Development of expert interfaces for Control and Survey applications

Project code	53
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Department	EN

Title

Development of expert interfaces for Control and Survey applications

Description

At CERN, computing for survey activities, for acquisition and control of Particle Beam Intercepting Devices, and for configuration of radiation monitoring equipment requires challenging developments. The project consists in implementing straightforward graphical interfaces for expert users, which is a key task of the SMM group (Survey Mechatronics and Measurements). In the case of survey interventions, the data acquisition and processing software is mainly used in tunnels and underground areas, where working conditions are very restrictive: the software user interfaces have been designed for light-weighted computers and a mobile phone application has been recently developed for collecting specific data. In the case of the Beam Intercepting Devices operation follow-up and calibration, the software must provide a quick and safe access, and offer comprehensive expert interfaces to the CERN technicians and engineers in charge of the accelerators operational support. These control tools also include internal alarm systems as well as the piquet interventions tracking system.

Functions and Training Value

You will work within a multidisciplinary team consisting of computing engineers, electronic and mechatronic experts, and surveyors. You will be trained on the basics of Accelerator Physics and Technology with special emphasis on CERN machines and control interfaces used by the operators. You will have the opportunity to study the controlled devices in-situ, and learn about the system operation. You will also have the possibility to join some surveyor teams on the field and become aware of the use of the software interfaces in real conditions.
You will work on the maintenance, upgrade and improvements of these various expert interfaces mainly written in Java and C# languages. You will actively participate to technical meetings aiming at reviewing the code and improving the current software design and architecture. You will also interact with the users and regularly collect their feedbacks from the field interventions or operational support.

Qualifications/Skills

Computing engineer or equivalent.
Technical skills: A good knowledge of one of those languages, Java or C#, is required. Specific knowledge of Java for Android, or Java Swing graphical libraries would be a real asset, as well as the theoretical and practical understanding of Git version control system and continuous integration tools.
Behavioral competencies: working in teams, managing self, communicating effectively.