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Status and future of the CMS Tracker DCS

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Detector Control Systems (DCS) for modern High-Energy Physics (HEP) experiments are based on complex distributed (and often redundant) hardware and software implementing real-time operational procedures meant to ensuring that the detector is always in a “safe” state, while at the same time maximizing the live time of the detector during beam collisions. Display, archival and often analysis of the “environmental” data are also part of the tasks assigned to DCS systems. The CMS Tracker DCS is a resilient system that has been designed to safely operate the Silicon Strip and the Pixel detectors of the CMS detector. It has been built on top of an industrial Supervisory Control and Data Acquisition (SCADA) software product (WinCC OA) extended with the JCOP framework developed at CERN along with CMS and Tracker specific components. The Tracker control system is at present undergoing major component re-work which is critical to ensure a smooth Run 3 and a workable baseline for the Phase-2 Tracker upgrade. In this talk we will present an overview of the Tracker DCS, which has been operational for over 12 years, during which it has been continuously modified by several different hands, and of the major development challenges we are facing. Furthermore, we will discuss a generic way to build an automated test environment that ensures the proper functionality of different parts of the system. This includes defining test scenarios that cover individual components, integration and system testing using Kubernetes and Gitlab runners.

Consider for promotion

Yes

Author: KARIMEH, Wassef (Université Saint-Joseph de Beyrouth (LB))

Presenter: KARIMEH, Wassef (Université Saint-Joseph de Beyrouth (LB))

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