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A Validation System for the Complex Event Processing Directives of the ATLAS Shifter Assistant Tool

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Complex Event Processing (CEP) is a methodology that combines data from different sources in order to identify events or patterns that need particular attention. It has gained a lot of momentum in the computing world in the past few years and is used in ATLAS to continuously monitor the behaviour of the data acquisition system, to trigger corrective actions and to guide the experiment's operators. This technology is very powerful, if experts regularly insert and update their knowledge about the system's behaviour into the CEP engine. Nevertheless, writing or modifying CEP directives is not trivial since the used programming paradigm is quite different with respect to what developers are normally familiar with. In order to help experts verify that the directives work as expected, we have thus developed a complete testing and validation environment.

This system consists of three main parts: the first is the persistent storage of all relevant data streams that are produced during data taking, the second is a playback tool that allows to re-inject data of specific data taking sessions from the past into the CEP engine and the third is a reporting tool that shows the output that the directives loaded into the engine would have produced in the live system.

In this paper we describe the design, implementation and performance of this validation system, highlight its strengths and short-comings and indicate how such a system could be re-used in similar projects.

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