Contribution ID: **192**   Type: **poster**

Feasibility of Data Acquisition Middleware based on Robot technology

Monday 13 February 2006 11:00 (20 minutes)

Recent Information Technology (IT) grows quickly and it is not so easy for us to adopt the software from IT into data acquisition (DAQ) because the software from the IT sometimes depends on OSs,languages and communication protocols. The dependency is not convenient to construct data acquisition software and then an experimental group makes their own DAQ software according to their own requirement. In robot technology field which needs a real-time system and is an embedded filed, they also have same problems and then try making Robot Technology Middleware (RTM) because they developed their own software and there was no common framework to make the robot as software point of view. The robot technology has similar functionality to the data acquisition for physics experiments. We studied the data acquisition based on the robot technology and then discussed the data acquisition middleware.

Summary

Object Management Group (OMG) has a development model called Model Driven Architecture (MDA). First, Platform Independent Model (PIM) will be generated on MDA. Next on PIM, Platform Specific Model (PSM) will be generated. Then, actual programs will be generated based on PSM. RTM was developed according to the model. Then, RTM-aist developed by AIST adopted CORBA model as PSM. It consists of RTM framework, service group, standard components and libraries. It also has system tools such as rtc-link, which is a GUI for connecting components and then starting them. For studying the feasibility of data acquisition middleware, several DAQ components such as collector from CAMAC, data logger to a file system and analyzer with ROOT, have been developed. We also have developed operator console and status/error logger based on WEB technology. We discussed the feasibility of data acquisition middleware from the evaluation of the demonstrator.

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Session Classification: Poster

Track Classification: Software Tools and Information Systems