

Lot 2 Ground Segment and Space Segment Engineering Support - Statement of Work

TABLE OF CONTENTS

1	INTRODUCTION	3
1.1	SCOPE OF ACTIVITIES	3
2	APPLICABLE AND REFERENCE DOCUMENTS	3
3	GENERAL REQUIREMENTS	4
3.1	TASK BREAKDOWN	4
3.2	GROUND SEGMENT ENGINEERING DETAILED TASKS DESCRIPTION.....	5
3.2.1	<i>Task 1: System Requirements Engineering</i>	<i>5</i>
3.2.2	<i>Task 2: Site Requirements Engineering.....</i>	<i>7</i>
3.2.3	<i>Task 3: Design, Development, Validation, Deployment and Migration oversight.....</i>	<i>8</i>
3.2.4	<i>Task 5: System Troubleshooting & Maintenance Releases Engineering.....</i>	<i>10</i>
3.3	SPACE SEGMENT ENGINEERING DETAILED TASKS DESCRIPTION.....	10
3.3.1	<i>Task 6: Support to Space Segment activities</i>	<i>10</i>
3.3.2	<i>Task 7: Support to Launch Services activities.....</i>	<i>11</i>
3.4	DELIVERABLES	12
4	SIMULATION EXERCISE	17
4.1	MAPPING OF THE SIMULATION EXERCISE TASKS.....	17
4.2	DESCRIPTION OF THE SIMULATION EXERCISE	17
4.3	DURATION.....	17
4.4	WORKING LANGUAGE	17
4.5	SIMULATION EXERCISE	18
5	APPENDIX: ACRONYMS AND ABBREVIATIONS	21

LIST OF TABLES

Table 1 - Applicable Documents	3
Table 3 - Task Breakdown Table	4
Table 4 - Task deliverables.....	12
Table 5 – Simulation Exercise: Service Mode	18
Table 6 - Simulation Exercise:Deliverable Mode.....	19
Table 7 - Abbreviations.....	21

LIST OF FIGURES

Figure 1 Lot 2 Work Breakdown Structure (WBS)	3
---	---

1 Introduction

1.1 Scope of activities

The subject matter of this Lot 2 is the provision of Engineering Support to the Contracting Authority on Ground Segment and Space Segment activities.

Ground Segment activities are split into two main threads, Evolution and Maintenance.

Space Segment activities have been split into two main threads, Support to Space Segment and Support to Launches Services activities.

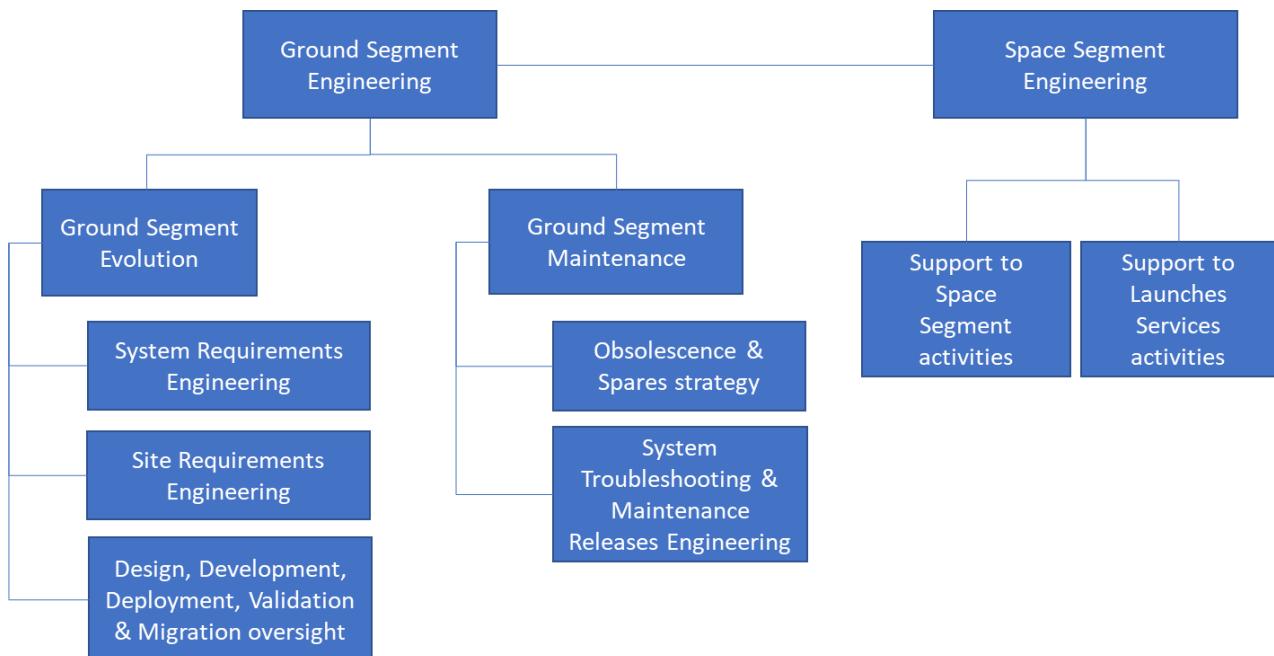


Figure 1 Lot 2 Work Breakdown Structure (WBS)

