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Evolution of ATLAS conditions data and its management for LHC run-2

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The ATLAS detector consists of several sub-detector systems. Both data taking and Monte Carlo (MC) simulation rely on an accurate description of the detector conditions from every sub system, such as calibration constants, different scenarios of pile-up and noise conditions, size and position of the beam spot, etc. In order to guarantee database availability for critical online applications during data-taking, two database systems, one for online access and another one for all other database access have been implemented.

The long shutdown period has provided the opportunity to review and improve the run-1 system: revise workflows, include new and innovative monitoring and maintenance tools and implement a new database instance for run-2 conditions data.

The detector conditions are organized by tag identification strings and managed independently from the different sub-detector experts. The individual tags are then collected and associated into a global conditions tag, assuring synchronization of various sub-detector improvements. Furthermore, a new concept was introduced to maintain conditions over all the different data run periods into a single tag, by using Interval of Validity (IOV) dependent detector conditions for the MC database as well. This allows on-flight preservation of past conditions for data and MC and assure their sustainability with software evolution.

This contribution presents an overview of the commissioning of the new database instance, improved tools and workflows, and summarizes the actions taken during the run-2 commissioning phase beginning of 2015.

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