

Master's Project

Data acquisition statistics for Technical Infrastructure Monitoring system

Problem: The Technical Infrastructure Monitoring system (TIM) is used to monitor and control CERN's technical services from the CERN Control Centre (CCC). The system's primary function is to provide CCC operators with reliable real-time information about the state of the laboratory's extensive and widely distributed technical infrastructure. TIM is also used to monitor all general services required for the operation of CERN's accelerator complex and the experiments.

The data acquisition (DAQ) tier consists of more than 130 data acquisition modules processing today about 45.000 different data tags and more than 2.1 million value updates per day. The data tags comprise digitized analogue measurements like temperatures and voltages but also equipment states. The DAQ layer is build out of two components: the proprietary communication interfaces between various types of monitored equipment and the common DAQ layer responsible for the range checks, dead band filtering, rejecting faulty values on the lowest level and propagation of significant changes to a business tier.

Project: The project will consist of writing a JAVA module which will register in a database all messages received by DAQ. Only some of those data tags values will be propagated to TIM application server, some data will be rejected already on DAQ level, but all should be stored in the database for the data analysis use. The database model to hold the following data will have to be designed and implemented.

The second part of the project will consist of displaying the DAQ statistics based on the gathered data. This task will require an evaluation of the available open source products and once chosen by the team the implementation of appropriate database queries and DAQ statistics display modules.

Knowledge: Good knowledge of Java, J2EE - Knowledge of databases (ORACLE would be an advantage) - Knowledge of SQL - Basic knowledge of Linux

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