2 Applicable and Reference Documents

Table 1 - Applicable Documents

Applicable Documents:				EUCI level	Proprietary Information
Type	Title	Reference	Issue	As per EU classification	Yes/No
AD-01	Management requirements for EUSPA/OP/37/23	EUSPA-PCEDQ-QMS-SOW-A16922	1.0		No

3 General Requirements

3.1 Task Breakdown

Table 2 - Task Breakdown Table

Task #	Title	PSC/ SAB authorisation/ Language skills*	Expected Missions [Frequency and destinations]	Place of performance	Expected level of effort during the FWC implementation (FTEs**)
1	System Requirements Engineering	Up to SECRET UE/EU SECRET PRS SM English	3 days per month to EUSPA HQ for consultants collocated in GSC, GRC, GSMC	EUSPA HQ Prague GSC-ES GSMC-ES Toulouse Contractor's premises Brussels	5.5
2	Site Requirements Engineering	Up to SECRET UE/EU SECRET Spanish French	3 days per month to EUSPA HQ for consultants collocated in GSC, GRC, GSMC	Contractor's premises Brussels	3
3	Design, Development, Deployment, Validation and Migration oversight	Up to SECRET UE/EU SECRET	3 days per month in continental Europe (ESTEC, Brussels, GCCs, MCCs, GSC) for consultants collocated in EUSPA HQ 4 x 2 days mission in continental Europe for consultants collocated in Toulouse	EUSPA HQ Prague EUSPA Toulouse Contractor's premises Brussels	5.5
5	System Troubleshooting & System Maintenance Releases Engineering	Up to SECRET UE/EU SECRET	3 days per month in continental Europe (ESTEC, Brussels, GCCs, MCCs, GSC) for consultants collocated in EUSPA HQ 4 x 2 days mission in continental Europe for consultants collocated in Toulouse	EUSPA HQ Prague Toulouse GSMC-FR GSMC-ES Brussels	4.5

Task #	Title	PSC/ SAB authorisation/ Language skills*	Expected Missions [Frequency and destinations]	Place of performance	Expected level of effort during the FWC implementation (FTEs**)
6	Support to Space Segment activities	Up to SECRET UE/EU SECRET	6x2-day mission per year in continental Europe (ESTEC, Brussels, GCCs, GSC, Satellites Prime Contractors premises in Europe, Launch Services Provider premises in Europe) - Ad-hoc missions to Spaceports during Launch campaign	EUSPA HQ Prague Contractor's premises Brussels	1
7	Support to Launch Services activities	Up to SECRET UE/EU SECRET	6x2-day per year in continental Europe (ESTEC, Brussels, GCCs, GSC, Launch Services Provider premises in Europe, Satellites Prime Contractors Premises in Europe) - Ad-hoc mission to Spaceports during Launch campaign	EUSPA HQ Prague Contractor's premises Brussels	2

* as related to Full Time Equivalents (**FTEs**) - one full time equivalent effort is defined as 220 working days/year – the FTE numbers provided reflect the expected level of effort that may be needed for providing of the services, which is merely an estimate and a non-binding indicator for the Contracting Authority. It is up to the Tenderers own assessment and they are free to determine the amount of effort and the profiles they consider appropriate to provide the service.

** As related to **language skills**: Persons assigned by the contractor to the Task should have, except proficiency in English, the language skill in the mentioned language, indicated at a level in line with the Common European Framework of Reference for Languages (CEFR)¹, forming part of their CV to be submitted with the tender.

3.2 Ground Segment Engineering Detailed Tasks Description

3.2.1 Task 1: System Requirements Engineering

The subject matter of this Task 1 is the provision System Requirements Engineering for developments for which EUSPA acts as System Development Prime and Design Authority (e.g. Galileo and EGNOS Service Facilities, GSMC, GOVSATCOM Hubs,...). Task 1 can be related to any of the EU Space Programme

Components (e.g. Galileo, EGNOS, GOVSATCOM, COPERNICUS, GOVSATCOM, IRIS, SPACE SITUATIONAL AWARENESS).

The System Requirements engineering process for both UNCLA and CLA aspects, is responsible for the proper interpretation of the end-customer needs expressed in high level requirements (e.g. for Galileo: MRD/eSSRS, SVRD/SVRD-x, eMRDx/EMRD-x/SPRD vol1/2/3 said to be at level N), coherent and appropriate generation of system and, in general, lower level specifications (said to be at level N-1 or below) and continuous control of the requirement status and traceability.

This activity is related to provision of system requirements (UNCLA and CLA) including security aspects and covers the requirements management process throughout their entire lifecycle, namely:

- Input service/mission requirements analysis and validation (done at level N).
- Lower-level requirement definition and allocation including justification (flow down to level N-1).
- Requirement maintenance including higher level requirements evolutions and follow up of RFDs/RFWs generated during the infrastructure development and qualification.
- Traceability and compliance status “as specified”, “as designed” and “as built” of level N-1 requirements vs level N requirements

The engineering process is triggered when (but not limited to):

- New/evolution of Service/Mission/Security Requirements is made available.
- Changes initiated by the needs of improving Service/System/Security availability/continuity following lesson learnt from REX (RAMS analyses, major anomalies, system robustness analyses and resilience tests).
- Evolutions required to solve specific obsolescence issues and requiring impact analysis.
- Evolutions System/Segment/Element requirements needed to improve system operability for service provision (operability improvements).
- Evolution of the infrastructure necessary to improve security (e.g. robustness to penetration tests).

