

**IT System Integration services and IT consultancy services for the
Agency for the Cooperation of Energy Regulators**

Multiple Framework Contracts in cascade

TECHNICAL SPECIFICATIONS

LOT 1 - IT System Integration services

OPEN CALL FOR TENDERS

ACER/OP/MIT/10/2017

Table of contents

- Glossary3
- 1. Introduction4
- 2. Subject of the contract.....4
 - 2.1 General requirements.....5
 - 2.2 Description of the services6
- 3. Service Level Requirements.....12
 - 3.1 Benchmark cards13
- 4. Types of projects17
 - 4.1 Fixed price projects17
 - 4.2 Time-and-Means projects.....17
 - 4.3 Quoted Time-and-Means projects17
- 5. Professional Profiles.....18
 - 5.1 A-level profiles.....18
 - 5.2 B-level profiles.....22
 - 5.3 C-level profiles24

Glossary

The Agency	Agency for the Cooperation of Energy Regulators
ARIS	Agency's REMIT Information System(s), including applications used for its management and handling of information stored within, e.g. CMT
CEREMP	Centralised European Register of Energy Market Participants
CMT	Case Management Tool
ISF	Information Security Framework
ISMS	Information Security Management System
ITSM	IT Service Management
NDA	Non-Disclosure Agreement
NP	Notification Platform
NRA	National Regulatory Authority
QMF	Quality Management Framework
REMIT	Regulation (EU) No 1227/2011 on wholesale energy market integrity and transparency
REMIT Information	Information and data in scope of the Agency's REMIT Information Security Policy
SDLC	Software Development Lifecycle

1. Introduction

This document contains detailed technical specifications for the requested “IT System Integration services and IT Consultancy services for the Agency for the Cooperation of Energy Regulators” for **Lot 1 - IT System Integration services**, and includes the following:

- a description of the requested services;
- a description of experts’ profiles required for the delivery of the services;
- the Service Level Requirements.

The purpose of this document is to specify in a clear manner what are the expected deliverables and services and their quality, which may be part of each specific contract.

2. Subject of the contract

The purpose of the Framework Contract (hereinafter the ‘FWC’) for Lot 1 is the provision of the IT System Integration services, as follows:

A. Central Service Desk

B. Infrastructure and operations of ARIS

- Management of the System Infrastructure and Software
- Management of Public Key Infrastructure, including provision of digital certificates for ARIS users
- Information Security Management

C. Software development and maintenance of ARIS

- Issue, Release and Change management
- Development of new functionalities and improvements
- Second-level user support
- Testing and Validation

D. Project and service management of ARIS

- Project Planning, Monitoring and Reporting
- Implementation, operation and further development of the ITSM processes, artefacts and workflows (e.g. logs, plans, etc.)

E. Application management of ARIS

- System monitoring and Capacity planning
- Management of User and System Credentials
- Supporting the Agency staff in activities related to management and evolution of ARIS

2.1 General requirements

All tenderers shall comply with the general Service Level Requirements defined in Section 3 of these Technical Specifications.

Where applicable, all provided equipment/software/services shall be at least VMware vSphere (ESX 5 or higher), Windows 2008 r2 (or higher), Redhat Enterprise Linux 6 (or higher) and Oracle 12c (or higher) certified or equivalent.

At the end of each specific contract and/or at the end of the FWC the Agency shall retain the right to remove its own equipment, software, applications, data, etc. The selected Contractor(s) (hereinafter referred to as 'the Contractor') are required to ensure cooperation with potential new contractor(s) for the possible handover of the services listed below, upon prior conclusion of a specific contract for a Transition-out of services.

The Contractor shall provide full technical support (i.e. active technical support with various vendors of various components of the technological platforms used) related to the services listed below without being entitled to any additional compensation for such support.

The Agency's staff and/or consultants shall have, if authorised by the Agency, physical access to the equipment on which REMIT information is stored without any additional cost.

If the use of specific tools and SW solutions is part of the services provided by the Contractor then the Agency may require that such tools and SW solutions are installed and used within the ARIS physical infrastructure without any additional cost.

All the services listed below will require a Transition-in phase to enable the Contractor to fully take in and start providing the services. Transition-in activities shall be included in the scope of services listed below. Unless agreed otherwise in each specific contract the Transition-in phase for any service shall not be longer than three (3) months from the date of the signature of the specific contract.

All the services listed below may require a Transition-out phase to ensure the Contractor fully hands over the services to the Agency or to another service provider. Transition-out activities shall not be included in the scope of the services listed below but may be requested as OUT OF PRICE LIST item according to point 10.2 of Annex I - Tender Specifications. The Contractor shall be able to provide the services related to Transition-out activities, including transportation and migration of hardware and software to another physical location, if requested by the Agency.

All the services listed below may be used also to support the Agency in managing its internal IT environment supporting REMIT and thus supporting internal end users, i.e. the Agency staff.

All the services listed below may be used also to support the Agency's test environments for REMIT infrastructure and applications.

The Contractor shall be able to act as a purchase channel for any equipment or third party software, including SW and HW licenses and vendor support services, necessary for the successful operation and evolution of ARIS and within the scope of this tender. Any such equipment or third party software shall be requested as OUT OF PRICE LIST item according to point 10.2 of Annex I - Tender Specifications.

2.2 Description of the services

The services listed below shall include all related basic infrastructure (such as provisioning of specific tools, licenses, HW and SW support, etc.) which is needed by the Contractor to be able to perform the requested services.

The Contractor shall be able to provide at least the following:

A. Central Service Desk

The Contractor shall establish a Central Service Desk which shall support the end users of ARIS. A full range of services, in line with Information Technology Infrastructure Library (the 'ITIL'), shall be offered. The services shall include also change and incident management as well as first-level support by phone, web interfaces and e-mail.

