SUMMARY

Call For Nomination IO/CFN/12/70000038/JTR
Framework Service contract for CODAC Operation Applications Engineering Services

Purpose

CODAC is the integrated and distributed Control, Data Access and Communication system responsible for operating the ITER device. The main purpose of CODAC is to provide a fully integrated and automated system. CODAC is based on a software infrastructure and toolkit, called CODAC Core System, deployed on all CODAC computers. To facilitate integrated and automated operation of the ITER device a software suite, called CODAC Operation Applications, is deployed on top of the CODAC Core System on a set of dedicated central servers and high performance computers. This software suite implements integrated supervision, orchestration, automation, scheduling, monitoring, data handling, remote participation and other functions.

The purpose of the requested services is to assist the CODAC section and its contractors in developing the CODAC Operation Applications by providing assistance for the development, maintenance and user support of the CODAC Core System.

Background

ITER will be constructed from a large number of components or “plant systems”, which will be delivered complete or in parts by the participating countries as “in kind” contributions, in compliance with contractual agreements, called Procurement Arrangement (PA), with the ITER Organization. These components will be assembled at the ITER site in Cadarache. Each of these components will be delivered with its own local control system and all of these must be integrated in the central CODAC system. To achieve this integration the Control System Division has developed a set of standards, called Plant Control Design Handbook (PCDH), and publically available at http://www.iter.org/org/team/chd/cid/codac/plantcontrolhandbook.

To support these standards and ensure integration, the CODAC section is producing the software infrastructure and toolkit, called CODAC Core System (http://www.iter.org/org/team/chd/cid/codac/coresystem). This software toolkit has to be used in the development and testing of local control systems by the ITER member states.

On top of that the CODAC section is responsible for developing the high level applications, called CODAC Operation Application, required for integrated operation.
Scope of work

The scope of the work covers the services to supply suitable and experienced personnel to contribute to the development of CODAC Operation Applications. The services requested herein can be categorized as follow:

- **Software development services for supervisor, scheduler and remote participation** covering the detailed design, development and maintenance of monitoring, supervision, sequencing, automation, operation schedule preparation, validation storage and remote participation support software running in the CODAC Core System environment.

- **Software development services for plasma control system** covering the detailed design, development and maintenance of real-time plasma feedback control software interfacing to the CODAC Core System environment.

- **Software development services for data handling** covering the detailed design, development and maintenance of data streaming, data archiving, data storage and data access software running in or interfacing to the CODAC Core System environment.

At least one staff shall be on site permanently to liaise between ITER Organization Responsible Officer and Contractor’s team. However, a larger on site-team is considered as an advantage

Duration of services

The Contract is scheduled to come into force in first quarter of 2013 for a duration of five (5) years. Due to the multiplicity of profiles required, the ITER Organization reserves the right to award this contract to more than one supplier.

Procurement Time table

A tentative time table is outlined as follows:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for Nomination release</td>
<td>4th July 2012</td>
</tr>
<tr>
<td>Receipt of nominations</td>
<td>3rd Aug 2012</td>
</tr>
<tr>
<td>Issuance of Pre-Qualification Questionnaire</td>
<td>8th Aug 2012</td>
</tr>
<tr>
<td>Clarification questions related to the PQQ (if any)</td>
<td>21st Aug 2012</td>
</tr>
<tr>
<td>Response to Questions from ITER Organization</td>
<td>29th Aug 2012</td>
</tr>
<tr>
<td>Receipt of Prequalification Application</td>
<td>7th Sept 2012</td>
</tr>
<tr>
<td>Notification of Prequalification results</td>
<td>14th Sept 2012</td>
</tr>
<tr>
<td>Issuance of Call for Tender</td>
<td>24th Sept 2012</td>
</tr>
<tr>
<td>Clarification questions related to this Call for Tender</td>
<td>3rd Oct 2012</td>
</tr>
<tr>
<td>Response to Questions from ITER Organization</td>
<td>12th Oct 2012</td>
</tr>
<tr>
<td>Tender Proposals Due Date</td>
<td>30th Oct 2012</td>
</tr>
<tr>
<td>Tender Evaluation &amp; Notification of results</td>
<td>Nov 2012</td>
</tr>
<tr>
<td>Estimated Contract Award Date</td>
<td>Nov 2012</td>
</tr>
<tr>
<td>Estimated Contract Start Date</td>
<td>January 2013</td>
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</tbody>
</table>
Experience

The acceptance criteria for the selection of the tender cover a broad range as listed below.

- Experience in Linux operating system and C, C++, Python and Java programming languages
- Knowledge of software quality process, ISO/IEC 12207-2008 in particular, and experience in software quality assurance (life cycle, documentation, configuration control, versioning, testing, etc.)
- Experience in participating to a large and distributed software project involving industry and research labs
- Ability to work together with ITER team and other related Contractors
- Ability to work within the multi-cultural environment of the ITER project
- Ability to provide at least one (more are better) staff permanently at IO site.
- Complete command (oral, writing, reading) of English

- Experience in developing complex software for large and distributed systems
- Experience in system integration
- Experience in using the Eclipse RCP platform
- Experience in database technologies
- Experience in using web services development and in building web user interfaces
- Experience in XML technologies
- Knowledge of EPICS would be an advantage

- Experience in real-time environments
- Experience in distributed real-time feedback loops
- Experience in some flavour of real-time Linux
- Experience in communication software based on the TCP/IP protocol stack
- Experience in control design tools such as MATLAB/SIMULINK

- Experience in developing complex and efficient software in C, Python and Java
- Experience in writing and tuning C applications for storage applications and parallel programming
- Experience in writing Python code (knowledge of Numpy and PyTable would be an advantage)
- Experience in database (relational and NoSQL) and file system technologies.
- Experience in tuning parallel file system would be an advantage.
- Experience in high throughput data communication and streaming technologies
- Experience in HDF-5 or similar technologies
- Experience in XML technologies

The CV’s of the persons, who will be later involved in the execution of the task orders, shall be provided by the tenderer.
Candidature

Participation is open to all legal persons participating either individually or in a grouping (consortium) which is established in an ITER Member State. A legal person cannot participate individually or as a consortium partner in more than one application or tender. A consortium may be a permanent, legally-established grouping or a grouping, which 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 cannot be modified later without the approval of the ITER Organization.

Legal entities belonging to the same legal grouping are allowed to participate separately if they are able to demonstrate independent technical and financial capacities. Bidders’ (individual or consortium) must comply with the selection criteria. IO reserves the right to disregard duplicated references and may exclude such legal entities form the tender procedure.

Reference

Further information on the ITER Organization procurement can be found at:

HTTP://WWW.ITER.ORG/ORG/TEAM/ADM/PROC/PAGES/WELCOME