

Project Description

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 solutions, based on the CERN-standardized stack of technologies employing industrial components are used to engineer control systems in the domains of the experiments, the technical infrastructure and the accelerators.

You will participate in the development of the JCOP Framework which is a layer build at CERN, on top of the commercial Simatic WinCC Open Architecture SCADA, providing core functional building blocks and tools used in turn by the community of users at CERN and in over 150 collaborating institutes to build large and complex Detector Control Systems for the CERN experiments. The project enters the consolidation & redesign stage after 2 decades of heavy use and the existing components, with the need for refactoring, modernization and enhancement of existing functionality as well as integration of new features. Providing support to the users (themselves being engineers/programmers) is the integral part of this assignment.

Functions and Training Value

The main tasks will be the following:

- Participation in large scale software development projects and with a very long lifetime.
- Participate in the consolidation& redesign efforts of selected components of the JCOP Framework, notably at its core; this will span from conceptual discussions through prototyping, approval of concepts with the users, implementation, QA, release management and documentation.
- Participate in maintenance and support of existing component, without major refactoring efforts of them.
- Provide support for the JCOP Framework components to the users.
- Strengthen the team responsible for CERN WinCC OA service, developing internal tools and services (e.g. users&licenses management)

The candidate will learn:

- Modern software development practises and methodologies.
- How the large distributed control systems as implemented by the LHC Experiments work.
- SCADA (WinCC OA) development.
- Designing and working with large and critical, industrial level, control systems.
- Understanding and refactoring legacy code.
- Standard software engineering methodologies

Qualifications/skills

Education: Master's degree in computer science.

Practical experience with the use of high-level programming and scripting languages (e.g. C/C++, shell),

Knowledge of the Qt framework would be an asset

Basic Windows and GNU/Linux administration skills

Knowledge of the git versioning system

Flexibility in understanding and refactoring existing complex code.