI functionalities – Modify Access Rights for individual reference ID

EODC Admin user shall be able via the Tasking List GUI to:

- Select 1 to n Reference ID
- Add or remove operations from the operation list for selected Reference ID

The change shall be applied to all selected Reference ID in one action without the need to confirm the change for each Reference ID.

If the list of operations resulting from the change is different from the initial list defined at cart creation, the "List of Operations modified" flag shall be set. If after some changes, the list of operations reverts to the initial list defined at cart creation, the flag shall be removed.

TOR_REQ_34	Priority: P1
<p>Tasking List GUI functionalities – Modify Service Type for individual reference ID</p> <p>EODC Admin user shall be able via the Tasking List GUI to:</p> <ul style="list-style-type: none"> • Select 1 to n Reference ID. • Change a number of parameters for each selected Reference ID <p>The interface used for performing the changes shall display detailed information as described in TOR_REQ_31.</p> <p>It shall be possible to perform the following operations:</p> <ol style="list-style-type: none"> a) Change service type b) Change planning mode c) Add/remove operations from the list of operations d) Change Provider by: <ul style="list-style-type: none"> • Selecting another Automatic Assignment to EO provider rule as defined in SERVICE_CONFIG_REQ_6; <p>OR</p> <ul style="list-style-type: none"> • Selecting a provider from the list of providers able to deliver this GSE under the framework contract used for this GSE. <ol style="list-style-type: none"> e) Change the Maximum Downlink Time for this GSE. f) Change Maximum Delivery Time for service elements part of the GSE. g) Add/remove acquisition from the list of acquisitions. h) Assign acquisitions to GSE. i) Select the Reference Acquisition. <p>It shall be possible to perform the following operations on a multiple selection of Reference ID. Changes shall be applied to all selected Reference ID in one action without the need to confirm the change for each Reference ID.</p> <ol style="list-style-type: none"> a) Change service type: the EODC Admin user shall be able to select another service type from the list of available service types configured in the EODC. The list shall display relevant information to facilitate the selection of the service type by the user. <p>After changing the service type, the user shall be asked to confirm. Immediately after confirmation, all automatic rules will be run again to generate appropriate GSE, assign GSE to providers and associate acquisitions to GSE. Detailed information panel will be updated accordingly. The tabular view and the Detailed information panel shall be updated accordingly.</p> b) Change planning mode: the EODC Admin user shall be able to select another planning mode from the list of available planning modes configured in the EODC. The list shall display 	

relevant information to facilitate the selection of the planning mode by the user.

After changing the planning mode, the user shall be asked to confirm. Immediately after confirmation, automatic rules to assign acquisitions to GSE will be run again. Detailed information panel will be updated accordingly. The tabular view and the Detailed information panel shall be updated accordingly.

- c) Add/remove operations: the EODC Admin user shall be able to add additional operations from the list of operations available in the CMC or to remove operations from the list. There is no need to confirm or run automatic rules.
- d) Change provider: The EODC Admin user shall select either a new "Automatic Assignment to EO provider" rule from rules available in the EODC or a provider directly from the list of providers. If a new "Automatic Assignment to EO provider" rule is used, the user shall be asked to confirm. Immediately after confirmation, automatic rules to assign providers to GSE will be run. Detailed information panel will be updated accordingly. The tabular view and the detailed information panel shall be updated accordingly to display providers resulting from the application of the rule.
- e) Change the Maximum Downlink Time per GSE.
- f) Change the Maximum Delivery Time per service element.

The following operations shall only be performed on Reference ID selected individually:

- g) Add/Remove acquisitions from the list of acquisitions.

It shall be possible to add acquisitions by:

- Selecting other acquisitions belonging to other Reference IDs contained in the same cart. These acquisitions shall be selected directly from the map view by clicking on the footprint or from the tasking list;
- Selecting other acquisitions available in the EODC with a status Delivered or Tasked. An acquisition search tool shall be available in the Tasking List GUI. Results shall be displayed in the map view and in the tabular view. It shall be possible to select the acquisition directly from the map view by clicking on the footprint or from the list displaying the search results. It shall be easy to toggle between the cart tasking list and the search results.
- Entering the Acquisition Identifier.

After an acquisition is added, the tasking list tabular view and list of acquisitions in the detailed information panel shall be automatically filled with relevant acquisition parameters.

If an acquisition is removed, it shall be removed as well from the tasking list tabular view.

- h) Assign acquisition to GSE: the user shall be able to assign acquisitions to a GSE by selecting the acquisition from the list of acquisitions available for this Reference ID.

If an acquisition in the acquisition list is not associated to any GSE, when saving the changes the user shall be warned that the acquisition will be removed from the Reference ID. If the user confirms the removal, the acquisition shall be removed from the list of acquisitions for this Reference ID. The tabular view and the detailed information panel shall be updated accordingly.

