

MANAGING INFRASTRUCTURE IN THE ALICE DETECTOR CONTROL SYSTEM

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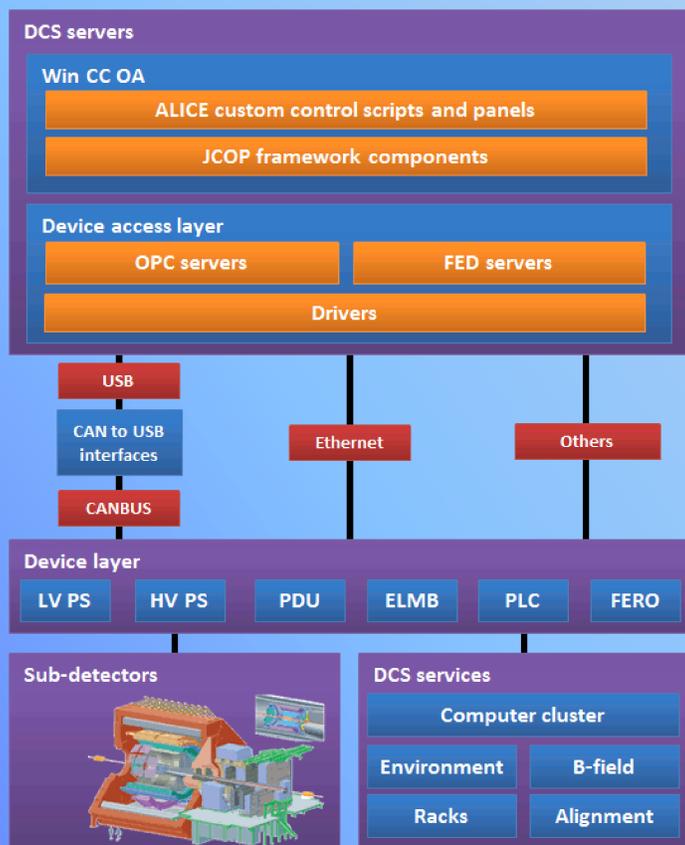
on behalf of the ALICE Collaboration



ALICE

A JOURNEY OF DISCOVERY

ALICE (A Large Ion Collider Experiment) is one of the big LHC (Large Hadron Collider) detectors at CERN that is optimized to study quark-gluon plasma. It consists of 18 sub-detectors constructed by different research institutes taking part in the project. All these subsystems have dedicated control systems implemented using the commercial SCADA package WinCC Open Architecture. The central Detector Control System (DCS) integrates all the sub-detectors as well as the general services (like environment monitoring, magnet control, racks management, etc.) and it allows for operating the whole experiment in a safe and efficient way from a single workspace.



HARDWARE

The field layer of the DCS includes various types of equipment - HV and LV power supplies, VME crates, ELMBs, PLC controllers, power distribution units (PDU) controlled via Ethernet and front-end and readout electronics (FERO) of particular sub-detectors. In total, there are over 1200 networked devices and over 270 VME and power supply crates.

