Call for contribution (Industrial Informatics)

CERN invites collaborating institutes and universities to contribute the expertise of their qualified employees to the activity described below.

Date: March 2022 - August 2023 (1 year and 6 months initial contract)

Project: <mark>**FRAS (Full Remote Alignment System)**</mark>

Activity:
Design and development of the supervision layer of the control system to automate the alignment of magnets in the LHC accelerator

Description of Project:
Within the Beams department (BE), the Industrial Control Systems group (ICS) develops solutions and provides support for large and medium scale industrial control systems and also promotes their use. The support covers the domains of the experiments, the technical infrastructure and the accelerators. The *Controls Engineering* section (BE-ICS-CE) is in charge of the engineering of the industrial control systems and provides technology support CERN wide.

As part of the High Luminosity LHC project, it is intended to develop and deploy a motion control system (FRAS) capable of remotely aligning sets of magnets at the interaction points of the LHC. The system is composed of a variety of very precise sensors, motors and in-house developed electronics components. The project activity will primarily involve the development of the supervisory control layer for this system, based on Siemens WinCC OA (SCADA) and using CERN's UNICOS framework for rapid control system development. The software will provide the sensors and actuators integration, data exchange with surveyors experts tools and the user interface to perform the precise alignment. Additionally, the project engineer will be involved with a data analytics system allowing an optimised long-term operation.

Detailed description of Activity:
The main tasks will be the following:
- Gathering the requirements of the control system and compiling all the relevant documents with the other members of the team.
- Design and development the control software for the SCADA layer (Siemens WinCC OA)
- Deploy the solution, in agreement with the control layer, and validate with the experts
- Commission and follow up the supervisory control system

Profile:
Master's or Bachelor's degree in computing, industrial informatics or similar.

Technical competences:
- Initial experience with industrial controls systems
- Confident in software development practices including rigorous use of version control and testing
- Knowledge of high-level programming and scripting languages (e.g. C/C++, python...)

Status at CERN:
Associated Member of the Personnel (Project Associate).
Conditions in accordance with CERN's Staff Rules and Regulations and Administrative Circular No. 11.
Subsistence allowance is payable by CERN to cover the additional cost arising from the individual's (and, as applicable, their family's) stay in the local area while performing activities at CERN.