<p>i) Select the reference acquisition: the user shall be able to select the reference acquisition from the list of acquisitions available for this Reference ID.</p> <p>If the service type resulting from the change is different from the initial one defined at cart creation, the "Service Type modified" flag shall be set; If after some changes, the service type reverts to the initial one defined at cart creation, the flag shall be removed.</p> <p>If the service type content resulting from changes described above is different from the initial service type content defined at cart creation, the "Service Type modified" flag shall be set; If after some changes, the content of the service type reverts to the initial one defined at cart creation, the flag shall be removed.</p> <p>If the service type or the content of a service type is changed after the confirmation phase was started (see TOR _REQ_37), affected Reference ID returned in status "Pending confirmation".</p> <p>Reference ID in Tasked status cannot be changed. They can only be cancelled.</p>	
TOR _REQ_35	Priority: P1
<p>Tasking List GUI functionalities – Compute Budget</p> <p>The purpose of this functionality is:</p> <ul style="list-style-type: none"> to estimate the cost per provider of orders that would be issued if the authorising would approve the cart; to ensure that, for each concerned EO provider, budget resources are available to cover the costs associated with envisaged orders assigned to this provider; to add/remove Reference IDs accordingly <p>Information generated by the financial system is presented to the TOR admin user in a separate window. The same information is presented to the Financial Officer and the Authorising Officer during the approval phase. Business requirements for this window will be defined together with the approval phase further in this document.</p> <p>It shall be possible to run the compute budget function at any time for the loaded cart.</p>	
TOR _REQ_36	Priority: P1
<p>Tasking List GUI functionalities – Add remove/Reference IDs</p> <p>EODC Admin users shall be able to add Reference IDs to an existing cart by starting again the cart creation process and adding new group of acquisitions to the existing cart. The service type and parameters to be used shall be the initial parameters when the existing cart was created.</p> <p>It shall be possible to remove Reference IDs directly from the Tasking list tabular view.</p>	

TOR_REQ_37	Priority: P1
<p>Tasking List GUI functionalities – Start confirmation phase</p> <p>Via the tasking list GUI, EODC Admin users shall be able to initiate the start of the confirmation phase.</p> <p>As a result of the “Start confirmation phase” action:</p> <ul style="list-style-type: none"> Concerned EO providers are notified by email that new Reference ID are available for confirmation (See TOR_REQ_49); Reference IDs in “Planned” status go into “Pending confirmation” status and become available for confirmation by EO providers. 	
TOR_REQ_38	Priority: P1
<p>Tasking List GUI functionalities – Confirmation by EO providers</p> <p>Via the tasking list GUI, EOS Service Providers and EOS Licence Providers users shall be able to:</p> <ul style="list-style-type: none"> Visualise the list of Reference IDs where at least one GSE is assigned to the EO provider to which they belong; Other Reference IDs with no GSE assign to the EO provider are not visible; Confirm the feasibility of tasks requested under the Reference ID by setting corresponding GSE to “Confirmed” status; Reject some tasks requested under the Reference ID by setting corresponding GSE to “Rejected” status. <p>The Tasking List map view, tabular view and the detailed information panel exposed to EO providers shall be similar to the EMSA EODC Admin interface.</p> <p>Access to information by EO providers is not managed by cart. It shall be a list of Reference IDs built:</p> <ul style="list-style-type: none"> By default by displaying the Pending confirmation list; only Reference IDs in “Pending confirmation” status are displayed. By using the acquisition search tool, EO providers shall be able to display any Reference ID with at least one GSE assigned to them whatever the Reference ID status is. <p>A GSE rejected by a provider is assigned to the next provider in row according to the “Automatic Assignment to EO provider” rule used for this GSE (See SERVICE_CONFIG_REQ_6). The status for the new provider is “Pending confirmation”. As a result, the “Reject” cannot be undone. Users shall be prompted to confirm the rejection. EMSA and the new service provider shall be notified (See TOR_REQ_49). If there is no next provider in row according to the “Automatic Assignment to EO provider” rule used for this GSE, the status for the GSE is set to “Rejected”.</p>	

TOR_REQ_39	Priority: P1
<p>Tasking List GUI functionalities – Close confirmation phase</p> <p>Via the tasking list GUI, EODC Admin users shall be able to close the confirmation phase.</p> <p>As a result of the “Close confirmation phase” action:</p> <ul style="list-style-type: none"> • GSEs that are still in “Ready for confirmation” status go automatically into “Rejected” status; • Reference IDs which contain at least one GSE in “Rejected” status go into “Not confirmed” status; associated acquisitions in “Planned” status remain in this status. • Reference IDs for which all GSEs have been confirmed go into “Confirmed” status. Associated acquisitions in “Planned” status go to “Confirmed” status. • The cart goes into “Confirmed” status <p>For Reference IDs in “Not confirmed” status, EMSA EODC Admin shall be able to:</p> <ul style="list-style-type: none"> • Set back the status to “Planned” status; • Modify the content; • Launch a new confirmation phase. This situation often results of a dialogue between EO providers and EMSA. The time available for the confirmation phase may be reduced and/or the automatic notification to EO Providers disabled. 	
TOR_REQ_40	Priority: P1
<p>Tasking List GUI functionalities – Start allocation phase</p> <p>Via the tasking list GUI, EODC Admin users shall be able to select the automatic “Assignment to country/organisation” rule and initiate the start of the allocation phase.</p> <p>As a result of the “Start allocation phase” action:</p> <ul style="list-style-type: none"> • Reference IDs in “Confirmed” status go into “Pending allocation” status; • The selected “Assignment to country/organisation” rule is applied to build the list of Reference IDs available for allocation by EOS National Planners users in the country or the organisation; • Concerned EO National Planner users are notified by email that new Reference ID is available for allocation. 	
TOR_REQ_41	Priority: P1

