

The Payload Inspector: a tool for the visualization of Calibration and Alignment constants stored in the CMS condition database

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The Compact Muon Solenoid (CMS) experiment makes a vast use of alignment and calibration measurements in several data processing workflows. Such measurements are produced either by automated workflows or by analysis tasks carried out by experts in charge. Very frequently, experts want to inspect and exchange with others in CMS the time evolution of a given calibration, or want to monitor the values produced by one of the automated procedures. To address and simplify these operations, a Payload Inspector platform has been introduced as a web-based service to present historical plots and maps of calibrations directly retrieved by the CMS production condition database. The Payload Inspector has been designed to allow for great flexibility in the drawing capabilities while keeping the visualization layer agnostic to the internal structure of the specific calibration. This is achieved through a multi-layered approach: the drawing layer is implemented as a plugin in the CMS offline software which consumes the calibrations while a web-service deals with the visualization aspects. This paper reports the design and development of the Payload Inspector platform, the choice of technologies (python, Flask and bokeh) and reports the operational experience after one year of use.

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