Minimum requirements for a Service Desk are as follows:

- Availability on the Agency's working days between 8:00 and 20:00 CET;
- Prioritisation of requests;
- Response time under one (1) hour for highest priority requests (automatically generated confirmation is not considered as a response);
- Escalation rules in case the second- or third-level support provided by the Contractor is necessary (e.g. developers, system administrators, etc.). This may need to include interaction and/or integration with the service desks of other external contractors and/or the Agency;
- Periodical monthly reporting on service desk usage and assessment of service desk performance, including the analysis of requests received;
- Provision of appropriate tools and their customisation to manage the Service Desk activities;
- Capacity of managing approx. 2,000 requests per year.

B. Infrastructure and Operations of ARIS

The entire Agency's infrastructure related to ARIS is going to be placed in the internal Agency's datacentre at the Agency's premises by the end of 2017 and will be owned by the Agency, including all the necessary licenses and vendor support. The Contractor shall be able to provide a remote location (i.e. fully functional and properly secured data centre that would allow for ARIS equipment to be migrated/installed there) to host the primary or the disaster recovery site for ARIS infrastructure. The remote location shall be in the territory of the EU.

All the services listed below may be used also to operate the ARIS systems on alternate location(s) provided either by the Contractor or by the Agency. The specific services necessary to run the alternate location and not listed below (e.g. rent of datacentre space, internet connectivity, etc.) may be requested as OUT OF PRICE LIST items according to point 10.2 of Annex I - Tender Specifications.

B1. Management of the System Infrastructure & Software

The Contractor shall install, configure, upgrade, replace, monitor, maintain and eventually possibly remove all the equipment and software used to run ARIS. The Contractor shall actively monitor the utilisation of all the infrastructure and monthly report to the Agency about the current utilisation of the equipment with the identification of potential performance bottlenecks and proposals for capacity upgrades.

The Contractor shall manage all the licenses related to HW and SW of ARIS and shall provide a quarterly report to the Agency about the current license coverage with

identification of necessary upgrades/extensions of licenses. The Contractor shall actively monitor the status of all the HW and SW licenses (including necessary maintenance agreements with vendors) and shall fully support the Agency in ensuring the licensing of ARIS is adequate and cost efficient.

The Contractor shall provide a full range of System Administration services including, but not limited to:

- Execute any system administration procedure required and/or supplied by the Agency (i.e. for deployments, installations, etc.);
- Execute configuration change requests;
- Execute security-related tasks (authentication and authorization mechanisms, proactive and reactive mitigation of existing and emerging security threats, anti-malware operations, system patching and updating, etc.);
- Troubleshooting and provision of relevant information about the hosted infrastructure and applications (e.g. log extraction, investigation of incidents, etc.).

The Contractor shall also perform the following:

- Maintain full and up-to-date inventory of all the equipment;
- Maintain full and up-to-date System Configuration Management Database;
- Manage virtualisation platforms, operating systems and databases
- Test equipment after installation or when resolving specific issues;
- Check and install cable connections and cable management;
- Power cycling;
- Load/change pre-labelled removable media;
- Report the status of indicator lights;
- Reset circuit breakers;
- Report physical conditions within the data centre;
- Physically install or remove equipment;
- Device labelling;
- Log on to the Agency's equipment;
- Perform hardware related software installations according to published installation processes (e.g. patching, upgrading);
- Server administration tasks such as creating new virtual hosts, activating authentications etc.;
- Configure networking connectivity (creation/modification of VPNs, VLANs, DNS entries, etc.)
- Reboot equipment;
- System troubleshooting;
- Network device administration (switches, routers, load balancers, proxies, etc.);
- Storage administration tasks (creation/modification of storage pools, LUNs, etc.);
- Security administration such as firewall rule base administration, system logging administration, etc.
- Create various scripts (e.g. for deployment);
- Kernel updates and recompilation;
- Software installations, updates and recompilation;
- Respond to client monitoring events;
- Problem management activities.

In case it is needed the Contractor shall actively engage in resolution of any specific issues with the equipment or software, including communication with vendors and thorough investigation (i.e. root cause analysis). The Contractor shall provide a 24x7 emergency communication channel to support the resolution of critical incidents and shall respond to reported issues within one (1) hour after the critical incident has been reported by the Agency.

B2. Management of Public Key Infrastructure (PKI), including provision of digital certificates for ARIS users

The Contractor shall be able to provide to the end-users of ARIS (including the Agency staff) the PKI services. The PKI services have to ensure the provision of digital certificates issued by a trusted Certification Authority within the EU to the end-users (i.e. physical and legal entities and/or IT systems) using only web browser. The Agency must have the possibility to approve each certificate request and review the status of issued certificates using only web browser.

Up to 1,000 issued certificates annually may be requested. The Contractor shall establish a service to issue test certificates in the same way as for the production certificates.

B3. Information Security Management

The Contractor shall ensure and be able to demonstrate that his working methods and operating procedures are compliant with the REMIT Information Security Policy which is based on ISO/IEC 27001 family of standards.

The Contractor shall perform the following:

- prevent misuse of the information processing facilities and systems;
- control and regulate the access to the information assets of the Agency;
- ensure the dissemination of the security principles to all staff who interacts with the information system;
- ensure the availability of information, facilities and systems of information processing;
- produce and maintain plans for the continuity of services provided under contracts resulting from the procedure, and submit these plans to periodic testing;
- have in place all necessary actions to reduce risks related to the following threats:
 - breaches of security due to poor organisation;
 - accidents and malfunctions of computer systems;
 - unauthorised use or misuse of equipment, information processing systems, system utilities or applications and unauthorized removal of objects;
 - unauthorised access to information or systems;
 - injection of malicious code, worms, Trojans, and generally any type of computer virus;
 - access by inappropriate or non-conforming users;
 - any type of attack from any interconnected network;
 - malicious use of the infrastructure or application by the supplier's staff in order to cause damage, including to third parties.
- collect reports and formalise timely reports on all breaches of security, actual or alleged, and where required, provide support for the conduct of investigations;
- setup and maintain procedures in support of security policy, including:
 - inventory, classification and control of assets;
 - assurance of physical security of the assets hosting the Agency Information;
 - logical security of information;

- management of removable media;
- back-up of information;
- long-term data retention and archiving;
- management of accidents and malfunctions related to security;
- check for viruses and spam;
- ensuring continuity of services, in compliance with contractual service levels;
- periodic review of the validity and effectiveness of countermeasures taken in time, by defining appropriate metrics and implementation of monitoring and control.

