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# CMS integrated central monitoring and validation system

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In operating a complex high energy physics experiment such as CMS, two of the important issues are to record high quality data as efficiently as possible and, correspondingly, to have well validated and certified data in a timely manner for physics analyses. Integrated and user-friendly monitoring systems and coherent information flow play an important role to accomplish this. The CMS integrated central monitoring and validation system (CICMS) is often described separately as two parts: Web Based Monitoring (WBM) and Data Quality Monitoring (DQM). Both are monitoring systems, but information for WBM is typically from non-event sources such as online databases and real-time messaging, while the primary DQM monitoring source is the event data. We discuss here both systems together, focusing on how we track the online operation run time (Run Time Logger), how we propagate the input information necessary for data certification, how we do the book-keeping (Run Registry), and how we visualize the data certification statistics (Data Quality Logger).

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