<p>Implement an “Assignment to country/organisation” configuration GUI that will be used for:</p> <ul style="list-style-type: none"> Creating, editing, updating, deleting automatic assignments rules based on a range of parameters including but not limited to country, organisation, operation, and geographical areas available in the EMSA’s Central Geo-reference Database. <p>Examples of automatic assignment rules:</p> <ul style="list-style-type: none"> The CleanSeaNet automatic assignment to country is the following: Reference ID shall be visible to EOS National planner in each country for which the footprint of the envisaged acquisition is intersecting at least one of the coverage requirements areas of the country. 	
TOR_REQ_42	Priority: P1
<p>Tasking List GUI functionalities – Allocation by End User</p> <p>Via the tasking list GUI, EOS National Planner users shall be able to:</p> <ul style="list-style-type: none"> By default, visualise the list of Reference IDs assigned to the country or the organisation of the end user; Select 1 to n reference IDs in “Pending allocation” status; Set the selected Reference ID to “Allocated” status. The change of status shall only be effective for the country or organisation of the end user. For the other countries or organisations the status shall remain “Pending allocation” <p>The Tasking List map view, tabular view and the detailed information panel displayed to end user shall be similar to the EMSA EODC Admin interface.</p> <p>EMSA EODC Admin shall be able via a GUI to configure the system in order to hide some information from the Tasking List GUI such as contractual or provider information depending on the end user profile (e.g. EOS national planners).</p> <p>Access to information by end user is not managed by cart. It shall be a list of Reference IDs built:</p> <ul style="list-style-type: none"> by default by displaying Reference IDs in “Pending allocation” status and assigned to the country or the organisation of the user; by using the acquisition search tool, EO providers shall be able to display any Reference ID assigned to the country or the organisation of the user and in “Pending Allocation”, “Allocated”, “Tasked”, “Delivered”, “Cancelled”, or “Anomaly” status. 	
TOR_REQ_43	Priority: P1

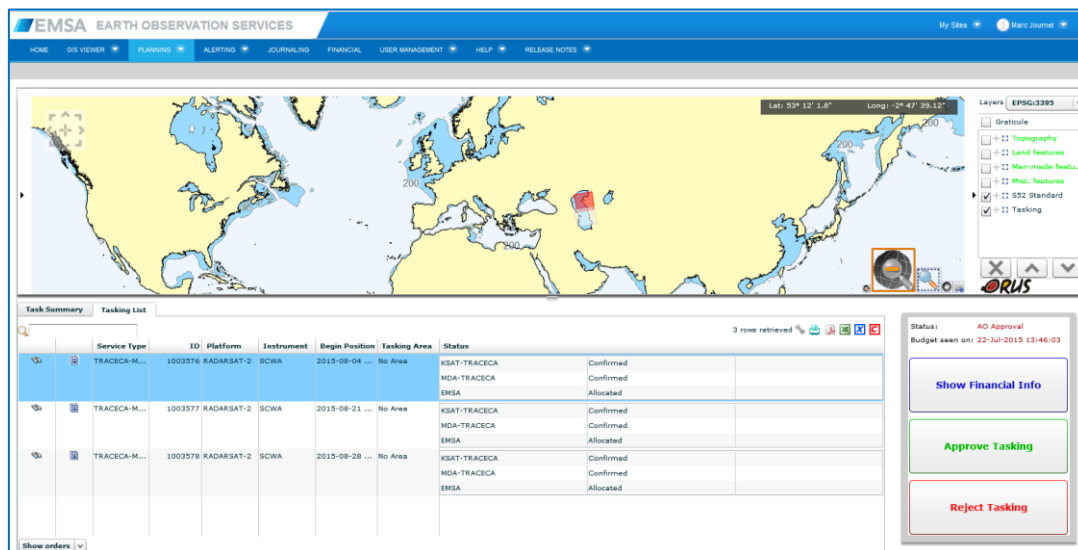
<p>Tasking List GUI functionalities – Close allocation phase</p> <p>Via the tasking list GUI, EODC Admin users shall be able to close the allocation phase.</p> <p>As a result of the “Close allocation phase” action:</p> <ul style="list-style-type: none"> • Reference IDs in “Pending Allocation” status go into “Not allocated” status. • Reference IDs allocated by at least one country or organisation go into “Allocated” status; • The cart goes into “Allocated” status and is automatically loaded in the “Ordering” GUI • The status of individual GSE and acquisitions remain unchanged. 	
TOR_REQ_44	Priority: P1
<p>Until the cart is in “Approved” status, EMSA EODC Admin users shall always be able to reset the status to “Tasking”. The status of Reference IDs, GSE and associated acquisitions contained in the cart shall not be changed.</p> <p>This allows for example to add new Reference IDs and to launch a new confirmation phase and/or allocation phase. Only the new or the modified elements will be visible for confirmation or allocation.</p>	
TOR_REQ_45	Priority: P1
<p>Implement a “Ordering” GUI that will be used by:</p> <p>a) “EMSA EODC Admin” users to:</p> <ul style="list-style-type: none"> • Select carts in “Allocated”, “Pending FO approval”, “Pending AO approval”, or “Approved” status • Display detailed information on GSEs and associated acquisitions contained in the loaded cart. Only one cart at a time can be loaded in the ‘Ordering’ window; • For carts in “Allocated” status: <ul style="list-style-type: none"> ○ Select 1 to n “Reference ID”; ○ Perform the following operations which will be applied only to selected Reference IDs; <ul style="list-style-type: none"> ▪ Compute the budget as specified in TOR_REQ_35; ▪ View the corresponding task forms and task lists with a possibility to download or print the documents; ▪ Select the FO and send for FO Approval. 	