C. Software Development and Maintenance of ARIS

The Contractor shall provide the services which may require expertise in the following (non-exhaustive) IT technologies, programming languages, technical standards and IT products:

Frameworks, programming languages, standards, methodologies and protocols:

- C
- C++
- SQL
- PL/SQL
- .NET
- C#
- J2EE
- Java
- Rational Unified Process (RUP)
- BPMN
- Agile Programming
- JavaScript
- HTML
- XML
- UML
- CSS
- PDF
- MS-Office file formats (DOC, DOCX, XLS, XLSX and others)
- SOAP
- W3C
- TCP/IP
- SSL
- PKI

In addition, the portfolio of products and technologies which could be used on back-end and server side includes:

Operating systems

- Windows
- Linux

Data bases

- Oracle RDBMS
- SQL Server
- MySQL
- PostGRES SQL

Application and web servers

- JBoss and Tomcat
- Oracle WebLogic
- Apache web server
- Microsoft Internet Information Server
- MS SharePoint and .NET Custom Applications

Document & Content Management tools

- Liferay
- Wordpress

Business Intelligence tools

- Oracle OBIEE

Specific tools for market monitoring and market surveillance

- Commercial tools for financial market monitoring (e.g. SMARTS)

The portfolio of products and technologies which could be used on front end and client side includes:

- Microsoft Windows for desktop from version 7 and above
- Linux for desktop
- MacOS starting from version 10.5
- MS Office (Word, Excel, PowerPoint, Visio, Outlook) and Acrobat
- Internet explorer, Mozilla Firefox, Safari for MacOS, Chrome

C1. Issue, Release and Change management

The Contractor shall manage the source code and shall continuously deliver improvements related to resolving specific issues or to implementing requested changes. Up to three (3) maintenance releases per year may need to be deployed to ensure ARIS is up to date and properly secured. The Contractor has to keep and manage a log of all reported issues and requested changes.

The Contractor shall support the Agency in performing root cause analysis for open issues.

The Contractor shall manage the releases, versioning and deployments of ARIS. This includes scoping, timing, prioritising and rolling-out activities.

C2. Development of new functionalities and improvements

The Contractor shall further develop and extend ARIS by delivering additional functionalities and improvements as requested by the Agency. Up to two (2) functional releases per year may need to be deployed to ensure that ARIS fulfils the defined business requirements.

The following activities related to the life-cycle of the developed software shall be included:

- Business and Technical Analysis of new software platforms and applications
- Design of new software platforms and applications
- Development
- Prototyping
- Configuration
- Technical documentation
- Technical training
- Functional training for end-users

C3. Second level user support

The Contractor shall provide second level end-user support to all users of ARIS, including the Agency staff.

The Contractor shall be able to provide remote support to all stakeholders, including participation in phone calls and meetings. Stakeholders within REMIT implementation framework are:

- National Regulatory Authorities (NRAs);
- Financial Securities Authorities;
- European Securities and Market Authority (ESMA);
- National Competition Authorities;
- Trade repositories;
- Registered Reporting Mechanisms (RRMs);
- Market participants;
- IT and service providers of other IT systems interconnected with the ARIS;
- Other EU institutions and bodies;
- Any other entity, organisation, company or body which could be identified as a stakeholder while performing REMIT tasks (in the EU Member States and potentially in the EEA states).

Remote support services are limited to supporting stakeholders in making their information systems fully functional when interacting with ARIS.

C4. Testing and Validation

The Contractor shall manage all the test environments and shall perform functional and non-functional tests for all ARIS components and modules. The Contractor shall perform the following activities:

- Unit Testing
- Module/Component Functional Testing
- Integration Testing
- Performance Testing
- Supporting End-user Testing with NRAs, RRM
- Supporting Acceptance Testing by the Agency
- Any other functional or non-functional testing

The Contractor shall manage and maintain test plans, test cases, test data and testing methodology/procedures. The Contractor shall use automated testing procedures where appropriate.

D. Project and Service Management of ARIS

D1. Project Planning, Monitoring and Reporting

The Contractor shall manage project plans, schedules, priorities and dependencies, including regular monitoring of the projects and reporting on their status.

D2. Implementation, operation and further development of the ITSM processes, artefacts and workflows (e.g. logs, plans, etc.)

The Contractor shall develop and maintain the relevant ITSM processes according to ITIL best practices. This includes also artefacts (e.g. templates, forms), logs and workflows. All ITIL processes and functions are in scope of this task.

E. Application Management of ARIS

E1. System monitoring and Capacity planning

The Contractor shall actively monitor all the applications and assess their performance. The Contractor shall ensure that the system capacity is properly planned and available when needed. The Contractor shall report to the Agency on the used capacity and specific performance benchmarks on a monthly basis unless agreed otherwise in each specific contract.

E2. Management of User and System Credentials

The Contractor shall manage and maintain user and system accounts, encryption keys, digital certificates and other information related to user and system credentials. This includes activities related to creation, renewal, revocation and removal of any such information. The Contractor shall maintain a log of all user and system accounts, including system administration accounts for managing any HW or SW.

E3. Supporting the Agency staff in activities related to management and evolution of ARIS

The Contractor shall be able to provide full support to the Agency in managing ARIS and its components/modules. This includes also participation in meetings with stakeholders, drafting and reviewing technical and business documentation and provision of Contractor's staff onsite to ensure that the management and evolution of ARIS is properly controlled and the associated risks are minimised.

3. Service Level Requirements

The minimum service level requirements (hereinafter the 'SLR') defined below are mandatory for the Contractor and are applicable to all ARIS components and modules in production and all services provided. Any additional service level requirements shall be set in the specific contract(s).