The output of the requirements engineering activities shall be sent to the relevant boards for evaluation and approval before entering the procurement process.

(1) Preliminary input requirement analysis

As preliminary work to allow proper generation of lower-level requirements the contractor shall:

- a. Review of the input (higher level requirements) to get a satisfactory understanding of the expected needs at lower level (N-1). Requirements which are incomplete, ambiguous or contradictory shall be identified and support provided to allow their timely resolution.
- b. Consolidate a synthesis of system needs related to the provided inputs
- c. Identify any constraints (e.g. limits of applicability) related to each specific higher-level requirement and propose alternative formulations.
- d. Integrate the results of the above analyses for subsequent processing.

(2) Requirements definition, allocation and justification

The following system requirements elaboration and allocation activities shall be performed in close interaction with the system design activities (several interactions maybe needed):

- a. Define functional requirements: the higher-level requirements (defined at level N) are allocated to functional requirements at lower level (level N-1). The allocation process is iteratively carried out in parallel to functional and physical architectural analyses.
- b. Define performance requirements: the higher-level performance requirements are allocated at lower level considering the allocation already available for other parts of the system contributing the final performances. Requirements to be flowed down to the operator to ensure performance requirements are met (e.g. Mean Time to Repair an equipment) shall be identified as well.
- c. Inclusion of non-functional requirements or design drivers: Existing direct requirements (e.g. some design constraints) are allocated to the applicable level without tailoring, including logical/physical architectures.
- d. Identification of requirement status (i.e. under procurement, confirmed by design at PDRs/CDRs, confirmed by analysis/test at CDRs/QRs), produce traceability and SoC controlled.
- e. Definition of the verification method and verification milestone for each requirement produced (input to RVM).
- f. A requirements justification file is produced for the initial set of requirements and then maintained for subsequent evolutions.
- g. The requirements baseline (From level N to level N-m) shall be put and maintained in DOORs, including SoCs and justification files.

Note: In case only the evolution of an existing segment/element/sub-system is required only the delta functional and architecture analysis shall be performed. Performance requirements may require full re-assessment. This will be evaluated on a case-by-case basis.

Furthermore, in the above-mentioned case, only a DCN to existing segment/element/sub-system specification will be needed, to be then incorporated in the main document following completion of the formal approval process.

3.2.2 Task 2: Site Requirements Engineering

The subject matter of this Task 2 is the provision Site Requirements Engineering for all the sites, including remote sites, for developments for which EUSPA acts as System Development Prime and Design Authority (e.g. Galileo and EGNOS Service Facilities, GSMC, GOVSATCOM Hubs,...). Task 2 can be related to any of the EU Space Programmes (e.g. Galileo, EGNOS, GOVSATCOM, COPERNICUS, GOVSATCOM, IRIS, SPACE SITUATIONAL AWARENESS).

Three main threads of activities have been identified:

- Maintenance and evolution of **system documentation baseline** related to hosting, e.g. site requirements and interface control documents.
- Technical support to the **procurement of hosting and network capabilities**.
- Support to the management of **Customer Undertakings**

Task 2 consists of the following activities related to the **system documentation baseline (UNCLA and CLA)**:

- (1) Update and maintenance of the documents related to hosting under Agency's responsibility and defined in the Programme/project baseline (e.g. Galileo Ground Segment Integration Standard – GGSIS) and update/maintenance of the different site IRDs and ICDs.

NOTE: Proficiency in the exploitation and management of documents in DOORs shall be demonstrated.

Task 2 consists of the following activities regarding **support to the procurement of hosting and network capabilities**:

- (2) Producing and delivery of requirements (UNCLA and CLA) for establishing and maintaining the sites hosting baseline and its evolution. All site requirements and ICDs, including compliance status considering existing RFD/RFW, shall be managed and maintained in DOORs;
- (3) Support to relevant Engineering Boards, contribution to the definition of hosting/network evolution plans and strategies. ;
- (4) Monitoring and verification of the relevant hosting infrastructure evolution;
- (5) Producing and delivery of technical reports related to management of site activities, including support to project periodical (e.g. progress meetings) and specific reviews (e.g. DKP, SDR, TEC-SAR), review of relevant data-packs, support of operational meetings (e.g. CCBs, Risk management boards, planning boards) and relevant working groups.
- (6) Contributions to team weekly meetings and programme/project reporting.

Task 2 consists of the following activities closely related to the **Customer Undertaking** management:

- (7) Contribution to the Customer Undertaking agreement in terms of scope (e.g footprint, cabling list, network bandwidth, etc.) and schedule feasibility. This includes main sites and remote sites.
- (8) Collection in a dedicated document the Customer Undertaking 's pre-requisites (input to be provided by the developers, e.g. DCPs, ABCL) including site accreditation, as well as the needed dates feasibility assessment and deliver it to the Agency.
- (9) Contribution to the definition of the End-to-End schedule for the delivery by the Contracting Authority of each Customer Undertaking, considering also the site accreditation constraints.
- (10) Follow up throughout the different phases of each programme the status of each Customer Undertaking to evaluate if the activities are carried out according to the above-mentioned schedule and identifying those at risk. This is reflected in the maintenance of the Customer Undertaking dashboards.

