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Interface between data handling system (SAM) and CDF experiment software

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CDF has recently changed its data handling system from the DFC (Data File Catalogue) system to the SAM (Sequential Access to Metadata) system. This change was done as a preparation for distributed computing because SAM can handle distributed computing and provides mechanisms which enable it to work together with GRID systems. Experience shows that the usage of a new data handling system increases rapidly if it incorporates as many use cases from the old system as possible and has an interface which is similar to the old system. This is also true for the transition of the DFC system to the SAM system.

The CDF Analysis Input and Output Modules are the preferred interfaces to access input data and direct output data in a standard analysis job. The Input Module invokes the data handling system in order to manage the data delivery to the job and to handle exceptions if problems with the data handling are experienced. The change of the data handling system has been done in such a way that it is nearly transparent to the user but still gives the user the choice which system to use. During the transition to the SAM data handling system methods have been tested to give reliable access to the data in case that the underlying storage mechanism (DCache) is failing. Another big issue of the interface is recovery of jobs which have failed. At FNAL most of the analysis jobs are running at the CAF (Central Analysis Farm). The CAF is basically a batch system, but has been expanded for example with the features of authentication. Therefore it is possible to distribute the computing for CDF with so-called DCAF systems (Decentralized CAF systems). The CAF system provides at the beginning and the end of the job interfaces to SAM, so it can be used to automatically recover jobs which failed. The Input Module is able to provide the necessary interfaces to the CAF to make the recovery possible. To implement this mechanism is good step in the direction of reliable jobs on the GRID.

Primary author: BARTSCH, Valeria (FERMILAB / University College London)

Co-authors: BARANOVSKI, Andrew (Fermilab); BENJAMIN, Doug (Duke University); LIPELES, Elliot (Univ. of California, San Diego); RATNIKOV, Fedor (University of Maryland); SFILIGOI, Igor (Fermilab); GENSER, Krzysztof (Fermilab); ST. DENIS, Rick (Glasgow university (Scotland)); HSU, SHIH-CHIEH (Univ. of California, San Diego); STONJEK, Stefan (Oxford university)

Presenter: BARTSCH, Valeria (FERMILAB / University College London)

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