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Jefferson Lab Data Acquisition Run Control System

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A general overview of the Jefferson Lab data acquisition run control system is presented.
This run control system is designed to operate the configuration, control, and
monitoring of all Jefferson Lab experiments. It controls data-taking activities by
coordinating the operation of DAQ sub-systems, online software components and
third-party software such as external slow control systems.
The main, unique feature which sets this system apart from conventional systems
is its incorporation of intelligent agent concepts. Intelligent agents are autonomous
programs which interact with each other through certain protocols on a peer-to-peer
level. In this case, the protocols and standards used come from the
domain-independent Foundation for Intelligent Physical Agents (FIPA), and the
implementation used is the Java Agent Development Framework (JADE).
A lightweight, RDF (Resource Definition Framework) based language was developed to
standardize the description of the run control system for configuration purposes.
Fault tolerance and recovery issues are addressed.
Key features of the system include: subsystem state management, configuration
management, agent communication, multiple simultaneous run management
and synchronization, and user interfaces. A user interface allowing web-wide
monitoring was developed which incorporates a JAS/AIDA data server extensible through
Java servlets.

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