Experimental data collection and Data access software from internet at SPring-8

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In the experimental measurements for beamline end stations at the SPirng-8 synchrotron radiation facility, there are strong needs for easy and quick reconfiguration of equipment setup for new experiments involving the software. However, these were difficult with current monolithic software in the measurement system. To overcome these challenges, we have developed DARUMA. DARUMA utilizes MADOCA II which was developed for distributed control for accelerator and beamlines at SPring-8, and involves many software components for stations such as data collection and online image monitoring. With separated software for each service and the flexibilities of MADOCA II, measurement applications for various experiments can be easily configured with combination of software components. DARUMA can help to reduce management costs and improve the measurement system. Measurement applications for 2D detectors (PILATUS, Andor and PerkinElmer etc.) have been developed and installed into several stations since September 2017. Online image analysis tools such as integrated sum in 2D array can be flexibly implemented and are useful in the measurements.

We also newly developed BENTEN for data access system from internet. The aim of BENTEN is to provide flexible and unified access for measured data both inside and outside from SPring-8. We already had a data access system, but it was hard for practical use. BENTEN will simplify the workflow of data registration, user authentication and data access with REST API for generic use in many stations. We also improved the flexibilities to manage metadata using elasticsearch for full-text search. Prototype of the system has been built and we plan to deploy BENTEN into stations next year.
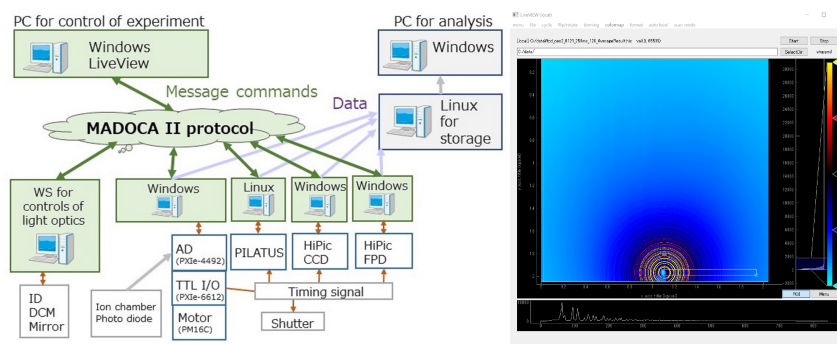
Schematic view of measurement software structure for BL03XU with DARUMA. LiveView for online image monitoring is also shown.

References

[1] T. Matsumoto, T. Abe, Y. Furukawa, T. Matsushita, N. Nakada, H. Masunaga, "DARUMA: Data collection And control framework for X-Ray experimental stations Using MADOCA", Proceedings of ICALEPCS 2017, Barcelona, Spain, p.1281-1285 (2017)

[2] T. Matsumoto, Y. Furukawa, M. Ishii, "Next-generation MADOCA for SPring-8 control framework", Proceedings of ICALEPCS 2013, San Francisco, CA, USA, p.944-947 (2013)

[3] H. Sakai, Y. Furukawa, Y. Ohata, "Development of SPring-8 experimental data repository system for management and delivery of experimental data", Proceedings of ICALEPCS 2013, San Francisco, CA, p.577-579 (2013)