

# **Appendix F to Tender Specifications**

## **Project Delivery**

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The present document details the requirements for the provision of services under the specific contracts of Modules 1 and 2.

This document presents the details of the phases and describes the deliverables requested, for each development and enhancement project, when they should be delivered and how they will be accepted by EMSA.

For each specific enhancement project, the set of phases and deliverables contained in this document shall be tailored, according to the requirements of each specific contract. This shall be defined based on the scope of the specific contracts.

## 1 Project Phases

The following major phases are foreseen from the signature of the contract until the end of the specific contract:

- Initiation,
- Design,
- Development and Test,
- Deployment,
- Go-Live and integration,
- Closure.

Deliverables are expected for each phase. They are detailed in Chapter 2 - Project deliverables.

If one deliverable is not accepted by EMSA during one phase, no acceptance of any deliverable of the following phase can be done.

### 1.1 Initiation phase

The objective of the initiation phase is to have a mutual understanding and agreement of methods and means that will be used for the completion of the contract.

Immediately after the signature of the contract the contractor should prepare the kick-off meeting which will cover at least the following subjects:

- Objectives and organization of the project,
- Contractor team,
- Project tools,
- Project plan,
- Methodologies and procedures,
- Content and level of detail of the project management documentation.

During this phase, the contractor is asked to work in close contact with EMSA in order to create a common view of the whole project.

### 1.2 Design phase

The objective of the design phase is to create a complete set of functional and technical specifications specifying what is to be implemented and how, as well as the methodologies that shall be used to verify and validate the project execution.

### 1.3 Development and Test phase

The objective of the development and test phase is to develop and test the system before deployment. The system will be developed according to the deliverables of the design phase.

Before delivering, the contractor must test the developed application to verify the conformity with the expected results and validate that the procedures as stated during the previous phases have been applied. The contractor should respect the “two chambers principle” which means that the team in charge of the tests should be different from the team in charge of the design and development. Tests cannot be executed before prior acceptance of the Test documentation by EMSA. Test results should be transmitted to EMSA.

During this phase the contractor is responsible to:

- Prepare the system documentation;
- Deliver the system;
- Prepare the Test documentation;
- Test the system before its delivery and report the test results to EMSA.

## 1.4 Deployment phase

Deployment starts as soon as all deliverables of the development and test phase are delivered to EMSA.

The objective of the deployment phase is to configure and make the system available and fully running on EMSA environments:

- Test,
- Pre-Production/Quality,
- Production.

During this phase EMSA will perform the acceptance tests with the support from the contractor in order to accept the system and its system documentation.

## 1.5 Go-Live and integration phase

The go-live phase starts after the system is accepted by EMSA. The objective of this phase is to:

- Obtain an optimum configuration of the system and maximal performance in the production environment by fine tuning the complete technical infrastructure;
- Perform necessary corrections and adjustments of the system while it is used by end users in real situation.
- Provide assistance to EMSA when integrating the CARD with four of the following Maritime Applications of the SSN Ecosystem:
  - SSN European Index Server,
  - Earth Observation Data Centre,
  - EU LRIT Cooperative Data Centre,
  - STAR,
  - SSN Ecosystem Graphical User Interface, and
  - THETIS.

For each of the four Maritime Applications, EMSA will provide a notice 3 weeks before the integration. For each of the four Maritime Applications, once the integration starts, the contractor will provide **5 days** of on-site support, in the premises of EMSA in Lisbon. The support will consist in:

- Configuration of CARD,
- Log files analysis,
- Troubleshooting,
- Control of CARD activity.

The go-live and integration phase ends at the final acceptance of the system.

## 1.6 Closure

The Closure phase represents the end of the project. The contractor will deliver the Project Closure Report, which will have to be accepted by EMSA. The phase will end with the acceptance of the report by EMSA.

# 2 Project deliverables

Documentation must be provided in electronic format compatible with MS Office 2010 or equivalent.

## 2.1 Initiation phase

### 2.1.1 Project Management documentation

The project management documentation should reflect the project management methodology proposed by the contractor in its bid. It should include at least the following documents:

- Project charter: details the understanding of the project, the different methodologies to be used and the first project baseline (in line with the first project plan).
- Project plan: must include the following items at least: project charter, project management approach, scope, Work Breakdown Structure (WBS), project team, Gantt chart, deliverables milestones, working locations, meetings planning and reports.
- List of outstanding and closed Action Items.
- Flash report: simple report on the status on the project containing (at least) ongoing tasks, resources usage, progress status, and issues foreseen.
- Agenda of the meetings: the contractor is responsible for providing detailed agenda and additional requests 3 days before the meetings for all relevant meetings held between EMSA and the contractor.
- Minutes of the meetings: the contractor is responsible for providing the minutes of the meetings for all relevant meetings held between EMSA and the contractor. The minutes of the meetings must include at least the topics discussed, decisions taken and action items with indication of the responsible person and deadline of the actions.