The minimum service levels requirements which shall apply and shall be binding for each specific contract (indicative, but non exhaustive) are:

- **System availability:** ARIS components and modules in production, operated and maintained by the Contractor will be operational at least 99.95% of the time in each calendar month;
- **Denial of service (DoS):** The Contractor shall respond to the Agency's request for assistance with a Denial of Service (DoS) attack and begin the appropriate diagnostic procedures as soon as reasonably possible and, in any event, in less than one (1) hour from the submission of a report of DoS activity;
- **Outage notification:** The Contractor shall guarantee that it will contact the Agency's technical contact, either by telephone or by email, within one (1) hour after the occurrence of any unavailability affecting the ARIS;
- **Disaster Recovery / Business Continuity:** Recovery Point Objective (RPO) shall be set to 24 hours and Recovery Time Objective (RTO) shall be set to 48 hours for all production REMIT IT System unless agreed otherwise.

- **Service Desk:** Requests are resolved on first iteration in more than 80 % of cases, measured on a quarterly basis. Resolution on first iteration means that no re-opening/re-submission of the request is done by the end-user after the ticket has been resolved.
- **Service Desk:** Requests are resolved on first level (First Level Resolution) in more than 20% of cases, measured on a quarterly basis. Resolution on first level means that no second level support is involved in the resolution process.
- **Testing:** At least 75% of all regression and performance tests shall be automated.
- **Deployments:** SW deployments shall be done within three (3) working days from the date of confirmation/request by the Agency. For critical deployments (e.g. hotfixes, security patches) this time shall be reduced to 24 hours.

3.1 Benchmark cards

With the aim to define a modular and customer-oriented SLA framework the Agency will set a list of benchmarks which will be used during the implementation of a specific contract to continuously monitor that the Contractor, when performing the specific services, is performing at commonly-agreed quality standards.

The Contractor may propose additional benchmarks, prior to the signature of a specific contract. The proposed benchmarks shall be approved in writing by the Agency and should follow the following basic rules:

- cannot override or modify any part of the benchmarks defined by the Agency,
- cannot be expressed in a way that makes the benchmarks defined by the Agency unusable for the purpose of the contract implementation,
- must be supported with a descriptive paper describing the use of the proposed benchmark.

Benchmark S.1 – System availability and uptime	
Service quality indicators	Continuity of operation of the overall managed infrastructure (including hardware and related software, networking components, storage, etc.) and applications
Unit of measure	Minutes
Source of measurement data	Report of the level of the services offered
Observation period	Quarterly
Frequency of measure	Monthly
Data to measure	<ul style="list-style-type: none"> – Actual availability: minutes of the month when there is availability of the system. The system is considered unavailable when the root cause of the unavailability can be put within the scope of the services provided by the Contractor. – Planned unavailability of the system: minutes for the month of unavailability of infrastructure agreed in advance with the Agency – Theoretical availability: minutes of the month
Formula (if any)	Value = (Actual availability) x 100 / (Theoretical availability - Planned unavailability of the system)
Thresholds	Value ≥ 99.5% for each month of the quarter
Contractual actions	In case of non-compliance with the threshold value the Agency shall apply a penalty as specified in the FWC for delayed delivery.
Exceptions	Force majeure adequately documented by the Contractor and accepted by the Agency.

Benchmark O1 - Compliance with timeline for sending the response to the request for services	
Service quality indicators	Compliance with timeline for sending the response to the request for services
Unit of measure	Working days
Source of measurement data	E-mail exchanges between the Agency and the Contractor
Observation period	6 months
Frequency of measure	Every time a new request for services is sent to the Contractor and reply received
Data to measure	- E-mail with the response and a formal offer from the Contractor - Date and time of arrival of the reply to declare willingness to provide an offer
Formula (if any)	$O2 = Date_Received_Offer_Email - Date_Deadline_Submission$
Thresholds	$O2 \leq 0$ in working days
Contractual actions	The Agency will send the request for services to the next Contractor on the list for a period of 12 months following the observation period, excluding the Contractor in question.
Exceptions	No exception

Benchmark O2 - Success or failure to provide the offer for the requested services	
Service quality indicators	Success or failure to provide the requested services
Unit of measure	Percentage
Source of measurement data	Report on the outcome of the offer evaluated by the Agency
Observation period	12 months
Frequency of measure	When every new request for services is sent to the Contractor
Data to measure	Report on the outcome of the offer evaluated by the Agency from a qualitative and quantitative perspective, in line with the Agency request.
Rules for measuring	After 12 months from the start of FWC and every 12 months period following the start of the FWC, per each Contractor who submitted an offer. The Agency shall take into account the evaluation reports and shall count the number of occurrences in which the Contractor has submitted the offer for the services requested and the number of occurrences in which the Contractor failed to submit the offer.
Formula (if any)	$O2 = [positive_outcomes / (positive_outcomes + negative_outcomes)] * 100%$
Thresholds	$O3 > Yes$ in 75% of the total requests
Contractual actions	The Agency will send the request for services to the next Contractor on the list for a time period of 12 months following the observation period, excluding the Contractor in question.
Exceptions	No exception

Benchmark E.1 - Transition-in of the services provided	
Service quality indicators	Successful completion of transition-in activities
Unit of measure	Working days
Source of measurement data	- Transition-in plan; - Completion date for transition-in;
Observation period	Transition-in phase
Frequency of measure	Once per specific contract
Data to measure	- Date of start of the Transition-in activities (<i>Start_Transition-in</i>) - Date of end of Takeover activities (<i>End_Transition-in</i>)
Formula (if any)	$TOTO = End_Transition-in - Start_Transition-in$
Thresholds	$TOTO \leq 3$ months