- For carts in “Pending FO approval” status:
 - Compute the budget as specified in TOR _REQ_35
 - View the corresponding task forms and task lists with a possibility to download or print the documents;
 - Approve on behalf of FO; The FO used is the one to whom the “Allocated” cart was assigned;
 - Select the AO;
 - Send for AO Approval.
 - For carts in “Pending AO approval” status:
 - Compute the budget as specified in TOR _REQ_35;
 - View the corresponding task forms (digitally signed by the FO) and task lists with a possibility to download or print the documents;
 - Approve on behalf of AO. The AO used is the one to whom the “Pending AO Approval” cart was assigned. The cart goes into Approved status. Digitally signed Task forms are automatically notified by email to relevant providers.
- b) “EMSA Financial Officer” users to:
- By default visualise the list of carts “Pending FO approval”.
 - By using the search tool visualise the list of carts “Pending FO approval”, “AO FO approval” and or “Approved” filter.
 - Select cart in “Pending FO approval” and assigned to the logged FO;
 - Display detailed information on GSEs and associated acquisitions contained in the loaded cart. Only one cart at a time can be loaded in the ‘Ordering’ window;
 - Compute the budget as specified in TOR _REQ_35;
 - View the corresponding task forms and task lists with a possibility to download or print the documents;
 - Select the AO and approve the cart. The cart is automatically sent for AO approval.
- c) by “EMSA Authorising Officer” users to:
- By default visualise the list of carts “Pending AO approval”.
 - By using the search tool visualise the list of carts “Pending AO approval” and or “Approved” filter.
 - Select carts in “Pending AO approval” and assigned to the logged AO;
 - Display detailed information on GSEs and associated acquisitions contained in the loaded cart. Only one cart at a time can be loaded in the ‘Ordering’ window;
 - Compute the budget as specified in TOR _REQ_35 and assign commitment indicative references;

- View the corresponding task forms (digitally signed by the FO) and task lists with a possibility to download or print the documents;
- Approve the cart. The cart goes into Approved status. Digitally signed Task forms are automatically notified by email to relevant EO providers.

This GUI shall consist of a map view, a tabular view, and a detailed information panel similar to the one used for the “Tasking List” GUI. Functions available will vary depending on the user’s role.

The figure below displays the current “Ordering” GUI currently used by EMSA FO and AO users. It is shown to facilitate the understanding of the business requirements but should not be considered as a mock-up of the future GUI. On this figure, the “Show financial” info button is equivalent to the “Compute budget” function mentioned above.



Note that budget information, task forms and task lists are generated by the FINSYS based on information received from the POR. Indicative commitment references are entered using a window generated by the FINSYS after clicking on the “Compute budget” function.

The Tasking list GUI and the Ordering list GUI are very similar. It shall be decided at mock-up phase if is more appropriate to share the same GUI for Tasking and Ordering with a reduced number of functions for the AO and the FO.

TOR_REQ_46

Priority: P1

As a result of the approval by the AO:

- the status of the GSEs and associated acquisitions for the Reference IDs contained in the approved cart is set to “Tasked” with the exception of acquisitions that are already in “Delivered” status;

<ul style="list-style-type: none"> Reference IDs that were not selected when the cart was sent for AO and FO approval are removed from the cart. 	
TOR_REQ_47	Priority: P1
<p>Cancellation and anomalies</p> <p>EO providers may have to cancel GSE that they were tasked to deliver. Technical failures referred to as anomalies may also occur which prevents or delays the delivery of expected GSE.</p> <p>There are dependencies between GSE. For example, for a Standard CleanSeaNet service, if the CSN Licence GSE is cancelled by the satellite operator, the CSN Service GSE (including oil spill and vessel detection) shall be immediately cancelled. If the CSN service is based on a DTO, the cancellation of the Licence GSE for one of the DTOs is not preventing the delivery of the service. It is even a normal situation.</p> <p>When several acquisitions and several providers are involved, the logic might be bore complex. Dependencies will be defined when configuring service types.</p> <p>EMSA EODC Admin users shall be able via the Service type configuration GUI to define dependencies between GSE included in the service type. As a consequence of these dependencies, if one GSE is cancelled or set to anomaly, dependent GSE shall be cancelled automatically; Dependencies are an n to n relationship. For example, one GSE might be dependent of 2 GSE. The non-delivery of one GSE may also result in the automatic cancellation of several GSE.</p> <p>Deliveries are sometimes delayed; The same tool shall allow EMSA EODC Admin to define dependency rules based on time conditions. E.g. if a provider is depending on the delivery of a GSE-1 by another provider to perform GSE-2 assigned to him, it shall be possible to define that GSE-2 shall be automatically cancelled if GSE-1 is not delivered within 4 hours after expected delivery time for GSE-1.</p> <p>The tool shall include rules to manage Reference ID and acquisition status based on the delivery of GSE.</p>	
TOR_REQ_48	Priority: P1
<p>Cancellation and anomalies</p> <p>Through the Tasking list GUI, EMSA EODC Admin, EOS Service Providers and EOS Licence Providers users shall be able to select GSE and to set them to "Cancelled" or to "Anomaly".</p> <p>When setting a GSE to "Cancelled" or to "Anomaly", EOS Service Providers and EOS Licence Providers users shall indicate the cause of the cancellation or of the failure, and describe when relevant the corrective and/or preventive actions taken.</p> <p>EO providers shall only be able to cancel or set to anomaly GSE assigned to them. Other GSE,</p>	

