

Trainee's Project Report

Job Code	PH100
Department	PH
Discipline	Computing
Supervisor	GASPAR Clara

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 modeling and automation of large scale, high complexity, installations. The applicants would participate, depending on their preference, in projects related to the development and integration of new components: \cdot providing access to new hardware devices using either industrial technologies, like field buses and the OPC protocol or through specialized `drivers'. \cdot modeling of the behavior and error-recovery procedures of devices, or complete sub-systems. \cdot development of intuitive user interfaces both for the configuration and operation of the system.

Special Requirements

Degree in automation, control or software engineering. Knowledge of C and C++, Windows and/or Linux would be an advantage.

Training Value

The trainee will gain experience with technologies used in industrial control and their application to the control and automation of very large distributed systems.