Contractual actions	<ul style="list-style-type: none"> – The Agency could invoke the right to terminate the specific contract and consider the Contractor unavailable. – The Agency shall apply a penalty as specified in the FWC for delayed delivery.
Exceptions	None
Benchmark E.2 - For timely delivery	
Service quality indicators	For timely delivery of the services under the specific contract
Unit of measure	True or False
Source of measurement data	Specific contract
Observation period	Duration of the specific contract
Frequency of measure	Once, at the end of the specific contract
Data to measure	<ul style="list-style-type: none"> – Estimated date of the Agency's acceptance must be mentioned in the detailed plan accepted by the Agency. – Date of Agency's acceptance.
Formula (if any)	<i>Date of Agency acceptance <= Planned date of Agency acceptance</i>
Thresholds	This measure should not be false
Contractual actions	<ul style="list-style-type: none"> - In case the value is above the threshold, the Agency shall apply a penalty as specified in the framework contract for delayed delivery. - In case this measure is false for 2 consecutive specific contracts the Agency may terminate the specific contract and consider the Contractor unavailable
Exceptions	No exception

Benchmark E.3 - Corrective maintenance development time	
Service quality indicators	Corrective maintenance development time
Unit of measure	Working hours
Source of measurement data	<ul style="list-style-type: none"> – Configuration management system – Issue Log
Observation period	Every corrective maintenance development
Frequency of measure	Measure is conducted on each development cycle
Data to measure	<p>For every agreed maintenance event on existing software:</p> <ul style="list-style-type: none"> – Duration of the development phase to maintain the specific software component estimated by the Contractor with the agreement of the Agency (<i>estimated_maintenance_duration</i>) • Time/Date of the start of the development phase to maintain the specific software component (<i>Start</i>) • Time/Date of the end of the development phase to maintain the specific software component with a positive resolution and proved by tests (<i>End</i>); • Any suspension notified to the Agency and which is not caused by the Contractor's (in)activity.
Formula (if any)	<i>Effective_Duration = estimated_maintenance_duration – (End – Start – Suspension)</i>
Thresholds	<p><i>Effective_Duration >= 0 in 90% of the total number of events in the observation period.</i></p> <p><i>Effective_Duration >= -0,25 x estimated_maintenance_duration for the remaining 10% of events in the observation period.</i></p>
Contractual actions	In case the values exceed one of the two thresholds, the Agency shall apply a penalty as specified in the FWC for delayed delivery.
Exceptions	No exception.

Benchmark E.4 - Compliance of time planned for planned maintenance	
Service quality indicators	Compliance of time planned for planned maintenance
Unit of measure	Working days
Source of measurement data	<ul style="list-style-type: none"> - Configuration management system - Registry of planned maintenance
Observation period	Quarter
Frequency of measure	Measure is conducted on each planned maintenance event, with the exclusion of those for which a work around is proposed and accepted by the Agency.
Data to measure	For every agreed planned maintenance event: <ul style="list-style-type: none"> - Duration of maintenance estimated by the Contractor with the agreement of the Agency (<i>estimated_maintenance_duration</i>) - Time/Date of start of planned maintenance (<i>Start</i>) - Time/Date of end of planned maintenance with a positive resolution (<i>End</i>); - Any suspension notified to the Agency and which is not linked to the Contractor's activity.
Formula (if any)	$Effective_Duration = estimated_maintenance_duration - (End - Start - Suspension)$
Thresholds	$Effective_Duration \geq 0$ in 95% of the total number of events in the observation period. $Effective_Duration \geq -0,25 \times estimated_maintenance_duration$ for the remaining 5% of events in the observation period.
Contractual actions	In case the values exceed one of the two thresholds the Agency shall apply a penalty as specified in the FWC for delayed delivery.
Exceptions	No exception.

Benchmark E.5 - Mean of time to close a defect (MTTCD)	
Service quality indicators	Mean of time to close a defect
Unit of measure	Hours
Source of measurement data	<ul style="list-style-type: none"> - Issue log related to a specific release - Configuration management system
Observation period	Quarter
Frequency of measure	Measured in case of a sever event which prevents several users and/or groups of users to interact with the system
Data to measure	<ul style="list-style-type: none"> - Start of resolution process: date and time of the first call to the service desk reporting the defect (<i>start</i>) - End of resolution process: date and time or release of the solution, in this case a workaround is acceptable if approved by the Agency and which involves the opening of planned maintenance (<i>end</i>) - Any suspension agreed between the parties (<i>suspension</i>)
Formula (if any)	$MTTCD = End - Start - Suspension$ Round to 30 minutes
Service quality indicators	MTTCD < 1 working day
Unit of measure	In case the values exceed the threshold, the Agency shall apply a penalty as specified in the FWC for delayed delivery
Source of measurement data	None
Exceptions	Shall not apply to planned activities.

4. Types of projects

Under the FWC three (3) different types of orders could be placed, depending on a type of a project, namely:

- Fixed price projects,
- Time-and-means projects,
- Quoted Time-and-means projects.

The type of the order shall be clearly indicated in the request for services the Agency sends to the Contractor. Detailed descriptions of the types of orders are defined below.

4.1 Fixed price projects

Services shall be provided at a fixed price as stipulated in a specific contract. The overall value of a project shall be based on the prices for man-days as listed in the FWC and on any additional cost clearly indicated in the offer and explained. The payments shall be made on the basis of the Agency's written acceptance of the work.

The work shall be carried out by the Contractor in accordance with the specifications set out in the specific contract and its annexes. This shall include a description of the work, the timetable, reports, standards, reference manuals and details of the results and deliverables required.

4.2 Time-and-Means projects

Services shall be provided on a time-and-means basis as stipulated in a specific contract. The overall value of a project shall be based on a specified daily sum to be paid for a given number of man-days to perform the services. The typical example of such a project is on-site full time service provision by the Contractor's dedicated staff. The specific contract shall state the purpose of the provision of the services, i.e. an obligation for the Contractor to achieve a specific result.

The Contractor shall, at the request of the Agency, supply all the necessary personal information regarding its staff providing the services.

The days worked (either on-site or off-site) shall be recorded by the Contractor and/or its staff in the manner defined by the Agency. At the end of each month, the Contractor and/or its staff shall complete and sign the attendance sheet which shall be verified by the Agency.

4.3 Quoted Time-and-Means projects

The request for services shall indicate the maximum number of days needed for the full provision of the requested services and shall be divided into various sub-tasks.

The typical example of such a project is off-site provision of service (e.g. development) with clearly defined deliverables and timelines.