<p>acquisitions and Reference ID will be cancelled or set to anomaly by application of the dependency rules applicable for the service type as specified in TOR _REQ_47.</p> <p>EMSA EODC Admin shall be able to cancel a full Reference ID or individual GSE.</p> <p>GSE Cancellation or anomaly information shall be communicated to the JOU and the FINSYS.</p> <p>Reference ID or GSE cancellations by EMSA shall trigger email notification per email to end users and EO providers.</p> <p>GSE cancellation by EO providers shall trigger email notification to EMSA, other EO providers impacted and end users.</p>	
TOR _REQ_49	Priority: P1
<p>Email notification – Content and distribution lists</p> <p>The following events trigger email notifications:</p> <ul style="list-style-type: none"> • “Start confirmation phase” as required in TOR _REQ_37; • A GSE rejected by an EO provider is assigned to the next provider as required in TOR _REQ_38; • “Start allocation phase” as required in TOR _REQ_40; • “Cart Approval by AO” as required in TOR _REQ_45; • “Cancellation and anomalies” as required in TOR _REQ_48. <p>EMSA EODC Admin users shall be able to configure the content (subject and body) for the different types of email listed above and the rules to automatically produce the list of recipients.</p> <p>Implement a “Manage email notification” GUI that will be used for:</p> <ul style="list-style-type: none"> • Creating, editing, updating, deleting email types. • For each email type, defining content information extracted from cart, service type, GSE, individual Reference IDs and associated GSE and acquisition. • For each email type, defining automatic distribution list generation rules based on a range of parameters including but not limited to cart, service type, GSE, Reference IDs acquisitions, framework contract, operation, and geographical areas available in the EMSA's Central Geo-reference Database. E.g: a cancellation of a CleanSeaNet service shall trigger a notification by email to EOS National planners of in concerned countries and to CleanSeaNet alert recipients for areas covered by the cancelled acquisition. 	
TOR _REQ_50	Priority: P1

The map views described above in the requirements shall include the following functionalities:

- Selection of map projection. Projections available shall allow displaying acquisition footprints without distortion (keeping angles and distances at the location of the footprint) anywhere on the globe including polar areas.
- Measurement tool to measure:
 - Length of a polyline
 - drawn on the map by the user
 - selected on the map
 - the contour length and the area of :
 - a polygon drawn on the map by the user
 - an area selected on the map

Distances calculated shall be orthodromic.

- Addition of vector layers
 - By importing files (including attributes)
 - ESRI shape files
 - KML files
 - By connecting to WFS available at EMSA (including access to attribute information)
 - a polygon drawn on the map by the user
 - an area selected on the map
 - By drawing points, polylines, and polygons on the map with a name and a legend
- Configuration of vector layers:
 - Select point symbols
 - Change line colour, thickness, and style for polylines and polygons.
 - Change polygon fill parameters including colour, pattern, and transparency

Acquisition footprints shall be displayed using a configurable line colour depending on acquisition status

- Addition of raster layers (e.g.: ENC, coverage density maps produced by SAVOIR ...)
 - By importing georeferenced image files
 - By connecting to WMS available at EMSA including the possibility to select the sublayers of information to be displayed.

The default background layer shall be ENC.

- Pan and zoom tool. The zoom shall include the possibility to zoom to an area by drawing a window on map.
- Changing the order of layers displayed on map and adjusting the transparency of raster

layers.	
TOR_REQ_51	Priority: P1
<p>Search tool</p> <p>For all GUI described above, a search tool shall be available to retrieve Reference IDs and associated content by</p> <ul style="list-style-type: none"> • selecting an area drawn or displayed on the map • and/or by selecting one or several time periods 	
TOR_REQ_52	Priority: P1
<p>Live search - multiple columns filters.</p> <p>It shall be possible to filter the content of the tabular by entering text in a text filter box available on top each column of the tabular view, it shall not be case sensitive. It shall be possible to filter at the same time on multiple columns.</p> <p>Acquisition footprint corresponding to records removed from the tabular view as a result of the filter shall be at the same time removed from the map view.</p>	
TOR_REQ_53	Priority: P1
<p>The following TOR actions shall be logged:</p> <ul style="list-style-type: none"> • Service types and GSE changes • Reference IDs <ul style="list-style-type: none"> ○ Change of content ○ Confirmation actions by EO providers ○ Allocation actions by end users ○ Cancellation and anomaly of GSE • Email notifications • Cart <ul style="list-style-type: none"> ○ Confirmation phase start and close 	

