

## Technical Specifications (In-Cash Procurement)

# Technical Summary for CODAC Operation Application Engineering Services

This document is the technical specification summary for Technical Support for the ITER Controls Division. It defines the scope of the support, services to be provided and the main requirements for those services. The document describes the technical and managerial scope linked to a Framework Service Contract (FWC) to be awarded to a Contractor selected through a competitive process. Task orders within the framework contract will be freestanding technical support activities. Finally, this ...

## TECHNICAL SUMMARY

### Call for Tender

## CODAC Operation Application Engineering Services

### **Purpose**

The document describes the technical and managerial scope linked to a Framework Service Contract or Contracts (FWC) to be awarded to a Contractor (or Contractors) selected through a competitive process. The objective of this Call for Tender is to select qualified companies or consortia with extensive experience in the required fields of work for the provision of Technical Support for the ITER Controls Division. Finally, this document provides the main technical requirements necessary for potential Candidates to understand if they have the overall technical and professional capacity in relation to the technical scope of the Contract.

### **Background**

The ITER Controls Division is responsible for receiving and inspecting, testing, commissioning and operating a very large instrumentation and control (I&C) hardware and software infrastructure for manual and automated control and monitoring of all ITER plants and subsystems, including those for conventional facilities, investment protection (interlocks), access control and safety.

### **Scope of work**

The contract awarded will establish the framework conditions for the performance of the services that will be structured in individual task orders. The services to be requested in the task orders will cover application software technician level activities for the implementation of ITER Operation Applications.

CODAC provides overall plant system coordination, supervision, plant status monitoring, alarm handling, data archiving, plant visualization and remote experiment functions. In this context, the operation applications are those components of the ITER CODAC system that fulfil a function that is exclusive to the ITER facility. The contract covers plant system integrated commissioning and initial operation as well.

The services requested herein can be broken down into two different lots as follow:

- Lot 1. Software development services for the supervision (SUP) and pulse schedule preparation system (PSPS), including detailed design, development and maintenance of supporting software for monitoring, supervision, sequencing, automation, operational schedule preparation, verification, storage and retrieval, running in the CODAC Core System environment.
- Lot 2. Software development services for plasma control system (PCS) covering the detailed production design, implementation and maintenance of real-time plasma feedback control software interfacing to the CODAC Core System environment.

Candidates are free to apply for one or both lots. The correspondent Framework Contract(s) awarded will include the scope of the lot(s) and will be implemented by the means of Task Orders in order to execute the specific services.

The work location is the ITER Organization construction site and the office spaces around it located in Cadarache, France.

The Contractor shall be able to provide personnel to be located permanently and in daily basis on the ITER site during the duration of the Contract.

**Contract schedule**

The Contract is scheduled to come into force in February of 2022 for a duration up to five (5) years (3 years fix and two (2) optional).

**Procurement timetable**

The tentative timetable is as follows:

|   |                |
|---|----------------|
| Call for Nomination Release               | May 2021       |
| Issuance of Pre-qualification Application | July 2021      |
| Issuance of Call for Tender               | September 2021 |
| Estimated Contract Award Date:            | January 2022   |
| Estimated Contract Start Date:            | February 2022  |

**Experience**

The candidate’s experience shall cover a broad range of capabilities to support all activities in I&C application design, implementation, testing and maintenance, including signal interfaces after deployment, commissioning and early operation, and software configuration control and maintaining the component lifecycle. The Contractor’s team and their staffs shall be capable to supervise and maintain the usability of the operation application.

They shall be capable to manage integration and proper handling of complex software components in a highly distributed system environment.

The required competences for both Lot 1 and Lot 2 in common are:

1. Expert level knowledge of computer programming language, e.g. C/C++, Python, Java, etc., and experience in application introspection and debugging;
2. Experience in instrumentation and control system implementation and integration on existing computing system infrastructure that is Linux-based;
3. Experience in networked-based distributed system environment and coordination for integrated operation;
4. Experience in designing, configuring and programming of HMI based on customers’ requirements;
5. In-depth knowledge of concurrency, synchronization primitives and thread safety;
6. Experience in testing and commissioning large scale distributed software systems;

7. Experience in high integrity software development and quality assurance process are an asset;
8. Experience in development using the CODAC infrastructure libraries is an asset;
9. Experience in using MS Office to produce User's guides and test reports;
10. Ability to communicate in spoken and written English in an international work place;

Specifics for Lot.1 SUP/PSPS development service are:

11. Experience in designing and implementing dynamic web content and web server applications, and graphical use interface;
12. Familiarity with information security is an asset (authentication, block chains, etc.).

Specifics for Lot.2 PCS development service are:

13. Experience in performance-oriented multi-core real-time control application software development;
14. Experience in scientific data processing and analysis in sets of inputs and outputs;
15. Experience in understanding code generation from Matlab/Simulink models and control algorithms;
16. Experience in using an oscilloscope, signal generator and other laboratory equipment is an asset.

### **Quality Assurance Requirements**

The organization conducting these activities should have an ITER approved QA Program or an ISO 9001 accredited quality system.

The general requirements are addressed in ITER Procurement Quality Requirements (ITER\_D\_22MFG4).

### **Candidature**

Participation is open to all legal persons participating either individually or in a grouping (consortium). All legal persons including all consortium members should be established in an ITER Member State that are:

- European Union including Switzerland and UK (EURATOM Members),
- Republic of India,
- Japan,
- People's Republic of China,
- Republic of Korea,
- Russian Federation, or
- United States of America.

A legal person cannot participate individually, as a consortium partner or as subcontractor in more than one application or tender. A consortium may be a permanent, legally established grouping or a grouping that has been constituted informally for a specific tender procedure.

All members of a consortium (i.e. the leader and all other members) are jointly and severally liable to the ITER Organization.

The consortium groupings shall be presented at the pre-qualification stage. The tenderer's composition cannot be modified without the approval of the ITER Organization after the pre-qualification.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities.

More information on ITER Organization Procurement process can be found at:

<https://www.iter.org/proc/generalinfo>