In the request for services, the Agency shall provide the Contractor with a detailed description of each sub-task. The Contractor shall in its response to such a request for service submit an offer which shall include an estimate of the number of days needed to carry out the sub-task and the expected delivery date(s).

The payment, approved by the Agency, will be carried out on the basis of each sub-task fully delivered, supported by "quoted time-and-means" certificate of conformity, and accepted by the Agency in writing.

5. Professional Profiles

The Contractor shall be able to provide a qualified team of experts covering the profiles listed below for the delivery of services under each specific contract for the entire duration of the FWC. The Contractor, as part of the offer for each specific contract, shall provide full details on the experts, including the CVs for each proposed expert. Each CV¹ shall show clearly the qualifications, professional experience and knowledge and skills as specified below for the relevant profile and shall indicate clearly the type of level profile(s) assigned to the respective expert.

Each expert may be associated to a maximum of four (4) different professional profiles (levels A, B or C).

For each specific contract each proposed expert may be assigned to a maximum of four (4) types of services as defined in Section 2 (A, B1-B3, C1-C4, D1, D2, and E1-E3) of these technical specifications.

For each specific contract the Contractor shall provide a clear mapping of each expert, indicating level profile and type of service, as well as specifying the main responsible person for each service.

5.1 A-level profiles

- Project Manager (PM)
- IT Infrastructure Architect (IA)
- Lead System Developer (LSD)
- Service Manager (SM)
- System Test Manager (STM)
- Business Analyst (BA)

Project Manager (PM)	
Minimum education	University degree in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> - At least seven (7) years' professional experience in IT covering a similar position of Project Manager for at least five (5) years; the professional experiences had to be gained after obtaining the required qualification; - Must have successfully completed the project management for at least two (2) international IT projects.
Minimum knowledge and skills	<ul style="list-style-type: none"> - In-depth knowledge of project management frameworks (e.g. PRINCE2 and/or PMBOK or equivalent certifications) - Knowledge of project management tools (e.g. MS Project, Microsoft Excel); - Excellent knowledge of English language (level C2 according to the Common European Framework of Reference for Languages (CEFR)²).
Tasks	<ul style="list-style-type: none"> - Manage project development; - Define project scope, goals and deliverables that support business goals in collaboration with senior management and stakeholders; - Communicate the project scopes, goals and deliverable to the implementation team; - Develop full-scale project plans and associated communications documents; - Effectively communicate project expectations to team members and stakeholders in a timely and clear fashion; - Liaise with project stakeholders on an on-going basis; - Estimate the resources and participants needed to achieve project goals;

¹ Preferably, in accordance with the European CV format:

<http://europass.cedefop.europa.eu/en/documents/curriculum-vitae/templates-instructions>

²<http://europass.cedefop.europa.eu/resources/european-language-levels-cefr>

	<ul style="list-style-type: none"> – Draft and submit budget proposals, and recommend subsequent budget changes where necessary; – Determine and assess the need for additional staff and/or consultants and make the appropriate recruitments if necessary during project cycle. – Set and continually manage project expectations with team members and other stakeholders; – Identify and manage project dependencies and critical paths; – Track project milestones and deliverables; – Develop and deliver progress reports, proposals, requirements documentation and presentations; – Proactively manage changes in project scope, identify potential issues, and devise contingency plans; – Coach, mentor, motivate and supervise project team members and contractors, and influence them to take positive action and accountability for their assigned work; – Build, develop and grow any business relationships vital to the success of the project; – Identify and communicate project risks in due time; – Check project implementation and assure delivery in time; – Act as interface between the Agency and the implementation team; – Draft executive and medium level project documents; – Lead and coordinate any relationship and needed cooperation with other Agency's contractors.
--	---

IT Infrastructure Architect (IA)	
Minimum education	University degree in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least seven (7) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in Data Centre design, relocation and transformation projects, – At least three (3) years' professional experience in current infrastructure technologies and with major IT companies (e.g. Oracle, Sun, Microsoft, IBM, HDS, RedHat, and VMware, EMC, Cisco, HP). – At least three (3) years' professional experience in network systems design, implementation and management. – At least three (3) years' professional experience in virtualisation technologies and best practices – At least three (3) years' professional experience in designing large highly available resilient IT systems.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Understanding of infrastructure technologies and solutions. – Knowledge of IT governance and operations. – Knowledge of hardware, software, application and systems engineering. – Analysis skills using analysis methodologies. – Ability to interact with stakeholders, by means of facilitating scoping workshops, in order to drive out requirements. – Knowledge of tools and techniques used to capture and prioritise requirements in order to produce designs that deliver business value. – Excellent knowledge of English language (level C2 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Decide and develop implementation plan for infrastructure architecture on the basis of IT strategies and technical and business requirements. – Enforce infrastructure architecture execution as well as on-going refinement tasks. – Consult project teams to fit infrastructure architecture assignments and identify needs to modify infrastructure architecture to attain project requirements. – Identify needs to change technical architecture to incorporate infrastructure needs. – Ensure documentation of entire architecture design.

Lead System Developer (LSD)	
Minimum education	University degree in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least seven (7) years' professional experience in IT covering a similar position of Lead System Developer for at least five (5) years in the same software development framework; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in quality assurance procedures (e.g. quality control, continuous quality improvement). – At least three (3) years' professional experience in one or more of the software development frameworks
Minimum knowledge and skills	<ul style="list-style-type: none"> – In-depth knowledge of configuration management and system integration methodologies; – Excellent knowledge of English language (level C2 according to CEFRL)
Tasks	<ul style="list-style-type: none"> – Manage technical project development from the beginning to the end; – Prepare clear and concise instructions for the development team about standards for writing codes in the frame of the project and about usage of objects; – Suggest and select the most appropriate technologies in line with the Agency's principles for the specific platforms; – Leadership in the technical role linked to her/his past experience and decide on the most appropriate technical solutions. – Select the most appropriate development platforms and technologies; – Be responsible for proper capacity and performance planning; – Bridge with technical analysts to fix all the issues not taken into consideration during the technical analysis phase and which could appear in the application integration phase; – Lead the application integration phase – Coordinate the overall software lifecycle process – Act as a third-level support for critical incidents, issues and problems – Provide the necessary support regarding testing and validation

