MATHIS Software

MATHIS (Monitoring and Alignment Tracking for the HIE-Isolede Software) is the software intended to the monitoring and alignment system of the HIE-Isolede components (internal cavities and solenoids of the cryo-modules). It drives the system either in fully "stand-alone" mode (PC Windows, Linux, Mac connected to the CERN network), or through the user interface available in the control room. In the last case, specific devices and properties have therefore been designed and integrated in the CERN Control Software Infrastructure to control remotely the system (devices registered in the CERN CCDB database) and save data (measurements and results) in different databases.

More generally, MATHIS is able to drive any monitoring system based on BCAM devices. It hence relies on several XML configurations files describing for example:

- the geometry of the system (positions of the devices, targets, physical objects, coordinate systems, survey references, unknown and known parameters with their a priori accuracy,...)
- the sequence of the observations (chronological sequences of the BCAM measurements with their acquisition options, connection parameters of drivers and devices,...)
- the options of the adjustment calculations (LGC2)
- ...

The general architecture has been conceived to remain modular, and the software is built around interacting independent modules developed in standard C++ or Java. Interactions and data exchanges are done either through dynamic libraries, loaded at run-time, or via straightforward client/server TCP-based communications.

All the module developments (including FESA classes) are done with the Eclipse IDE under Linux or Windows environment.

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