3.2.3 Task 3: Design, Development, Validation, Deployment and Migration oversight

The subject matter of this Task 3 is the provision of Engineering Support Services to the Contracting Authority for the oversight of the Design, Development and Validation of the Ground Segment Evolutions of Services Facilities (e.g. GSC, GRC, GSMC, SDAF,...), Systems in Operations (e.g. GMS/GSF/GCS/GDDN for Galileo, EGNOS V2/EGNOS V3, Galileo SECMON,...) and new developments (e.g. GOVSATCOM Hubs, SECMON for EGNOS, Secure Connectivity and SST). Task 3 can be related to any of the EU Space Programme Components (e.g. Galileo, EGNOS, GOVSATCOM, COPERNICUS, GOVSATCOM, IRIS, SPACE SITUATIONAL AWARENESS).

This activity is relevant for all of the space programmes regardless whether the System Development Prime and Design Authority is EUSPA or not.

Task 3 consists of the following activities and includes both UNCLA and CLA parts:

- (1) Contributing to the preparation of the technical specifications;
- (2) Support to the Contracting Authority in the analysis of the Industry proposals relevant to Ground Segment evolutions and changes;
- (3) Support to the Contracting Authority in the oversight of industry compliance to the Statement of Work;
- (4) Support to the Contracting Authority in the oversight of the industrial development plans and associated risks, contributing to the development of the associated risk mitigation actions with industry;
- (5) Contribute to the assessment of the performance of the Ground Segment evolutions from an engineering perspective, through the review of the relevant KPIs and deliverables, and propose actions and improvements to address issues and opportunities;
- (6) Participation in the design, qualification and acceptance reviews at System, Segment, Sub-System and Components level to confirm the compliance of the design to the upper level requirements, the qualification status of new releases, the impact on the overall compliance tree and the status of the waivers and deviations and the availability of all the documentation necessary for acceptance into operations. RIDs shall be raised and the Agency technically supported at the review panels/boards;
- (7) Follow up of industrial activities related to operations engineering, including definition of CONOPS (Concept of Operations), SECOPS (Security of Operations), design for operations, human centred design, operators training and contributing to the Service Provision Requirements Document (SPRD) compliance monitoring;
- (8) Follow up the industrial activities related to the System and Sub-system maintenance engineering with focus on Integrated Logistic Support (ILS) including, but not limited to, Maintenance Concept, Packaging & Handling Storage and Transportation (PHS&T) requirements, Fault Detection Isolation and Recovery (FDIR) strategy, maintenance tools, maintainer training with focus on establishing the documentary basis that will be input to the Operator/Service Provider;
- (9) Support to the Contracting Authority in the delivery and acceptance by industry of the EUSPA Customer Undertakings supporting site or sub-system delivery or hand-over and acceptance;
- (10) Support to the Contracting Authority in the follow-up of the industrial development and AIV plans and associated risks, contributing to the development of the associated risk mitigation actions with industry;
- (11) Support to the Contracting Authority in the management and oversight of the deployment activities conducted by the industry leading to the qualification and then up to Entry-into-Service;
- (12) Support to the Contracting Authority in the follow-up of the industrial activities related to the definition and validation of the migration scenarios in support to the Entry-into-Service;
- (13) Support to the Contracting Authority in the management and oversight of the migration activities conducted between the qualification and the entry-into-service;
- (14) Support to the Contracting Authority in the management of the anomalies handling up to the finalisation of the migration activities/entry-into-service;
- (15) Support to the Contracting Authority in the preparation of the hand-over data-package and coordination with the Service Provision Project team member to ensure proper hand over and acceptance by the Operator/Service Provider;
- (16) Contribute to the Meetings relevant to the evaluation and approval of technical requirements (e.g. Engineering Board, Risk Management Board, Schedule Management Board, Technical Control Board, Change Control Board)

3.2.4 Task 5: System Troubleshooting & Maintenance Releases Engineering

The subject matter of this Task 5 is the provision of support for the Engineering of the System Maintenance Releases dealing operability improvements or maintenance correction of maintenance for the Systems in Operations. Task 5 can be related to any Project on which EUSPA acts as System Development Prime and Design Authority as well as System Prime of System in Operation part of any EU Space Programme Components (e.g. Galileo, EGNOS, GOVSATCOM, COPERNICUS, GOVSATCOM, IRIS, SPACE SITUATIONAL AWARENESS).

Task 5 consists of the following activities and includes both UNCLA and CLA parts:

- (1) Contribution to the analysis of anomalies technical root cause raised by the Operator/Service Provider or Industry System Prime and contribute to the relevant anomaly review processes and boards (e.g. ORB, ARB, NRB, SYS-NCB) addressing UNCLA and CLA issues;
- (2) Contribution to the specification of the mitigation actions for those SW components impacted by software obsolescence issues and/or obsolescence risk;
- (3) Contribute to the specification of the mitigation actions for those SW components impacted by security vulnerabilities;
- (4) Support to the interface with Operator/Service Provider to identify operability and maintainability improvements to be injected in future maintenance releases;
- (5) Contribution to the content definition for each maintenance release in terms of non-conformance correction, hardware & software obsolescence resolution, operability & maintainability improvements, security vulnerabilities, operations baseline evolutions (evolutionary maintenance/minor releases);
- (6) Contribution to the evaluation of SW patches necessary to correct e.g. anomalies of vulnerabilities as proposed by the operators in order to confirm that the qualification boundary of the system in operations is not affected (i.e. that the SW patches can be actually categorised as maintenance releases

3.3 Space Segment Engineering Detailed Tasks Description

3.3.1 Task 6: Support to Space Segment activities

The subject matter of this Task 6 is the provision of Engineering Support Services to the Contracting Authority for the Space Segment Engineering of the EU Space Programme Components.