Service Manager (SM)	
Minimum education	University degree in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least seven (7) years' professional experience in IT covering a similar position of Service Manager for at least five (5) years; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in development and optimisation of ITSM processes.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of IT Service Management (ITIL) and Governance (COBIT) frameworks – Knowledge of best practices and IT tools used for efficient ITSM. – Excellent knowledge of English language (level C2 according to CEFRL)
Tasks	<ul style="list-style-type: none"> – Manage the ITSM processes and ensure they are properly followed – Act as a Service Desk Manager responsible for the performance of the Central Service Desk – Further develop, improve and optimise the implemented ITSM processes – Propose, design and implement new ITSM processes – Coordinate the overall Service Management Framework to ensure proper alignment and harmonisation of all the processes – Management of all ITSM documentation and artefacts (e.g. logs, templates, etc.) – Assess, provide, support and improve the necessary IT tools to support ITSM.

System Test Manager (STM)	
Minimum education	University degree in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least seven (7) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in system testing in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of software testing methodologies and best practices, including test automation; – Knowledge of software development methodologies, frameworks and best practices – Excellent knowledge of English language (at least level C1 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Develop technical guidelines which must be followed by the development team in the development phase in order to simply and optimise the testing process; – Work with the software developers, technical analysts, data base architect and system administrator to ensure the final product is what the Agency needs; – Test the software and validate that it is free from inaccuracies and operating problems and fully compliant with the technical requirements; – Perform validation and verification of business and technical requirements; – Prioritize and schedule features and changes to the software as requested by the Agency in order to ensure there is no degradation in the overall quality of the delivered solutions; – Research and keep current with software and systems designs; – Ensure that the test strategies, test plans and test reports are properly prepared, executed and followed-up. – Ensure quality control for all software developed by designing, planning, supervising and assessing system testing, taking into account feedback from the Agency and external stakeholders.

Business Analyst (BA)	
Minimum education	University degree preferably in the field of Economics with focus on Financial or Energy Markets. Alternatively, university degree in the field of Mathematics, Engineering, Computer Science, Computer Engineering or similar.
Minimum experience	<ul style="list-style-type: none"> – At least seven (7) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in the analysis of business processes in the field of wholesale energy market or in the field of financial markets or in the field of market monitoring and surveillance or similar.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of Rational Unified Process or Agile programming processes and methodologies; – Knowledge of market monitoring matters or knowledge of working methods in the world of financial markets, or functional knowledge of the wholesale energy market or similar; – Knowledge of at least a UML design tool, preferably IBM Rational suite. – Excellent knowledge of English language (at least level C1 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Gather and assess the business requirements and prioritise their implementation; – Interact with the Agency (in particular with business experts) to gather functional and where applicable, technical requirements. – Suggest alternative approaches to better comply with the user needs. – Formalize gathered requirements in detailed specifications according to best practices and standards (e.g. UML diagrams, etc.) – Follow-up the implementation of the requirements and prioritize them in co-ordination with the project manager, based on business needs and experience. – Support the testing process when needed.

5.2 B-level profiles

- Infrastructure Engineer (IE)
- System Administrator (SA)
- Database Expert (DBE)

Infrastructure Engineer (IE)	
Minimum education	Post-secondary education of total duration at least two (2) years in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least five (5) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in storage (SAN and NAS) and network administration. – At least three (3) years' professional experience in working on multiple vendor platforms including but not limited to Oracle, Sun, Microsoft, IBM, HDS, RedHat, and VMware, EMC, Cisco and HP – At least one (1) valid certification for each of the following: storage, network and virtualisation management. – At least three (3) years of professional experience in designing and operating complex virtual infrastructure solutions in a mid-to-large scale data centre environment.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of storage clustering, virtualisation, SAN and networking functionality. – Ability to monitor system performance and utilization. – Ability to create documentation based on functions and tasks performed. – Knowledge of network system engineering methods, configuration and management of networking components and various networking services. – Knowledge of network operations. – Good leadership skills and the ability to guide and provide technical direction and supervision for a given project. – Knowledge of server and desktop virtualisation technologies. – Understanding of storage, network and hardware technologies. – Ability to proactively address any issues involving end-users (e.g. diagnosis, root cause analysis, troubleshooting). – Excellent knowledge of English language (at least level C1 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Ensure full performance and capacity of the storage – Provide input to coordinate storage space increases and new system integrations. – Perform routine system updates and maintenance of storage – Design, plan, implement, monitor and administer LANs and WANs networks. – Responsible for communication protocols, configuration, integration and security. – Responsible for network evaluations, troubleshooting a variety of network problems and implementing various software and hardware upgrades. – Investigate, diagnose and resolve all network problems. – Plan and implement the virtualisation infrastructure. – Administer virtualisation clusters, including managing updates, deploying high-availability, load-balanced systems, monitoring of the infrastructure. – Design, plan, implement, monitor and administer all server infrastructure and operating systems according to best practices. – Prepare, maintain and update all the system documentation (e.g. inventory, configuration, etc.). – Report regularly on system status.

System Administrator (SA)	
Minimum education	Post-secondary education of total duration at least two (2) years in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least five (5) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' professional experience in system administration in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of system administration, in particular installation and maintenance of the most common Linux/UNIX and windows operating systems; – Knowledge of application servers; – Knowledge of Data Bases; – Scripting languages to automate system administration; – Excellent knowledge of English language (at least level C1 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Installation, configuration and tuning of basic operating systems; – Installation, configuration and tuning of basic database software; – Installation, configuration and tuning of the application and web servers; – Installation, configuration and tuning of third party software; – Document the overall installation and system maintenance process; – Maintain compliance with applicable standards and policies; – Implement localization or globalization of software. – Monitor and report on overall system status and performance – Support incident and issue investigations.

