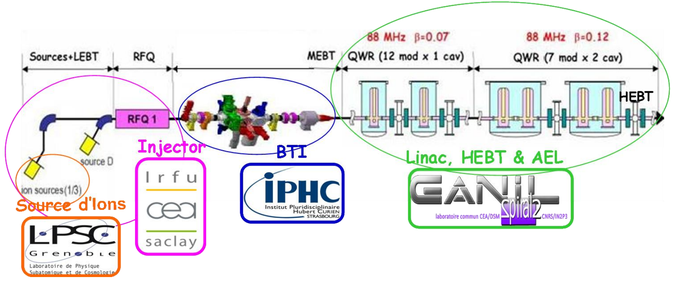


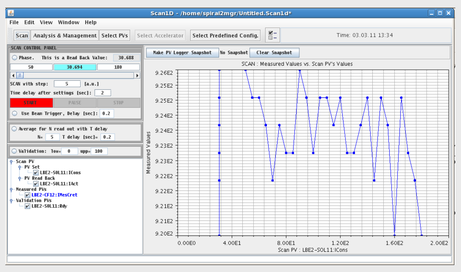
SPIRAL2 Control Command : First High level JAVA application based on the XAL library

P. Gillette, E. Lemaître, L. Philippe, G. Normand, and the Ganil control group (Ganil / Caen, France)

High level applications

XAL standard applications used

Scan 1D 2DApplication standard XAL : Scans one PV (or two PVs) and mesures other PVs



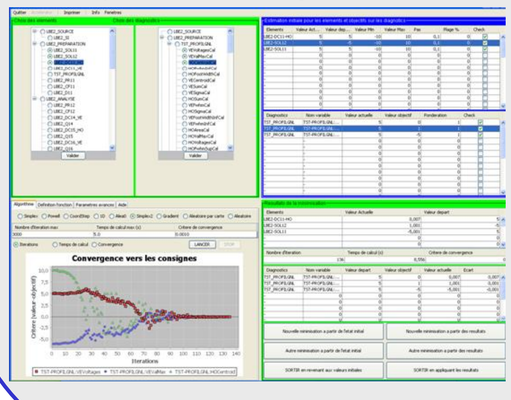
General usage of the XAL Framework

- XAL menu and window management.
- XAL EPICS channel access library.
- XAL tools (scan, plot, virtual accelerator).
- Ressources management.

SPIRAL2 applications derived from XAL

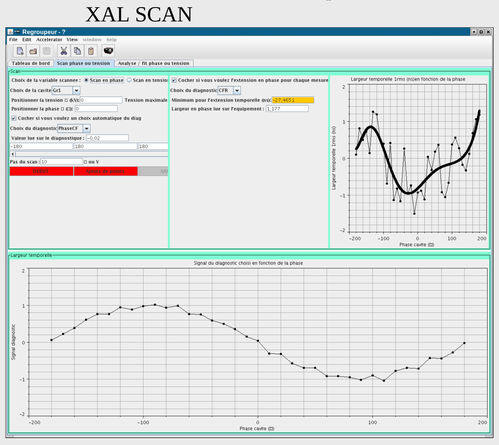
Optimisation

- Achievement of the minimization of objectives on a set of diagnostics



Cavities tuning (preliminary version)

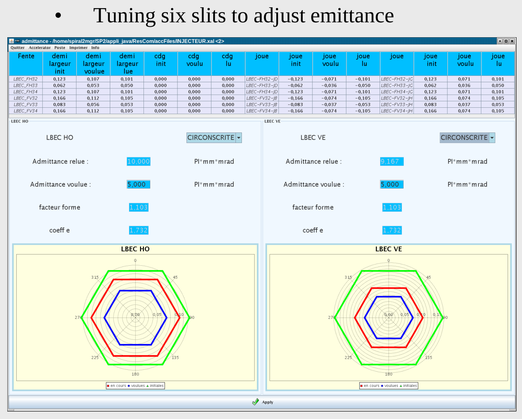
- Do a phase or voltage scan to optimize tuning on extension phase diagnostics
- Use XAL PLOT and an adaptation of XAL SCAN