### 2.1.2 Tools for project controlling

Unified Modelling Language (UML) should be used for object and system modelling. The UML modelling tool and any additional tools suggested by the contractor in its offer will be used.

EMSA suggests the use of ArgoUML (open source) or Altova UModel as the UML modelling tool. The contractor is free to use another UML modelling tool as long as he guarantees its compatibility with one of the previous tools.

Project progress controlling method will be proposed by the contractor. EMSA suggest EVM (Earned Value Management).

The contractor will provide a project site accessible by EMSA through internet. The project site should contain, at least:

- Last stable version of all document deliverables,
- Last stable version of the prototype or system,
- Current working documentation,
- Current development snapshot.

The project site must provide version control of all documentation and source code, making possible to retrieve at any time previous versions and the last stable version of source codes and documentation.

As indicated in chapter 3.1 below, all software issues reported during the acceptance tests will be registered and tracked by EMSA and by the contractor using the EMSA TeamForge application.

## 2.2 Design phase

The deliverables of the design phase are:

- Functional design specifications,
- Technical design specifications,
- A draft version of the Software Test Plan containing at least the test strategy.

Design documentation should be prepared by the contractor in close collaboration with EMSA's personnel. If needed the contractor and/or EMSA may suggest modifications in the content of the deliverables. These modifications should be agreed by EMSA.

### 2.2.1 Functional Design Specifications

Functional design specifications will be used as guidelines for the implementation of the system. They should describe in detail as a minimum of:

- Use cases descriptions and business rules representing the system functionalities,
- Capabilities and processes,
- Interactions with users and with other systems,
- Traceability matrix between the requirements from the technical specifications, the business rules and use cases.

### 2.2.2 Technical Design Specifications

Technical design specifications will be used as a blueprint for the system implementation. They describe how the system will be implemented in order to cope with functional design specifications. They should include as a minimum:

- Conceptual and physical system architecture,
- Software design and layering,
- Modules and components,
- Process, workflows and algorithms design and documentation,
- Mock-ups of the data entry and configuration forms
- Interfaces definitions.

### 2.2.3 Draft version of the Software Test Plan

The draft version of the Software Test Plan will serve as the basis for preparing the Software Test Plan to be implemented during “Development and Test” phase. This draft version should include as a minimum:

- Definition of the Software Test Plan Structure and global strategy,
- Reference to the different test phases to be executed,
- Definition of the test detailed strategy presenting an overall perspective of testing and identifying individual test phase plans for unit, integration, functional, performance, load and stress test phases. Each test phase plan should include at least:
  - Description of the test phase strategy,
  - Test phase standards and practices,
  - Test phase supporting guidelines,

- Test phase selection criteria,
- Test phase evaluation metrics,
- Completion criteria for the test phase,
- Test phase implementation templates.
- Reference to the test environment(s) to be used,
- Software Test plan execution planning,
- Software Test team responsibilities and staff.

The final version of the Software Test Plan is to be provided during the Development and Test phase.

## 2.3 Development and Test phase

The deliverables of the development and test phase are:

- The system documentation,
- The test documentation and test results,
- The system prototypes,
- The simulators,
- The system.

If needed the contractor and/or EMSA may suggest modifications in the content of the deliverables. These modifications should be agreed by EMSA.

### 2.3.1 System Documentation

#### 2.3.1.1 Operational and Maintenance Documentation

The operational and maintenance documentation must explain how the system should be operated and maintained on a daily base. It should include the following documentation:

- Installation manual,
- Operation and Maintenance manual,
- HOW-TO troubleshooting and root-cause analysis.

#### 2.3.1.2 System building procedures

The system building procedures should allow EMSA to completely build the system from its source code at any moment.

System building procedures shall be executed in the EMSA building environment. The contractor must provide all the necessary information to prepare the building environment. EMSA favours the use of virtual Linux building environments.

At the delivery of the system, the contractor must provide an automatic build procedure with the complete source code, additional software packages and code generators.

For each code generator used during development a correspondent generator should be provided to EMSA.