Database Expert (DBE)	
Minimum education	Post-secondary education of total duration at least 2 years in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar
Minimum experience	<ul style="list-style-type: none"> – At least five (5) years' professional experience in the relevant field as specified above; the professional experiences had to be gained after obtaining the required qualification. – At least three (3) years' experience in the role of DB Architect or DB Administrator in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of at least Oracle and Microsoft SQL DBMS, including PL/SQL and T-SQL. – Knowledge of maintaining, developing and troubleshooting DB architecture. – Excellent knowledge of English language (at least level C1 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Describe and implement the database design based on the inputs of the technical analysis; – Act as a database architect and administrator; – Perform installation and capacity planning of Data Base Software on test, stage and production environments; – Establish and maintain a backup and recovery strategy for the databases; – Suggest security strategy to comply with functional requirements in accordance with the specific Data Base and infrastructural limitations; – Performance optimisations and tuning of the system; – Daily activities related to Database Administration (e.g. regular maintenance activities, monitoring, backup, issue resolution, etc.)

5.3 C-level profiles

- Deployment and Maintenance Expert (DME)
- Software Developer (SD)
- Service Desk Agent (SDA)
- Tester (TST)
- Service & Operations Support (SOS)

Deployment and Maintenance Expert (DME)	
Minimum education	Post-secondary education of total duration at least two (2) years in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar OR related secondary education attested by a diploma giving access to post-secondary education and appropriate professional experience of three (3) years.
Minimum experience	<ul style="list-style-type: none"> – At least three (3) years' professional experience in the relevant field as specified above (and at least five (5) years' experience in case of secondary education); the professional experiences had to be gained after obtaining the required qualification. – At least two (2) years' experience in deploying and maintaining Linux, Oracle, Microsoft products/solutions and Java applications in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Good knowledge of deployment phases in the specific surrounding technical environment; – Knowledge of scripting languages to automate deployment phase; – Good knowledge of English language (at least level B2 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Responsible for Software Deployment in test, stage and production environments; – Ensure that appropriate versions of Operating System, Application Server, Data Base are in place before the software deployment; – Responsible to manage software lifecycle management (releases, versions, etc.); – Coordinate any possible issue related to the resolution of performance problems during the execution of the project; – Document all the deployment phases and all the pre-requisites needed to deploy the platforms and applications. – Actively participate in investigation and resolution of issues and problems

Software Developer (SD)	
Minimum education	Post-secondary education of total duration at least two (2) in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar OR related secondary education attested by a diploma giving access to post-secondary education and appropriate professional experience of three (3) years.
Minimum experience	<ul style="list-style-type: none"> – At least three (3) years' professional experience in the relevant field as specified above (and at least five (5) years' experience in case of secondary education); the professional experiences had to be gained after obtaining the required qualification. – At least two (2) years' professional experience in Java software development of medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of Integrated Development Environments (IDE) (Eclipse, NetBeans, JDeveloper, Visual Studio or similar); – Good knowledge of English language (at least level B2 according to CEFRL) to be able to understand the requirements and prepare the relevant documentation.
Tasks	<ul style="list-style-type: none"> – Design, code and debug applications – Front end graphical user interface design using Web Interfaces – Unit test of developed components; – Performance tuning, improvement, balancing, usability, automation; – Document software functionality; – Integrate developed components with pre-existing components; – Integrate third-party software with pre-existing components – Evaluate and identify new technologies for implementation; – Maintain compliance with standards and best practices; – Implement localization or globalization of software.

Service Desk Agent (SDA)	
Minimum education	Post-secondary education of total duration at least two (2) in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar OR related secondary education attested by a diploma giving access to post-secondary education and appropriate professional experience of three (3) years.
Minimum experience	<ul style="list-style-type: none"> – At least three (3) years' professional experience in the relevant field as specified above (and at least five (5) years' experience in case of secondary education); the professional experiences had to be gained after obtaining the required qualification. – At least two (2) years' professional experience with end-user support in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – In-depth knowledge of most common service desk tools used; – In-depth knowledge of best practices and standards related to efficient end-user support; – Excellent knowledge of English language (level C2 according to CEFRL)
Tasks	<ul style="list-style-type: none"> – Execute the activities related to operations of the Central Service Desk. – Coordinate, escalate and monitor the resolution of incidents or implementation of changes. – Directly support users by providing specific information necessary to diagnose the problem and work around it. – Perform the activities according to agreed standard operating procedures. – Manage the service desk tools, including integration with other contractors.

Tester (TST)	
Minimum education	Post-secondary education of total duration at least two (2) in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar OR related secondary education attested by a diploma giving access to post-secondary education and appropriate professional experience of three (3) years.
Minimum experience	<ul style="list-style-type: none"> – At least three (3) years' professional experience in the relevant field as specified above (and at least five (5) years' experience in case of secondary education); the professional experiences had to be gained after obtaining the required qualification. – At least two (2) years' professional experience with system testing in medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – Knowledge of scripting languages to automate test phase; – Good knowledge of English language (at least level B2 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Execution of tests and validation of software functionality. – Preparation of test cases and test data. – Implementation, configuration and maintenance of tools for automated testing. – Setup, configuration and maintenance of test environments.

Service & Operations Support (SOS)	
Minimum education	Post-secondary education of total duration at least two (2) in the field of Computer Science, Computer Engineering, Engineering, Mathematics or similar OR related secondary education attested by a diploma giving access to post-secondary education and appropriate professional experience of three (3) years.
Minimum experience	<ul style="list-style-type: none"> – At least three (3) years' professional experience in the relevant field as specified above (and at least five (5) years' experience in case of secondary education); the professional experiences had to be gained after obtaining the required qualification. – At least two (2) years' professional experience with supporting implementation and operation of medium-large projects in environments with similar software and hardware infrastructure as in these tender specifications.
Minimum knowledge and skills	<ul style="list-style-type: none"> – General knowledge of IT domain; – Good knowledge of English language (at least level B2 according to CEFRL).
Tasks	<ul style="list-style-type: none"> – Supporting any activities related to the execution of the tasks under this tender – Supporting the Agency in performing its activities related to REMIT IT tasks