SPIRAL2 applications

Emittance limitation

- Tuning six slits to adjust emittance



The Profils application

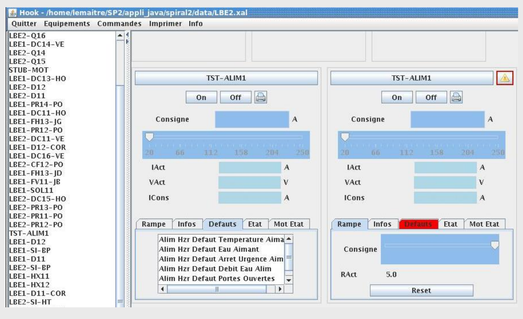
- Display and command of the beam wires harps

The server profils

- Uses XAL portable Channel Acces Server
- Enables other applications to access calculation realized by java Profil component on a beam wires harps.
- Actively used by Tracewin Software for optimization

The Hook application

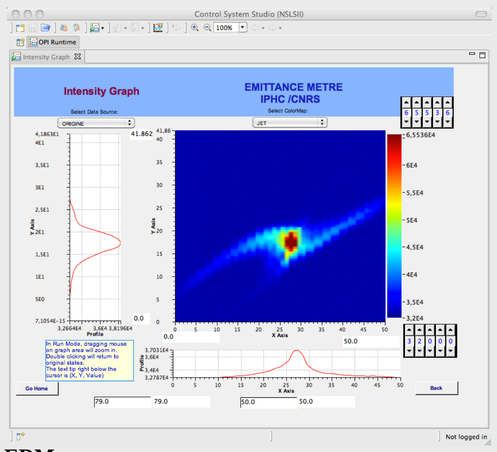
- Directly interacting with equipment
- Hook and Profil HMI rely on the same grid component



But XAL isn't the only technology used

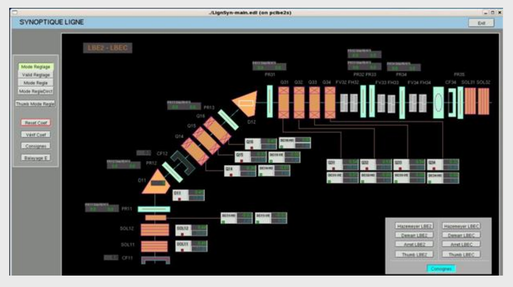
CSS BOY

- December 2011 : The choice to use BOY or not will be made.
- Some apprehension about operator interface, not access to preference, only access to boy runtime
- Below an example of application : emittance viewer



EDM

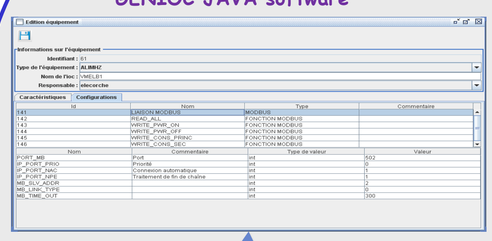
- Widely used
- Below an example of application : LBE2 synoptic



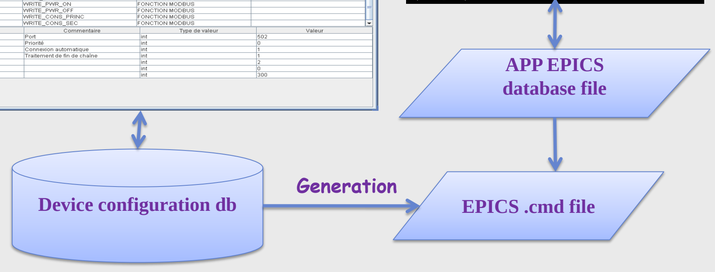
DATA management

Device configuration

GENIOC JAVA software



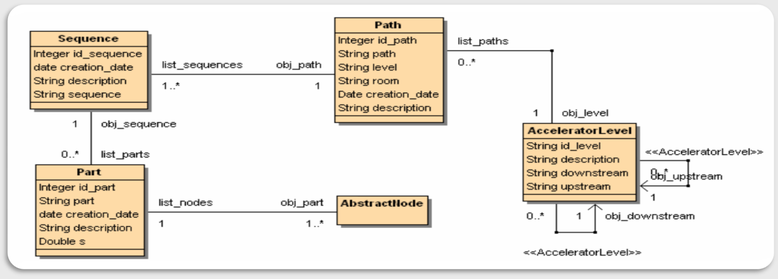
VDCT



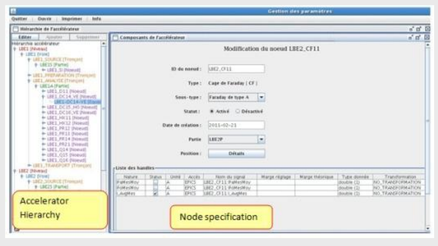
- Rely on a Ingres database 10.1
- Describe type of equipments dynamically on database
- Describe «simple » equipments on database such as slits, motors or power supplies
- Enable generation of IOC configuration file. Three files are generated :
  - One for network connection configuration
  - One for macro substitutions
  - One for sequencer definition
- Each of this file are load by the .cmd file

