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DEVELOPMENT OF THE CONFIGURATION DATABASE AND RELATIVE INFORMATION SERVICES FOR NICA EXPERIMENTS

Collecting, storing and processing of experimental data are an integral part of modern high-energy physics experiments. Various experiment databases and corresponding information systems related to their use and support play an important role and, in many ways, combine online and offline data processing. One of them, the Configuration Database is an essential part of a complex of information systems, which have been developed for the experiments of the NICA project at the Joint Institute for Nuclear Research (JINR). The Configuration Information System is used to store and provide data on the configuration of the experiment hardware and software systems when collecting data from the detectors in the online mode. The developed database stores both a set of various configuration parameters, such as those required for setting the detectors into operation modes, for instance, a working voltage, and descriptions of a sequence of software tasks (processes) including online raw data digitization, online histogramming, fast event reconstruction and event monitor to be started and run during experiment sessions. As a result, the system described in the report allows loading configuration information into the data acquisition and online processing systems, activating those hardware setups, that are needed in the current experiment session, and launching all the necessary software applications with the required parameters on the specified distributed nodes. The architecture of the Configuration Information System is presented and mainly contains the Configuration Database and Configuration Manager, which was developed to provide stored configuration data to other experiment systems, start software tasks in a described sequence, and support process management of those tasks. The Dynamic Deployment System (DDS) of the FAIR collaboration was chosen as a tool for managing tasks on distributed resources of the NICA complex, as well as for providing intercommunication. In addition, the client-server architecture of the configuration system is shown, where the server ensures interactions (viewing and editing) with the Configuration Database, and the client was implemented as a Web service to access to configuration parameters by users.

Significance

References

Speaker time zone

Compatible with Europe

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