- GOVSATCOM space component, GOVSATCOM Component Space Segment Interface (Secure SatCOM)

Task 6 consists of the following activities:

- (1) Participation in the Space Segment related reviews to confirm the compliance of the design to the upper level requirements, the compliance to the security baseline, the qualification status, the impact on the overall compliance tree and the status of the waivers and deviations and the availability of all the documentation necessary for acceptance into operations. RIDs shall be raised and the Agency technically supported at the review panels/boards;
- (2) Provide input to the RAMS team related to the satellite constellation reliability/availability analyses, review the outcome of the analysis;

- (3) Contribute to the board endorsing or approving new or modified requirements (e.g. Engineering Board, Risk Management Board, Schedule Management Board, Change Control Boards) and working meetings;
- (4) Contributing to the preparation and evaluation of the technical requirements (UNCLA and CLA) for the space segment development and operations;
- (5) Contribution to the technical evaluation of EUSPA's suppliers baselines change related to Space Segment;
- (6) Review of the technical documentation (UNCLA and CLA) for the space segment level activities;
- (7) Preparation and maintenance of space segment documentation (UNCLA and CLA) as required (e.g. Technical Notes, Plans, Technical Specifications, Procedures, Schedules, Presentations ...);
- (8) Performance of regular and ad-hoc reporting to the Technical Officer;
- (9) Provision of technical expertise related to satellite requirements, security and performance;
- (10) Support to Launch Services activities.

3.3.2 Task 7: Support to Launch Services activities

The subject matter of this Task 7 is the provision of Engineering Support Services to the Contracting Authority for satellites launch services:

Task 7 consists of the following activities:

- (1) Support to the preparation of the Contracting Authority baseline for launch services management and execution (requirements and changes);
- (2) Support to satellite launch mission integration processes, mission analyses, in coordination with external stakeholders;
- (3) Support to launcher-to-satellite interface matters relating to the satellites, in coordination with external stakeholders;
- (4) Support to Launch Services requirements definition, security baseline and analysis, in coordination with external stakeholders;
- (5) Support to the preparation and maintenance of launch-related documentation (UNCLA and CLA);
- (6) Support to the review of launch-related documentation (UNCLA and CLA)
- (7) Support to the coordination, interfaces and interactions with Satellites Operations Team and Launch Services Provider, including during launch campaign;
- (8) Contribution to the definition of security aspects for launch campaign;
- (9) Support to the management of the Launch Services Contract, including assessment of Change Requests/Change Notices, waivers, deviations, anomalies and alerts related to launch services;
- (10) Support to early identification of problem areas and participate in their resolution;
- (11) Participate in meetings and reviews in areas relating to Launch Services (including during launch campaign);
- (12) Support to launch campaign preparation and execution, in coordination with external stakeholders;
- (13) Support to launcher flight performance tracking and anomaly analysis, in coordination with external stakeholders;
- (14) Performing of regular and ad-hoc reporting to the Technical Officer;
- (15) Support to Space Segment activities.

3.4 Deliverables

Table 3 - Task deliverables

ID	Name	Related activity
Task 1 System Requirements Engineering		
D1.1	TN providing the results of the preliminary analysis identified in the section “Preliminary input requirement analysis” .	1
D1.2	Segment/element/sub-system requirement document or DCN	2.a
D1.3	Performance requirement document or DCN	2.b
D1.4	SoC document covering, for each new/modified requirement document, the requirement status (as above specified) and traceability to upper level requirements	2.d
D1.5	Inputs to Requirements Verification Matrix	2.e
D1.6	Segment/element/sub-system requirement and design document justification file	2.f
D1.7	DOORS Database with requirements, requirement verification methods, statement of compliances, requirement justification files and verification control documents	2.g
Task 2 - Site Requirements Engineering		
D2.1	Specific deliverables to be planned on a weekly basis during team coordination meeting. Either: <ul style="list-style-type: none"> • TN addressing analyses of existing hosting capabilities to support future developments • DCPs against documents not under Agency’s responsibility • DCNs against documents under Agency’s responsibility Updated GGSIS, site requirement and ICDs	1
D2.2	DOORS Database with Site Requirements and Site ICD, Statement of Compliances including RFD/RFW	2
D2.3	Memo on impact analysis from EB inputs	3
D2.4	Progress/verification Reports on hosting infrastructure evolution	4
D2.5	Technical Reports related to management of the site activities RIDs to Sites reviews data packages Panel and Board Reports for Sites reviews	5

