Consolidation and Redesign of the CERN Industrial Controls Frameworks

Introduction

The CERN Industrial Controls Frameworks, JCOP and UNICOS, provide generic building blocks, as well as standardized methodology to implement industrial controls applications comprising a variety of front-end equipment, like PLCs and commercial power supplies, as well as the SCADA layer based on the Siemens WinCC Open Architecture package.

These Frameworks are currently used in more than 600 critical controls applications in the Experiments, the Accelerator complex and the CERN technical infrastructure. Most of these applications will have to be maintained during the whole lifetime of the LHC.

A major consolidation and redesign effort was started in 2018 in order to minimize maintenance cost over the long run, as well as to modernize and prepare the Frameworks for the challenges that the upgrade plans of the LHC will bring, and to integrate new technologies and methodologies like efficient data analysis and machine learning.

Tasks

The successful candidate will join the Industrial Controls and Safety Systems group in the CERN Beams Department (BE-ICS) and will play a major role in the consolidation and redesigning of some component of the Frameworks.

The work will mainly focus on the SCADA layer of the Frameworks.

Profile

We are looking for a software engineering, capable of agile working, comfortable with Git version control, and keen to learn a new C/C++ scripting language and RAD tools.

C/C++, Qt, ergonomic design of user interfaces would be a strong asset.

The knowledge of automation and process control would be a plus.