Job Title: Software Developer IO1104

The ITER Organization brings together people from all over the world to be part of a thrilling human adventure in southern France—building the ITER Tokamak. We require the best people in every domain.

We offer challenging full-time assignments in a wide range of areas and encourage applications from candidates with all levels of experience, from recent graduates to experienced professionals. Applications from under-represented ITER Members and from female candidates are strongly encouraged as the ITER Organization supports diversity and gender equality in the workplace.

Our working environment is truly multi-cultural, with 29 different nationalities represented among staff. The ITER Organization Code of Conduct gives guidance in matters of professional ethics to all staff and serves as a reference for the public with regards to the standards of conduct that third parties are entitled to expect when dealing with the ITER Organization.

The south of France is blessed with a very privileged living environment and a mild and sunny climate. The ITER Project is based in Saint Paul-lez-Durance, located between the southern Alps and the Mediterranean Sea—an area offering every conceivable sporting, leisure, and cultural opportunity.

To see why ITER is a great place to work, please look at this video

Application deadline: 24/07/2022
Domain: Science & Operation Domain
Department: Science, Controls & Operation Department
Division: Controls Division
Section: Data, Connectivity and Software Section
Group: Not applicable
Job Family: Engineering
Job Role: Coordinating Technician
Job Grade: G5
Language requirements: Fluent in English (written & spoken)
Contract duration: Up to 5 years
Purpose

As a Software developer, you will design and develop operator interfaces for Tokamak operation compliant with ITER Human Factor requirements. You will maintain the Human Machine Interface (HMI) templates and standardize resources for the application software and framework software. You will also develop ITER plugins for selected web-applications for supporting Tokamak operation, in addition to supporting users on the development and usage of the operation tools in the control room.

Background:

The ITER CODAC is the integrated control, data access and communication system to control and operate ITER facilities, and interfaces with ~170 Plant Systems that compose the ITER machine. The CODAC has continuously developed two software suites in accordance with purposes and released in regular intervals.

i. CODAC Core System (CCS) is a software tool kit for plant control system developments. It is based on Linux and Experimental Physics and Industrial Control System (EPICS) and includes configuration tools, communication middleware, device drivers and human-machine interface tools.

ii. CODAC Operation Application System is another software suite for operation of ITER Tokamak and execution of plasma experiments. It includes real-time framework for feedback control, plasma control system, supervision & automation system, pulse scheduling system, data handling system and remote participation system.

Key Duties, Scope, and Level of Accountability

- Designs and develops operator interfaces for operation compliant with ITER Human Factors requirements;
- Provides regular and adaptive maintenance of Human Machine Interface (HMI) templates and standardized resources – fonts, colors, graphical widget properties, industrial symbols library according to operation requirements;
- Designs and implements alarms for operation;
- Designs and develops monitoring and reporting tools to assess the systems in operation;
- Liaises and provides supports to users on the development and usage of the operator interface in the control room;
- Communicates with stakeholders in order to identify necessary features to apply into the operator interface up to the operation phase;
- Develops ITER plugins for selected web-applications for supporting tokamak operation;
- Improves the performance and robustness of the applications;
- Produces the commissioning plans for validating operator interfaces and takes the responsibility for executing those plans;
- Takes a role in preparing, configuring and deploying the software required for ITER integrated commissioning and operation;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- May be required to work outside ITER Organization reference working hours, including nights, week-ends and public holidays.

Measure of Effectiveness

- Delivers planned releases of operator interfaces for operation compliant with ITER Human Factors requirements and quality audits as per requirements and on time;
- Efficiently provides robust procedures, standards, solutions and guidance during integration, commissioning, operation and maintenance activities;
- Maintains operational software with a high degree of availability;
- Communicates well and maintains high professional standards when interfacing with internal and external stakeholders;
- Maintains up-to-date documentation related to software components.

Experience & Profile

- ***Professional Experience:***
  - Minimum 7 years' experience in the full lifecycle, from design, development to implementation of Operator Interface software components involved in a large scientific research facility, within complex international environments or projects.
- ***Education:***
  - Bachelor degree or equivalent in computer science, electronics field or other relevant discipline;
  - The required education degree may be substituted by extensive professional experience involving similar work responsibilities and/or additional training certificates in relevant domains.
- ***Language requirements:***
  - Fluent in English (written and spoken).
- ***Technical competencies and demonstrated experience in:***
  - Specialized Domain of Expertise (Software Architecture): Writing clean, maintainable and easily adaptable software, including methodology, object-oriented programming (Java, C++) and scripting (JavaScript, Python);
  - Development and Implementation: Web development and REST services, and developing HMI;

- Linux and virtualization environment;
- Version control tools (e.g., Subversion, Git); unit testing frameworks (e.g. gtest, …); debuggers and profilers (e.g., gdb, valgrind, …);
- CODAC Core System framework would be an advantage;
- EPICS and/or Control System Studio would be an advantage;
- Implementing quality standards for high integrity software (e.g. MISRA, HIC++, …) would be an advantage;
- Problem Solving: Resolving complex technical issues autonomously and proposing solutions crossing organizational lines and interacting closely with other stakeholders to support decision making.

- ***Behavioral competencies:***
  - Collaborate: Ability to facilitate dialogue with a wide variety of contributors and stakeholders;
  - Communicate Effectively: Ability to adjust communication content and style to deliver messages to work effectively in a multi-cultural environment;
  - Drive results: Ability to persist in the face of challenges to meet deadlines with high standards;
  - Manage Complexity: Ability to analyze multiple and diverse sources of information to understand problems accurately before moving to proposals;
  - Instill trust: Ability to apply high standards of team mindset, trust, excellence, loyalty and integrity.

The following important information shall apply to all jobs at ITER Organization:

- Maintains a strong commitment to the implementation and perpetuation of the ITER Safety Program, ITER Values (Trust; Loyalty; Integrity; Excellence; Team mind set; Diversity and Inclusiveness) and Code of Conduct;
- ITER Core technical competencies of 1) Nuclear Safety, environment, radioprotection and pressured equipment 2) Occupational Health, safety & security 3) Quality assurance processes. Knowledge of these competencies may be acquired through on-board training at basic understanding level for all ITER staff members;
- Implements the technical control of the Protection Important Activities, as well as their propagation to the entire supply chain;
- May be requested to work on beryllium-containing components. In this case, you will be required to follow the established ITER Beryllium Management Program for working safely with beryllium. Training and support will be provided by the ITER Organization;
- May be requested to be part of any of the project/construction teams and to perform other duties in support of the project;
- Informs the IO Director-General, Domain Head, or Department/Office Head of any important and urgent issues that cannot be handled by line management and that may jeopardize the achievement of the Project's objectives.