ID	Name	Related activity
	Operational meetings MoMs	
D2.6	Contribution to weekly reporting	6
D2.7	Memo on Customer Undertaking Scope and schedule feasibility	7
D2.8	Customer Undertaking 's pre-requisites (input to be provided by the developers, e.g. DCPs, ABCL) including site accreditation, as well as the needed dates feasibility assessment and deliver it to the Agency.	8
D2.9	Initial plan and schedule for Customer Undertaking delivery and its maintenance	9,10
D2.10	Monthly CU dashboard for each programme/project.	10
Task 3 - Design, Development, Deployment, Validation and Migration oversight		
D3.1	Technical Contribution to the Contracting Authority ITT/CRN	1
D3.2	RIDs to Industry Proposal/Change Proposals	2
D3.3	N/A –	3
D3.4	Contribution to the the Contracting Authority Risk Register	4
D3.5	Quarterly RIDs to Industry Progress Reports	5
D3.6	RIDs to System, Segment, Subsystem and Components level reviews data packages Panel and Board Reports for System, Segment, Subsystem and Components level reviews	6
D3.7	RIDs to System, Segment, Subsystem and Components level reviews data packages for what concerns operations engineering Panel and Board Reports for System, Segment, Subsystem and Components level reviews for what concerns operations engineering	7
D3.8	RIDs to System, Segment, Subsystem and Components level reviews data packages for what concerns maintenance engineering Panel and Board Reports for System, Segment, Subsystem and Components level reviews for what concerns maintenance engineering	8
D3.9	N/A	9
D3.10	RIDs to System, Segment level reviews data packages for what concerns AIV engineering	10

ID	Name	Related activity
D3.11	RIDs to System, Segment level reviews data packages for what concerns deployment activities	11
D3.12	RIDs to System, Segment level reviews data packages for what concerns migration activities System Migration Plan	12
D3.13	N/A	13
D3.14	N/A	14
D3.15	Handover Review Plan Handover MoMs	15
D3.16	MoMs of the meetings	16
Task 5 - System Troubleshooting & Maintenance Releases Engineering		
D5.1	Root Cause Analysis	1
D5.2	Obsolescence Mitigation Action	2
D5.3	Vulnerability Mitigation Action	3
D5.4	System and Operability Improvement proposals	4
D5.5	System/Software Release Content	5
D5.6	Patch evaluation	6
Task 6 - Support to Space Segment activities		
D6.1	RIDs to the documentation under review Technical notes/Memos summarizing main outcome of a review, criticalities and way forward	1
D6.2	Technical notes/Memos with inputs to the constellation reliability analyses Technical notes/Memos with assessment of the constellation reliability analyses	2
D6.3	Technical notes/Memos with inputs and outcome to/from relevant board meetings and working meetings Minutes of Meetings	3

ID	Name	Related activity
D6.4	Technical notes/Memos reporting inputs to the technical specifications and change requests	4
D6.5	Technical notes/Memos with assessment of Change Requests/Change notices	5
D6.6	Technical notes/Memos with outcome of the review of the space segment technical documentation, including summary, main criticalities and way forward	6
D6.7	Technical notes, memos, plans, technical specifications, procedures, schedules, presentations and related updates	7
D6.8	Report on activities and contribution to reports	8
D6.9	Technical notes/Memos with inputs/assessment for satellites requirements and performance	9
D6.10	Technical notes/Memos with inputs/assessment for launch services related activities	10
Task 7 - Support to Launch Services activities		
D7.1	Requirements specifications, plans, deliverables requirements list, document content guidelines, technical notes, memos and other documents defining the EU the Contracting Authority SPA baseline for launch services	1
D7.2	Technical notes/Memos on required mission integrations Summary reports on related activities (including coordination with external stakeholders)	2
D7.3	Technical notes/Memos summarizing inputs and assessment for launcher-to-satellites interfaces definition, main criticalities and way forward Minutes of Meetings	3
D7.4	Technical specifications and Technical notes/Memos, including related requirements trade-off (when required). When the activity foresees interactions with external stakeholders, memos summarising exchanges (progresses, critical areas, way forward,...)	4

ID	Name	Related activity
D.5	Plans, technical notes, memos, schedule, organizational notes and other documents as required, including their updates	5
D7.6	RIDs and/or comments (reported in a Memo format) Technical notes/Memos summarizing main outcome of a review, criticalities and way forward	6
D7.7	Technical Notes/Memos with required inputs for either Satellites Operations Team or Launch Service Provider	7
D7.8	Technical Notes/Memos containing : <ul style="list-style-type: none"> • Inputs to security-related documents • Assessment of the security-related documents 	8
D7.9	Technical Notes/Memos with assessment of Change Requests/Change Notices, waivers, deviations, anomalies and alerts related to launch services	9
D7.10	Reports on problem areas, proposed mitigation actions and way forward	10
D7.11	RIDs to the documentation under review Presentations slides Minutes of Meetings	11
D7.12	Technical notes/Memos, plans, procedures, user manuals, presentations for launch campaign and any other document as required for the preparation and execution of launch campaigns Daily and ad-hoc reports during launch campaign	12
D7.13	Technical notes/Memos with assessment on launcher flight performance tracking and anomaly analysis	13
D7.14	Report on activities and contribution to reports	14
D7.15	Technical notes/Memos with inputs and/or assessment for space segment related activities	15

4 Simulation Exercise

4.1 Mapping of the Simulation Exercise Tasks

The Simulation Exercise is based on the tasks (Table 2) as described in this document.

4.2 Description of the simulation exercise

In this Simulation Exercise, the tasks of Lot 2 have been described to simulate the likely activities and effort which could potentially (non-binding) be placed on the successful tenderer through a first specific contract/s for implementing the Framework Contract.