#### 2.3.1.3 Infrastructure (HW and SW) documentation

The contractor is requested to provide a complete and detailed architecture definition and sizing for the following EMSA environment:

- Test,
- Pre-Production/Quality,
- Production.

The environments will be provided at the EMSA Data Centre.

In order to correctly size the production environment, the contractor must consider the following elements: system architecture, implementation, non-functional requirements and the performance requirements specified in the Tender Specifications.

For the production environment, detailed information about requirements for servers characteristics, network, bandwidth, base software, databases, security and accessibility shall be provided to EMSA. For the others environments, the same level of information must be provided with an indication of expected performance.

### 2.3.2 Test Documentation and test results

Test documentation should cover at least 80% of the functionalities of the system. Tests to be performed by the contractor must cover the two following objectives:

- Verification tests: verify that the product is in line with the functional and technical requirements and design specifications and that implementation best practices were applied,
- Validation tests: verify that procedures and activities as described in the project plan, change management procedures and software development plan were applied.

The test documentation and test results should provide evidence that these objectives are met.

The test documentation should detail all necessary documents to plan, design, execute and report tests. This should include as a minimum:

- The Software Test Plan with all details regarding the test process:
  - Definition of the Software Test Plan Structure and global strategy,
  - Reference to the different test phases to be implemented,
  - Definition of the test detailed strategy presenting an overall perspective of testing and identifying individual test phase plans for unit, integration, functional, Non-functional (including Nominal response tests, Peak tests, Load and Stress tests, Performance, Resilience and Availability tests) test phases. Each test phase plan should include at least:
    - Description of the test phase strategy,
    - Test phase standards and practices,
    - Test phase supporting guidelines,
    - Test phase selection criteria,
    - Test phase evaluation metrics,
    - Completion criteria for the test phase,
    - Test phase implementation templates.
  - Results achieved with the test phase implementation including at least:
    - Test cases,
    - Test scripts,
    - Data sets,
    - Test results,
    - Test phase report.
  - Reference to the test environment(s) to be used,
  - Software Test plan execution planning,
  - Software Test team responsibilities and staff.

Test results should be added to each test plan once the corresponding tests have been executed.

### 2.3.3 System Prototypes

One or more prototypes will be delivered to EMSA in order to perform an early assessment of the functions provided by the system and identify possible gaps or incorrect implementations.



Prototypes should include representative data entry and configuration forms, tools and interfaces as requested by EMSA at the beginning and during the Development and Test phase.

### 2.3.4 Simulators

Simulators are a simplified implementation of the services to be provided by the system.

Simulators are delivered to EMSA at an early stage of the Development and Test phase. Simulators are used by other systems and projects to execute an initial validation and verification of their implementation of one or more interfaces of the system.

Simulators allow the test of a successful connection to the system, the use of the correct protocol and a successful exchange of messages, Simulators implement stubs of the functions provided by the interface and generate one or more valid response messages.

### 2.3.5 System

The system delivered to EMSA should contain:

- The developed system/component,
- Related source codes, build procedures and supporting documentation,
- A complete system documentation,
- Test documentation,
- Release notes.

## 2.4 Deployment

Deliverables of the deployment phase are:

- The system deployed and fully working in the three EMSA environments:
  - Test,
  - Pre-Production/Quality,
  - Production,
- Updates of the system documentation if needed,
- Updates of the deliverables of the design phase if needed.

## 2.5 Go-Live and integration

Deliverables of the Go-live and integration phase are:

- Updates of the system documentation if needed,
- Report on the tasks undertaken by the contractor and their results,
- The system, including its updates if relevant, deployed and fully working in the three environments

The system will be evaluated by EMSA when available in the production environment. EMSA will verify that the system operates correctly while being integrated with the Maritime Applications of the SSN Ecosystem and being used by end users in real situation.

## 2.6 Closure

The deliverable of the Closure phase is the Project Closure Report. It should provide a comprehensive summary of the activities, results and lessons learned during execution. The acceptance from EMSA of this report officially closes the project.

## 3 Acceptance procedures

For each deliverable, EMSA provides a formal indication of the acceptance, conditional acceptance or rejection of the deliverable to the contractor.

### 3.1 Classification of software issues

EMSA will classify issues found on software into 3 different categories according to their impact and severity:

- Blocking issues: structural problems or serious issues (functional or technical) considered as limitations of the implementation with very high probability of interfering with the expected result. The contractor will be obliged to correct/execute all issues considered in the category,
- Critical issues: problems or issues that do not conform to the requirements or specifications or best practices or considered to be the wrong approach to obtain the result, but for each one of them a workaround is available.
- Minor issues: changes considered to be a better solution but without a deep impact in the quality of the system. The correction/execution of the issues of this category will be decided case by case.

