Contribution ID: **77**   Type: **oral**

Common software for controlling and monitoring the upgraded CMS Level-1 trigger

Thursday, 25 May 2017 16:30 (18 minutes)

The Large Hadron Collider restarted in 2015 with a higher centre-of-mass energy of 13 TeV. The instantaneous luminosity is expected to increase significantly in the coming years. An upgraded Level-1 trigger system was deployed in the CMS experiment in order to maintain the same efficiencies for searches and precision measurements as those achieved in 2012. This system must be controlled and monitored coherently through software, with high operational efficiency. The legacy system was composed of a large number of custom data processor boards; correspondingly, only a small fraction of the software was common between the different subsystems. The upgraded system is composed of a set of general purpose boards, that follow the MicroTCA specification, and transmit data over optical links, resulting in a more homogeneous system. The associated software is based on generic components corresponding to the firmware blocks that are shared across different cards, regardless of the role that the card plays in the system. A common database schema is also used to describe the hardware composition and configuration data. Whilst providing a generic description of the upgrade hardware, this software framework must also allow each subsystem to specify different configuration sequences and monitoring data depending on its role. We present here, the design of the control software for the upgrade Level-1 Trigger, and experience from using this software to commission the upgraded system.

Primary author: CODISPOTI, Giuseppe (U)

Presenter: CODISPOTI, Giuseppe (U)

Session Classification: R3-Trigger and data acquisition systems(5)

Track Classification: Trigger and data acquisition systems