The tenderers shall demonstrate the approach for implementation of the tasks, included in the simulation exercise, highlighting the proposed team organisation, best practices, methodologies, criticalities and risks for the completion of the task and the provision of the associated deliverables (the deliverables themselves are not required as part of the simulation exercise), incl. if deemed appropriate any template documentation of relevant reports, number and typology of consultant(s) involved (incl. PSC availability), intended provision of on site and remote activities, training of proposed personnel etc. The tasks are provided in the following table, following the tasks identified in Table 2. It is furthermore requested to address in the simulation exercise the main risks and challenges expected during the ramp up and the measures and approaches proposed to overcome them and ensure an optimised ramp up.

The number of issues in the simulation duration is driven by the need to work in parallel on different services.

Any mentioning on effort and profiles provided in table 3 and table 5 is aimed at creating a level playing field between tenderers for evaluation purposes.

The information on effort indicates the level of resources expected to be engaged for the tasks to be implemented in Service Mode for the provision of Tasks under the FWC and the ramp-up expected due to the evolutions of EUSPA obligations (the level of effort for the delivery of possible new tasks based on the experience of the EUSPA relating to the provision of similar services).

N.B. These information are merely indicative and not meant to take the place of the candidates' assessment of the scope and characteristics of the simulation exercise and relevant substantiated offer.

While continuity of services is of the essence, tenderers, are requested to make their own assessment on the level of effort required for the delivery of the services constituting the subject matter of this lot in quality and time and at a competitive price, based on the task descriptions in this Annex I.I and the Tasks in this document.

4.3 Duration

All tasks shall start on hypotheticalal KOM (T0) and will end at T0+12 (twelve) months.

4.4 Working Language

The working language for all tasks is English and any other EU language if so indicated in the task description.

4.5 Simulation Exercise

Table 4 – Simulation Exercise: Service Mode

FWC Task #	SE Task #	Title / Description	Inputs	Deliverables	PSC/SAB Authorization* Language skills **	Place of Performance	Expected effort (#FTE***) (only for the Service Mode)
1	1	System Requirements Engineering - EGNOS	Mission and System Baseline	As per Table 3 - Task deliverables , Task-1	[Up to S-UE/UE-S] [PRS-Support] [PRS-Secure Module] [PRS-Receiver]	[Toulouse]	2
1	2	System Requirements Engineering – Security Facility	Mission and System Baseline	As per Table 3 - Task deliverables , Task-1	[Up to S-UE/UE-S] [PRS-Support] [PRS-Secure Module] [PRS-Receiver]	[GSMC-ES]	1
1	3	System Requirements Engineering – Service Facility	Mission and System Baseline	As per Table 3 - Task deliverables , Task-1	[Up to R-UE/UE-R]	[GSC-Es]	1
1	4	System Requirements Engineering - GOVSATCOM	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-1	[Up to S-UE/UE-S]	[EUSPA HQ Prague]	1
3	5	Design, Development, Deployment, Validation and Migration oversight - Galileo	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-3	[Up to S-UE/UE-S] [PRS-Support] [PRS-Secure Module] [PRS-Receiver]	[EUSPA HQ Prague]	2
3	6	Design, Development, Deployment, Validation and Migration oversight - EGNOS	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-3	[Up to S-UE/UE-S]	[Toulouse]	2.5
3	7	Design, Development, Deployment, Validation and Migration oversight - GOVSATCOM	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-3	[Up to S-UE/UE-S]	[EUSPA HQ Prague]	1
5	8	System Troubleshooting & Maintenance Releases Engineering (GAL Core)	Observations and Anomaly Reports	As per Table 3 - Task deliverables , Task-5	[Up to S-UE/UE-S]	[EUSPA HQ Prague]	1
5	9	System Troubleshooting & Maintenance Releases Engineering (Service Facilities)	Observations and Anomaly Reports	As per Table 3 - Task deliverables , Task-5	[Up to S-UE/UE-S]	[GSC-ES]	1

FWC Task #	SE Task #	Title / Description	Inputs	Deliverables	PSC/SAB Authorization* Language skills **	Place of Performance	Expected effort (#FTE***) (only for the Service Mode)
5	10	System Troubleshooting & Maintenance Releases Engineering (Security Facilities)	Observations and Anomaly Reports	As per Table 3 - Task deliverables , Task-5	[Up to S-UE/UE-S] [PRS-Support] [PRS-Secure Module] [PRS-Receiver]	[GSMC-FR]	1
5	11	System Troubleshooting & Maintenance Releases Engineering (EGN)	Observations and Anomaly Reports	As per Table 3 - Task deliverables , Task-5	[Up to S-UE/UE-S]	[Toulouse]	1.5
7	12	Space Segment Engineering-Galileo	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-6	[Up to S-UE/UE-S]	[EUSPA HQ Prague]	1
8	13	Launch Services Engineering-Galileo	Relevant task-related inputs	As per Table 3 - Task deliverables , Task-7	[Up to S-UE/UE-S]	[EUSPA HQ Prague]	2

Table 5 - Simulation Exercise: Deliverable Mode

FWC Task #	SE Task#	Title / Description	Inputs	Deliverables	Number of issues in simulation duration (Deliverables Mode)	PSC/SAB Authorization*	Place of Performance
2	14	Site Requirements Engineering	Relevant task-related inputs	DEL-02-001 DEL-02-002 DEL-02-003 DEL-02-004 DEL-02-005 DEL-02-006 DEL-02-007 DEL-02-008 DEL-02-009 DEL-02-010 Del-02/011	6 (3 TN for analysing existing hosting capability + 3 DCNs) 2 (GGIS and Site IRDs in DOORS plus 1 update) 12 12 6 (TecSAR reports) 3 48 3 2 1 11 (CU dashboard updates)	[Up to S-UE/UE-S] [PRS-Support] [PRS-Secure Module] [PRS-Receiver]	[Contractor's Premises]