Each issue is identified and described by EMSA and communicated to the contractor with the EMSA TeamForge application (the tool used by the Agency for Application Lifecycle Management – EMSA will provide the contractor with one account to access the EMSA TeamForge application). The contractor is requested to track and monitor the treatment of each issue sent by EMSA, applying the change management procedures and using the EMSA TeamForge application. The acceptance tests and the classification of the issues are made in collaboration between EMSA and the contractor.

The outcome of the acceptance procedure is positive if no issue is found by EMSA. If issues are found by EMSA during the acceptance procedure, the contractor is requested to immediately correct them and the acceptance procedure restarts from the date of the delivery of the corrected deliverable.

EMSA can decide to conditionally accept the deliverable when some issues remain uncorrected and that issues are not blocking issues. In order to accept such remaining issues the contractor shall propose a deadline for the correction and EMSA to accept it. EMSA will take the decision on conditionally acceptance of the product after evaluation of each remaining issue.

No software acceptance shall be made by EMSA without a successful execution of the automatic build procedure.

### 3.2 Acceptance of documentation

In the case of Project Management documents, EMSA will provide comment and/or reservations which will be transmitted to the contractor within **five EMSA working days** of the date of delivery. Based on this comment and/or reservations, EMSA will either accept or reject the deliverables. In the case of rejection, the contractor will be requested to provide a new appropriate revision.

In the case System documentation and User Documentation, EMSA will provide comment and/or reservations which will be transmitted to the contractor within **ten EMSA working days** of the date of delivery. Based on this comment and/or reservations, EMSA will either accept or reject the deliverables. In the case of rejection, the contractor will be requested to provide a new appropriate revision.

In the case of Design Documentation, EMSA will provide comment and/or reservations which will be transmitted to the contractor within **ten EMSA working days** of the date of delivery. Based on this comment and/or reservations, EMSA will either accept or reject the deliverables. In the case of rejection, the contractor will be requested to provide a new appropriate revision.

### 3.3 Acceptance of the System

The system will be evaluated by EMSA when available and running on the test, quality and production environments.

Before the system is accepted EMSA will verify if:

- All issues detected in the previous acceptance tests have been corrected,
- It conforms with the functional specifications,
- It conforms with the technical specifications,
- Non-functional requirements are met,
- It works correctly in its environments according to all requirements and specifications.

EMSA will provide issues which will be transmitted to the contractor within **fifteen EMSA working days** of the date of delivery. Based on these issues, EMSA will either accept or reject the version. In the case of rejection the contractor will be requested to provide a new appropriate version.

### 3.4 Final acceptance of the System

The system will be evaluated by EMSA for the purpose of the final acceptance when the accepted system will be available in the production environment. EMSA will verify the system operates correctly while being integrated with the Maritime Applications of the SSN Ecosystem and used by end users in real situation.

EMSA will provide its final acceptance of the system within **six months** at the condition that no blocking issues as described in chapter 3.1 above are found.

In the case a blocking issue is found, the final acceptance period is frozen until a corrected version is made available on the production environment by the contractor.

### 3.5 Quality Gate

Delivered source code shall always be submitted to the Quality Gate defined in Appendix H of the Tender Specifications. Results of the Quality Gate shall be evaluated and decision to accept or reject the release will be taken based on the defined conditions.

## 4 Meetings

### 4.1 Project management meetings

Action list, risk registry and planning will be reviewed during project management meetings.

At each project management meeting, the contractor should present an updated project status report.

In addition to the project status reports, between the project management meetings, the contractor delivers to EMSA a flash report.

The contractor is responsible for providing detailed agenda and supporting documents for the meetings, supporting the discussions during the meeting, and providing the minutes of the meetings. The detailed agenda and supporting documents must be provided by the contractor 3 days before each meeting. The minutes of the meetings must include at least the topics discussed, decisions taken and action items with indication of the responsible person and deadline of the actions.

## ABOUT THE EUROPEAN MARITIME SAFETY AGENCY

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency 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. It has also been given operational tasks in the field of oil pollution response, vessel monitoring and in long-range identification and tracking of vessels.

### **European Maritime Safety Agency**

Praça Europa 4  
1249-206 Lisbon, Portugal  
Tel +351 211209 200  
Fax +351 211209 210  
[emsa.europa.eu](http://emsa.europa.eu)