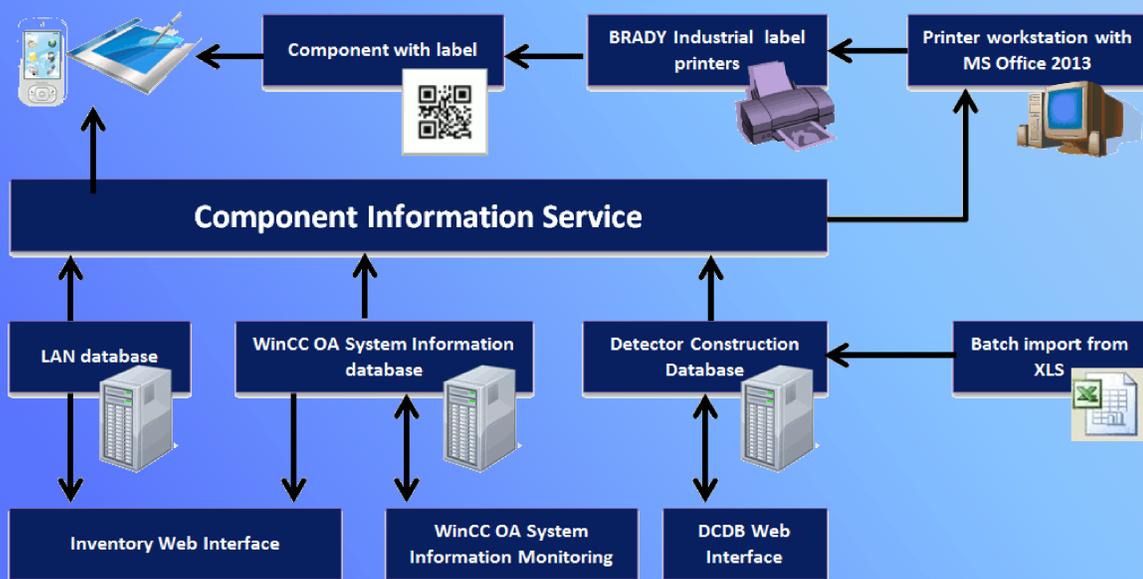
SOFTWARE

The OPC (Open Platform Communications) protocol has been selected as the software standard to communicate with the devices. In the ALICE DCS there are 48 instances of OPC servers in use that, in total, exchange data via over 180,000 OPC items.

Since FERO hardware is specific for every sub-detector, it has been necessary to standardize its integration with the control layer. Therefore, an additional abstract layer was introduced: Front End Device (FED). The FED servers and WinCC OA communicate via CERN DIM (Distributed Information Management System) protocol.

INFRASTRUCTURE MONITORING

Supervision of the DCS devices is realized mostly at the WinCC OA level via JCOP framework components and custom ALICE panels. Centralized monitoring of the machines and processes running on them is performed via the JCOP (Joint Controls Project) System Overview Tool.



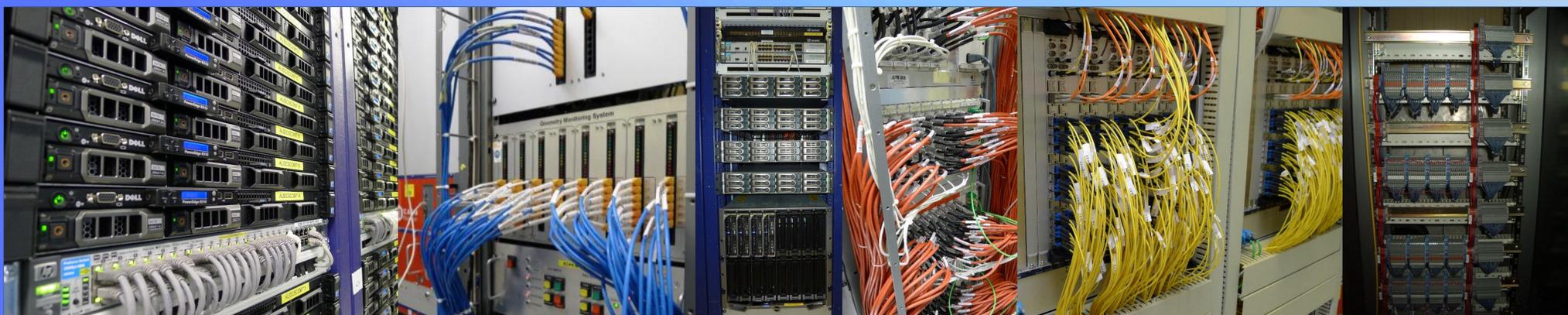
MANAGING INFRASTRUCTURE

Detector Construction Database (DCDB)

The aim of the DCDB system is to provide a universal repository for parts that exist in the ALICE detector. This storage is based on a generic data model that allows defining new types of components (together with attributes) and creating their hierarchies.

Component Information Service (CIS)

The CIS is a web application that has been created in order to provide a common interface to different data sources containing information about the devices used in the DCS.



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