* as related to **PSC/SAB Authorisation Category**: these are mandatory requirements which for the PSC have to be fulfilled by persons at minimum at the indicated clearance level and for SAB Authorisation have to be fulfilled by the entity performing the activities under the Task, involving the handling of classified/PRS information

** As related to **language skills**: Persons assigned by the contractor to the Task should have, except proficiency in English, the language skill in the mentioned language, indicated at a level in line with the Common European Framework of Reference for Languages (CEFR)¹, forming part of their CV to be submitted with the tender.

*** as related to **FTE and profiles** - one full time equivalent effort is defined as 220 working days/year – the FTE numbers

provided reflect the expected level of effort that may be needed for providing of the services, which is merely an estimate and a non-binding indicator for the Contracting Authority. It is up to the Tenderers own assessment and they are free to determine the amount of effort and the profiles they consider appropriate to provide the service

For the sake of the simulation, the tenderer shall assume that it is required to implement the Tasks in accordance with the methodology it may further describe in its tender unless otherwise requested in this document.

Tenderers are reminded that provisions under section 2.1.6 of the tender specifications (Annex I) shall apply.

5 Appendix: Acronyms and Abbreviations

Table 6 - Abbreviations

Abbreviation	Definition
AD	Applicable Document
AIV	Assembly, Verification and Integration
AR	Anomaly Report
AR	Acceptance Review
ARB	Anomaly Review Board
ATO	Approval to Operate
CA	Certificate Authority
CAS	Commercial Authentication Service
CCB	Change Control Board
CDR	Critical Design Review
CFI	Customer Furnished Item
CIA	Cyber Internal Auditor
CLA	Classified
CISL	Contractual Index Status List
COTS	Commercial off-the-shelf
CP	Certificate Policy
CPS	Certification Practice Statement
CSM	Cyber Security Manager
DCN	Document Change Note
DDF	Design Definition File
DDL	Deliverable Document List
DDVP	Design, Development, Verification Plan
DIL	Deliverable Item List
DJF	Design Justification File
DKP	Design Key Point
DP	Data Package
EB	Engineering Board
EC	European Commission
ECSS	European Cooperation for Space Standardization
EoC	End of Contract
ESA	European Space Agency
EU	European Union
EUSPA	EU Agency for the Space Programme
EWS	Emergency Warning Service
FFPA	Financial Framework Partnership Agreement
FOC	Full operational Capability
GALSEE	Galileo System Engineering Environment
GRSP	Geodetic Reference Service Provider

Abbreviation	Definition
GSC	Galileo Service Centre
GSMC	Galileo Security Monitoring Center
GSO _p	Galileo Service Operator
HAS	High Accuracy Service
HQ	Headquarter
HSOW	Hosting Statement of Work
HW	Hardware
ICD	Interface Control Document
ILS	Integrated Logistic Support
INT	Integration Chain
IOM	Installation, Operation and Maintenance manual
IRD	Infrastructure Requirement Document (see also Site IRD)
ITIL	Information Technology Infrastructure Library
KO	Kick Off
KoM	Kick-off Meeting
KPI	Key Performance Indicator
LD	Liquidated Damage
LRU	Line-Replaceable Unit
MS	Microsoft
NC	Not Compliant
NRB	Non-conformance Review Board
NPRS	Non-PRS
O/S	Operating System
OPE	Operational chain
ORR	Operational Readiness Review
OS-NMA	Open Service Navigation Message Authentication
OVRR	Operational Validation Readiness Review
PA	Product Assurance
PC	Partially Compliant
PKI	Public Key Infrastructure
PRS	Public Regulated Service
QR	Qualification Review
RAMS	Reliability, Availability, Maintainability, and Safety
RCA/ Root CA	Root Certificate Authority
RCV	Receiver
RFD	Request for Deviation
RFW	Request for Waiver
RID	Review Item Discrepancy
RLSP	Return Link Service Provider
RVM	Requirement Verification Matrix

Abbreviation	Definition
SAB	Security Accreditation Board
SAS	Security Accreditation Strategy
SC	Specific Contract
SDD	Site Description Document
SecOPs	Security Operating Procedures
SEC SAR	Security (Site) Acceptance Review
SECVTB	Security Validation Test Bench
SETA	System/Service Engineering Technical Assistance
SFC	System Functional Chain
SM	Security Module
Site IRD	Site Infrastructure Requirement Document
SoC	Statement of Compliance
SoW	Statement of Work
SSD	Site Security Description
SSRS	System Security Requirements
SVP	Site Verification Plan (the planned way of verification of the SOC with evidence to go in VCD)
SW	Software
TEC SAR	Technical (Site) Acceptance Review
TSP	Timing Service Provider
TUR/TUS	Test User Receiver/Segment
TV	Test Vector
UNCLA	Unclassified
USEG	User Segment
UTC	Coordinated Universal Time
VAL	Validation chain
VCD	Verification Control Document
VCM	Verification Control Matrix
WBS	Work Breakdown Structure
WPD	Work Package Description
XCA	X Certificate and Key management

End of Document