

## **SOFTWARE COMPONENTS FOR THE LHC DATA ACQUISITION ERA: AN OBJECT ORIENTED APPROACH**

S. Cittolin, CERN; J. Gutleber, CERN; L. Orsini, CERN; D. Samyn, CERN

As object-oriented technology becomes ubiquitous in new high-energy physics experiments a strong need for high performance and composeable DAQ components has arisen. This approach allows to build highly configurable DAQ software capable of surviving changes in network and sensor generations or families. When deploying commercial-off-the-shelf toolkits it becomes clear that performance is largely sacrificed for having a flexible system. Experiments for accelerators such as the LHC have strong requirements on both axes: flexibility and efficiency. It is therefore vital to provide a set of software components for DAQ systems that are able to satisfy both demands. This paper deals with our efforts in the CMS experiment to approach such architecture. We would like to outline two subsystems of modern DAQ systems, namely the Readout Unit which serves as an intelligent memory device and the Filter Unit that processes the data. We are able to show that their structure exhibits a certain symmetry and that therefore we can use common software components for both. Our goal is not driven by the intention to have a set of classes that cover every possible use case. Indeed we argue that such approach keeps users from applying new paradigms due to their size and complexity. We concentrate on the most crucial aspects that are process management and communication. An initiative in this area, once successful can trigger further discussion and development.