Contribution ID: **183**   Type: **presentation**

Highly extensible modular system for online monitoring of the ATLAS experiment

Thursday 12 July 2018 14:15 (15 minutes)

Unprecedented size and complexity of the ATLAS experiment required adoption of a new approach for online monitoring system development as many requirements for this system were not known in advance due to the innovative nature of the project.

The ATLAS online monitoring facility has been designed as a modular system consisting of a number of independent components, which can interact with one another via a set of well defined interfaces. The system has been developed using open source software and is based on the two in-house developed highly scalable distributed services for message passing and information exchange, which can deal with information of arbitrary types. The other monitoring components use these services to implement high-level facilities, like for example Monitoring Data Archiving and Data Quality Assessment, as well as end user interfaces like the Data Quality and Online Histogramming displays.

This presentation will describe the online monitoring system design and evolution for the first two data taking periods showing how the chosen approach allowed the system to be gradually extended during operation in a non-disruptive way by adding more high level tools and frameworks as requirements evolved.

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Session Classification: T1 - Online computing

Track Classification: Track 1 - Online computing