The OASIS system for TT40

Overview and status

Javier Serrano on behalf of the OASIS Project Team
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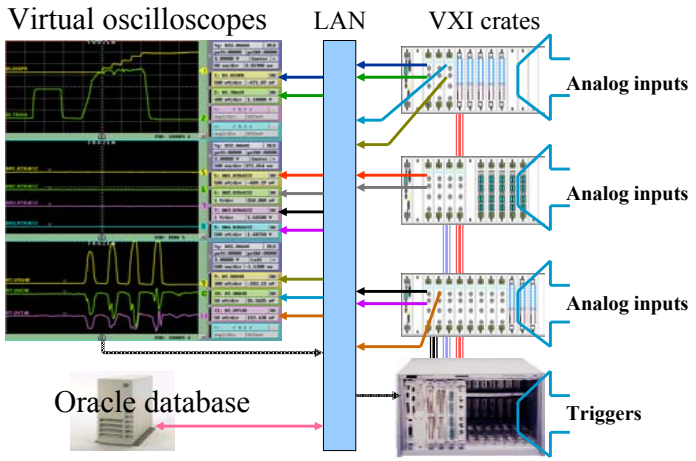
Context and team members

- OASIS: Open Analogue Signals Information System
- Main goal: to satisfy the user requirements gathered by the LHC-CP Analogue Signals Working Group
  (http://project-lhc-cp-sigwg.web.cern.ch/project-lhc-cp-sigwg/)
- Team members:
  - **Stéphane Deghaye – analysis, design, implementation of front-end and middle tier software.**
  - **Delphine Jacquet and Ioan Kozsar– Implementation of OASIS TT40 Viewer.**
  - **Javier Serrano – analysis, hardware and coordination.**

The current nAos system



A comparison of architectures

	nAos	OASIS
Layers	2-tiered	3-tiered
GUI	C/Motif	Java
Communication with front ends	UDP sockets	JAPC using CMW to access Equipment Modules
Middle tier		EJB
Front End real-time software	C under VxWorks	C++ under LynxOS

The TT40 Oasis Viewer

- GUI Application written in Java.
- EdPlot package (B. Dupuy) extended to fulfill OASIS requirements for a generic virtual oscilloscope component.
- Interface to OASIS services uses synchronous and asynchronous communication mechanisms.

Middle tier

- Enterprise Java Beans on a J2EE server machine.
- Some examples of services offered by OASIS:
  - Connection to a signal.
  - Change of settings for a signal.
  - Saving a signal for future reference.
  - Post-processing (e.g. cabling or TOF delay compensation)

Front End Software

- Equipment Modules using CMW for communication.
- Real-time task written in C++ using the new RT task framework of AB-CO-FC.
- Linux driver written for the CompactPCI multiplexer modules.

Hardware

- CompactPCI with Concurrent Technologies CPU running Linux.
- Acqiris DC270 digitizer modules (4 channel, 250 MHz BW, 1Gs/s).
- Pickering 40-745-501 4 to 1 RF multiplexer (1 GHz BW).
- Acqiris CC105 crate (7.5A on 12V supply). We might switch to Wiener in the future.

Status

- User requirements document approved by SiWG.
- All hardware for TT40 installation procured.
- Linkmen in AB-CO-AP designated for EJB and GP support.
- AB-CO-IN linkman supports Linux for Concurrent Technologies boards.

TT40 OASIS Viewer Status

- High level design finished.
- Evaluation of different candidates for virtual scope component finished.
- Work underway to extend EdPlot.
- API for communication with OASIS defined.
- Dummy interface implementing this API completed.

OASIS Middle Tier Status

- Analysis and design completed.
- “Hello world” using EJB and JMS for communication completed.
- Implementation started.

Front End Software Status

- Linux driver for the multiplexer module written and tested.
- Linux driver and libraries for oscilloscope control tested. Visualization of signals coming from Acqiris boards using nAos GUI.
- Equipment Modules and real-time task finished.
- Minor problem with the CMW server under Linux/CompactPCI to be investigated.

Conclusions

- No major technical stumbling blocks ahead.
- FE Software finished.
- GUI well underway.
- Middle tier designed. Implementation will benefit from AB-CO-AP support.