<ul style="list-style-type: none"> ○ Allocation phase start and close ○ Approval or rejection actions by FO ○ Approval or rejection actions by AO <p>All log entries shall include the date, the country and/or the organisation, and the user that performed actions reported in the log.</p> <p>EMSA EODC Admin shall be able to easily retrieve log information from the GUI.</p> <p>When a selected ID is selected, log entries displayed shall be all entries related with the relevant cart, the Reference ID and notification emails.</p>	
TOR_REQ_54	Priority: P1
<p>All designations used throughout the interface shall be fully configurable.</p> <p>The list below is just listing some examples but this possibility shall be open to all parameters.</p> <p>Column, titles, tab names, window titles...</p> <p>Parameters names: Service type, GSE, Maximum Delivery Time, For example, EMSA might want to rename GSE to TG (Task Group)...</p> <p>Status values...</p>	
TOR_REQ_55	Priority: P1
<p>The implementation of the requirements described above in this document should never result in breaching the access right rules based on operations.</p> <ul style="list-style-type: none"> • End users whether in a country or in an organisation should be able to see only EO products assigned to at least one operation of which the user is a member. 	
TOR_REQ_56	Priority: P1
<p>The implementation of the requirements described above in this document should never result in breaching the access right rules based on the confidentiality of contractual information.</p> <ul style="list-style-type: none"> • Users at EO providers should never be able to see pricing information from other contractors. • End users whether in a country or in an organisation should never be able to see pricing information. 	

TOR_REQ_57	Priority: P1
The change status for Cart, Reference IDs, GSE and acquisitions shall be fully configurable via the GUI.	
TOR_REQ_58	Priority: P1
It shall be possible to export any tabular view described earlier in the requirements as a csv file, an excel sheet, or a pdf document. The export shall contain full information even if some attributes are not displayed on the GUI.	
TOR_REQ_59	Priority: P1
<p>Above requirements have been described using user profiles that are currently being foreseen to be implemented in the CMC for the EODC.</p> <p>User profiles are a combination of user roles. For example, the “Approve EO tasking” is one of the roles of the Authorising officer profile.</p> <p>New profiles might be created in the future. It shall be possible to configure via a GUI authorised actions for each profile.</p>	

1. Technical

1.1 System capacity

TECHNICAL_REQ_1	Priority: P1
The TOR envisages a change in the number of acquisitions per files, currently limited to 100, will be increased up to 500 acquisitions.	
TECHNICAL_REQ_2	Priority: P1
<p>The EODC will be able to manage a maximum number of 10 concurrent users.</p> <p>Therefore the worst scenario is about 10 users that plan and task 500 acquisitions each.</p>	

The “90th percentile scenario” is about 2 users that plan and task 100 acquisitions each.

1.2 System Performance

TECHNICAL_REQ_3	Priority: P1
<p>The performance requirements applicable to the “90th percentile scenario” are:</p> <ul style="list-style-type: none">• Import planning files containing up to 200 acquisitions in less than 30 seconds• Import planning files containing up to 500 acquisitions in less than 1 minute• Loading carts containing up to 200 Reference ID in less than 30 seconds• Loading carts containing up to 500 Reference ID in less than 1 minute• Actions at cart level for carts containing up to 200 Reference ID in less than 15 seconds. E.g. start confirmation phase, approve cart• Actions at cart level for carts containing up to 500 Reference ID in less than 30 seconds• Change Reference ID content for 1 selected Reference ID in less than 5 seconds• Change Reference ID content for up to 10 selected Reference ID in less than 10 seconds• Change Reference ID content for up to 200 selected Reference ID in less than 30 seconds• Change Reference ID content for up to 500 selected Reference ID in less than 1 minute• Display detailed information and highlighting selected acquisitions on the map view in less than 1 second• Removing information out from the tabular view and the map view using the text filters in less than 1 second.• When using the acquisition search tool (see TOR _REQ_34), display search results in less than:<ul style="list-style-type: none">○ 3 seconds when searching per Reference ID○ 30 seconds when searching with time window up to a one month and for a geographical area up to 1.000km x 1.000km.○ 1 minute when searching for a time window up to 1 year for an area covering all the European waters. <p>Once the results, have been displayed, navigation through the results and display of detailed information shall be compliant with performances described above in this requirements. within the times</p>	

1.3 System Availability

TECHNICAL_REQ_4	Priority: P1
This component shall follow the EODC SLA. Therefore the functionalities provided by the TOR shall	

be available on a 24/7 basis in accordance with the targets described for the all system, sub-systems and components as follows:

- 97.5% of the time over any 24-hour period;
- 99.5% over any 1 month; and
- 99.9% over a year.

