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Current status of the applications for a live data reduction method in MLF, J-PARC

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One of the recent successful developments in the computing group in MLF at J-PARC is about the "quasi-real-time" data reduction and visualization method, named a live data reduction. From the beginning of MLF running, users have strongly required to see the current data during the measurement to decide next experimental conditions and schedules. To realize "real-time" data treatment we considered that the message queue technology of an asynchronous communications protocol should be utilized for our data acquisition system and data reduction software. In these years, we decided to adopt a Publisher-Subscriber model using this technology and developed new modules working on our data acquisition system, DAQ middleware, which sends event-recorded data to a message queue server as a data publisher. In parallel, we started to develop the data reduction and visualization software working as a data subscriber to obtain the event-recorded data from the server. Consequently, at several instruments in MLF, we have successfully realized the live data reduction using Utsusemi, which is one of the software suite used as common data reduction and visualization in MLF, and the other visualization codes as a subscriber.

In addition, we have a plan to offer users the new methods to obtain speedily the result of the live data reduction for the current measuring data. We start to develop a new server cooperating with the DAQ middleware and the measurement control system with web user interface, called IROHA2, to execute the live data reduction code prepared by users and visualize the result which enables users to confirm them on web browser.

In this presentation, we will introduce our approaches for the live data reduction system and show the development plan.

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