Title: LHCb Experiment Control System: Configuration Tools.

Description: LHCb's Experiment Control System handles the configuration, monitoring and operation of all experimental equipment involved in the various activities of the experiment. Millions of parameters originating from a large variety of equipment, ranging from commercial power supplies to sophisticated home made electronics, have to be collected, stored and presented to the physicists operating the experiment. The scale of the system requires the control system to run distributed over hundreds of computers in a coherent and coordinated, hierarchical, fashion.

A commercial industrial-strength SCADA (Supervisory Control and Data Acquisition) System - Siemens WinCC-OA - has been chosen as the basis for the development. WinCC-OA has been complemented by another tool - SMI++ - combining a rule-based approach with Finite State Machine methodology, providing a very convenient mechanism for the modelling and automation of large scale, high complexity, installations.

The applicant would participate in the development of tools for the creation, modification and visualization of "Recipes", which are sets of parameters (stored in a Configuration Database) used to configure the various types of equipment for the different running modes of the experiment.

Training value: The trainee will be part of the central LHCb Online team, responsible for providing tools and expertise to all the sub-system developers in the experiment and will gain experience with technologies used in industrial control and their application to the control and automation of very large distributed systems.

Skills needed: Proficiency in C and C++ languages. Experience with Linux and Windows.

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