1.4 Technology

TECHNICAL_REQ_1	P1
<p>The TOR shall be implemented based on web technologies. The TOR shall be deployed in the EMSA portal. The technologies and the infrastructure that the contractor shall make use to implement this solution have to be compliant with specification described in the EMSA Technical Landscape.</p>	

TECHNICAL_REQ_2	P1
<p>In order to provide the information processed by the TOR the other EODC or SSN-ecosystem components, the services implemented shall be compliant with the following SOA service principles: standardized contract, loose coupling, abstraction, reusability, autonomy, statelessness, composability and interoperability.</p> <p>The solution to implement shall describe each of the aforementioned SOA's principle as in the Technical Design Document (TDD). The TDD shall be provided to EMSA during the design phase.</p>	

TECHNICAL_REQ_3	P1
<p>The integration between the EODC or SSN-ecosystem components with the TOR shall be implemented based on the following architectural integration patterns: web services (preferable REST based) or messages (JMS).</p> <p>The exchanging mechanism shall be documented in the Technical Design Document (TDD). The TDD shall be provided to EMSA during the design phase.</p>	

TECHNICAL_REQ_4	P1
<p>The data format and structure that this component has to manage is defined in the Earth Observation Interface Control Document (ICD).</p> <p>The ICD is governed by EMSA.</p>	

REQ-11	Technical Landscape compliancy	P1
<p><i>Requirements</i></p> <p>The contractor shall design and implement a system compliant with EMSA's System and Application Technical Landscape as presented in the General Conditions of the draft Framework contract.</p> <p>If the bidder/contractor intends to propose a deviation from the Technical Landscape, EMSA could accept it. The bidder/contractor shall justify the proposal.</p> <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none"> i. Compliancy report of the EO-Provisioning System against the EMSA's system landscape. 		

REQ-12	Business Continuity Facilities	P1
<p><i>Requirements</i></p> <p>In terms of Business Continuity, the contractor shall implement a system be BCF complaint as specified within the EMSA's System and Application Technical Landscape. Overall the EO-Provisioning must have:</p> <ul style="list-style-type: none"> i. SLA of 24/7 with 97.5% of availability. ii. Resolution time for Incidents: 4 hours. iii. Release Point Objective (RPO) of 8 hours. iv. Total recovery time: 12 hours. <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none"> i. EO-Provisioning certified for EMSA's BCF. <p><i>Acceptance Criteria</i></p> <ul style="list-style-type: none"> i. Perform fail-over/back and switch-over/back tests from EMSA site to BCF site. Ensure that the system runs as expected in both sites after the fail over/back and switch-over/back actions. 		

REQ-13	Interface for the configuration parameters	P1
<p><i>Requirements</i></p> <p>The all system parameters, as described in the section "Functional Requirements", shall be configurable through a Graphical User Interface. The list of the parameters configurable has to be defined within the context of the Design phase.</p> <p><i>Expected Deliverables</i></p>		

i. List of parameters in the Technical Design Document
<i>Acceptance Criteria</i>
i. An end-to-end test is conducted.

REQ-14	SSL	Informative
<p><i>Requirements</i></p> <p>All interaction in system to system and user to system communications need to be protected by SSL. For system to system the communications are 2-way SSL protected and for user to system they are (at minimum) 1-way SSL protected. The communications encryption is terminated (for the incoming communications) and started (for the outgoing communications) in EMSA's reverse proxies.</p> <p><i>Expected Deliverables</i></p> <p>i. All internal communications are in plain text, all external communications are to be decrypted (incoming) and encrypted (outgoing) using the reverse proxies.</p> <p><i>Acceptance Criteria</i></p> <p>i. The solution is able to use our reverse proxies for handling SSL.</p>		

REQ-15	Technical Requirements	P1
<p><i>Requirements</i></p> <p>The following recommendations are to be followed during the development of the EO-Provisioning system:</p> <p>i. The EO-Provisioning system components should be owned by a non-root OS user. When possible or applicable, all the system components on a specific machine/server should be owned by the same OS user. In case some deviations are needed (example: RH Linux standard services), these need to be detailed and justified.</p> <p>ii. In case it is necessary to have authentication on middleware components (example: accessing a JMS in WebLogic) a dedicated user should be used. The user used to access these components cannot be the administrator user.</p> <p>iii. The contractor is requested to avoid software distributions by rpm. The software distribution formats are to be agreed with EMSA during project execution.</p> <p>iv. The configuration files must not include passwords in clear text. Solution to cope with this requirement may vary and must be agreed with EMSA.</p> <p>v. When using non-compiled languages (such as php or perl), the code needs or be updated to the minimum version compatible with the Red Hat distribution of the Red Hat Linux in use in the system. The code should be optimized to minimize, as much as possible, the</p>		

consumption of memory when executing.	
vi.	The EO-Provisioning system should include and implement log rotation rules/processes and clean-up mechanisms to avoid filling up the system components/machines with old/useless data.
vii.	The error shall be reported in the logs of the subsystem that fails.
viii.	The verbosity of the logs shall be configurable.
ix.	The EO-Provisioning subsystem that fails shall provide relevant information to the EMSA's monitoring tools, see Appendix (ICT), so that the error shall be detected and promptly addressed.
<i>Expected Deliverables</i>	
x.	A Package to deploy this subsystem.
xi.	TDD, ICD and OMM shall contain relevant information about this subsystem.
xii.	Test Plan and test cases implemented.

1.5 Migration

REQ-16	Data Migration	P1
<i>Requirements</i> The data migration from the current EODC-POR to the new EODC-TOR shall be planned and implemented for all the current budget year data recorded by the POR. During the Design phase of this component a migration plan has to be defined and performed within the context of release 1.0 of the TOR. <i>Expected Deliverables</i> i. CSN data migrated to new EO-Provisioning system. ii. Report on data migrated between systems. iii. Detailed test plan for the data migration activity. <i>Acceptance Criteria</i> The data migrated will be checked for validation and correctness in a sample approach. This sample approach will be detailed during project execution.		

2. Tests Specification

REQ-17	End to End test	P1
<i>Requirements</i>		

The contractor is in charge to create a 10 test cases where the following steps of an acquisition are performed:

1. Planning.
2. Ordering.
3. Acquiring.
4. Delivering.
5. Financial.
6. Oil Spill Alerting.
7. Oil Spill Drifting.

The steps 1 and 2 have to be included only for the tests about the interaction between the integrity subsystem and the ordering of satellite images subsystem.

The step 5 has to be included only for the tests about the interaction between the Data Ingestion (timeliness subsystem) and the financial subsystem.

The tests shall include workflow with different paths to be tested.

The steps 1, 2, 5, 6, 7 and shall make of either the current CSNDC components or the components procured within the context of the Module 2 of the current FWC.

The 10 test cases shall cover all the possible EO products and processing acquisition described in this technical specification.

Expected Deliverables

- i. Test cases

3. Documentation

REQ-18	Interface Control Document	P1
<p><i>Requirements</i></p> <p>The contractor shall edit and maintain the Interface Control Document (ICD).</p> <p>The ICD shall describe the interfaces between EO-Provisioning subsystems and the interaction with other systems, the protocol for invoking the interfaces, and the data models of the information exchanged.</p> <p>For each of the interface implemented, the ICD shall provide examples how to invoke the interface and the responses.</p> <p>The contractor shall propose a structure of the ICD and update the relevant information from the current CSNDC's EICD</p> <p><i>Expected Deliverables</i></p> <ol style="list-style-type: none">i. The EO-Provisioning ICD version 1.0		

REQ-19	Data Model Management	P1
<p><i>Requirements</i></p> <p>The contractor is in charge to provide feedback and when requested by EMSA edit the EODC data models.</p> <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none">i. The EODC Data Model documentation.ii. The EODC Data Model UML version 1.0.		

REQ-20	Technical Design Document	P1
<p><i>Requirements</i></p> <p>The contractor shall edit and maintain the Technical Design Document (TDD).</p> <p>The TDD describes the architecture, the modules, and interaction among the EO-Provisioning modules.</p> <p>The contractor shall edit the document adopting a structured approach. EMSA recommends structuring the document taking into account the Reference Model of Open Distributed Processing (RM-ODP).</p> <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none">ii. The EO-Provisioning TDD version 1.0.		

REQ-21	Operational and Maintenance Manual	P1
<p><i>Requirements</i></p> <p>The contractor shall edit and maintain the Operational Maintenance Manual (OMM).</p> <p>The OMM defines the procedures for the effective operation, maintenance the EO-Provisioning components.</p> <p>The OMM shall describe how to: (i) monitor the status of the subsystem, (ii) manage (delete, modify, insert) data in the system, (iii) start and stop the system and its components, (iv) maintain the data.</p> <p><i>Expected Deliverables</i></p> <ul style="list-style-type: none">i. The EO-Provisioning OMM version 1.0.ii. Wiki version of the document.		

REQ-22	Incident Handling Procedure	P1
<p><i>Requirements</i></p> <p>The contractor shall edit and maintain the Incident Handling Procedure (IHP).</p> <p>The IHP is aimed at providing a quick guide to address the most common incidents of the EO-Provisioning.</p> <p>The document shall be organised in a form of troubleshooting guide, e.g. with the following sections:</p> <ul style="list-style-type: none"> • A list of possible incidents, from the user perspective, with reference to the possible causes • For each of the possible causes, identified with a unique label, there is a quick procedure to be executed in order to: <ul style="list-style-type: none"> ○ Check if that was actually the cause of the incident. ○ Resolve the incident. <p>As such, the document is addressed to the typical activities carried out by the 1st and/or 2nd line of Operations Support.</p> <p>The document does not address all complex cases, such as a defect in the SW or other complex situations which require a 3rd line intervention. Therefore the typical workflow is:</p> <ul style="list-style-type: none"> • An incident occurs and is drawn to the attention of the Operation Support. • The Operations Support investigates using this troubleshooting guide. • If the incident cannot be resolved, it is escalated to the 3rd line (the EO-Provisioning Contractor). <p><i>Expected Deliverables</i></p> <ol style="list-style-type: none"> i. The EO-Provisioning IHP version 1.0. ii. wiki version of the document. 		

REQ-23	Installation Manual	P1
<p><i>Requirements</i></p> <p>The contractor shall edit and maintain the Installation Manual (INS).</p> <p>The contractor shall provide the INS for all the components that needs to be deployed in the EMSA infrastructure assuming that all and only the components described in the EMSA technical landscape will be made available by EMSA.</p> <p>The INS shall describe the installation procedure in terms of sequential steps.</p> <p><i>Expected Deliverables</i></p> <ol style="list-style-type: none"> i. The EO-Provisioning INS version 1.0. 		

Acceptance Criteria

- i. An EO-Provisioning instance in one of the EMSA's environment is deployed in the EMSA infrastructure.

4. Appendices

The contractor shall make reference to the Tender Specification Appendices.