Accelerator configuration

- Rely on a Ingres database 10.1
- Describes accelerator hierarchy

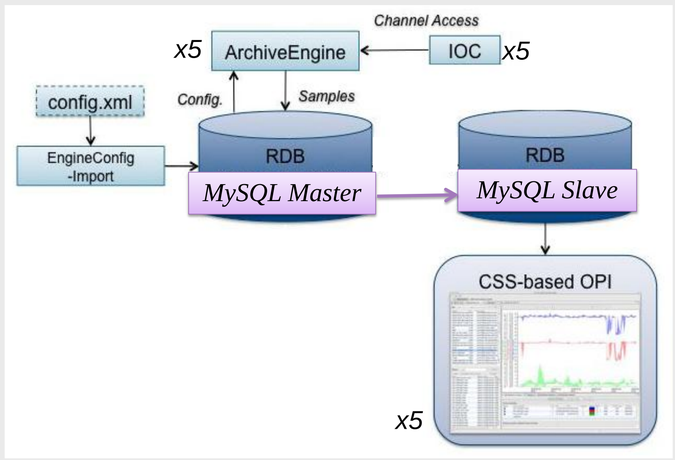


- Describe optics
- Enables generation a XAL file.xdf
- Offline usage : Set values for a new beam., either theoretical or extrapolated from beams realized previously .And schedule operation
- Online usage : Apply or save sets of values
- A new JAVA dedicated software, namely GestParam, interfaces the database



Archiving

- Software architecture use for test



Number of IOC	Number of PV/IOC	Number of Archive Engine	Number of PV/ Archive Engine	f	PV/s
5	80	5	80	10Hz	4000

- Rely on two MySQL 5.1.17 servers and Mysql Replication
- One Master for writings and one slave for readings

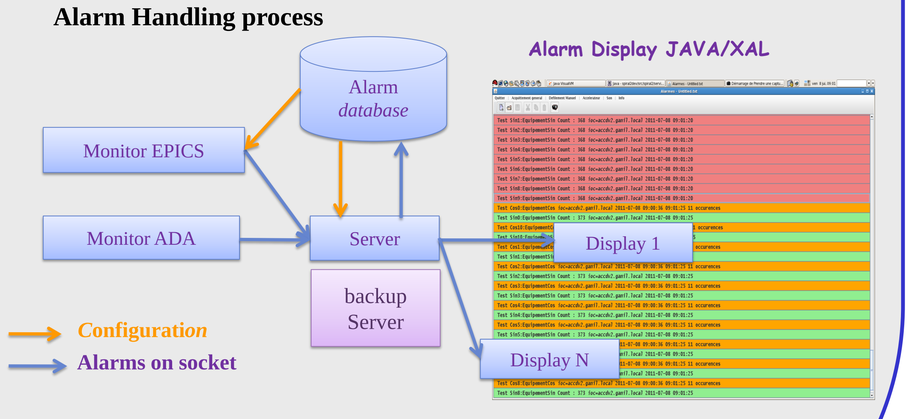
Archive Engine first results

- Needed to update mysql JDBC driver (5.1.17 in place of 4.04) and to set rewriteBatchedStatement property to true to enable bulk insert (BATCH).
- Use MySQL myISAM engine without index for sample table
- Used MySQL replication driver for read archive configuration on slave server

Data browser first results

- Use MySQL myISAM engine with index for sample table
- Partition sample table: Range partition on date/time and key subpartionning on channel_id
- Improve query *sample_sel_initial_time* for MySQL Dialect

Alarm Handling process



- Rely on A Ingres database for configuration and storage issues
- Don't use EPICS Alarm Handler
- Supports a throughput of 330 alarms per seconds

Software development

Functional anlysis

- Defines functions from coarse-grained granularity to fine-grained granularity, from operation to device.

IHM Listing :

- Classified by segment of the facility
- Around one hundred IHM listed

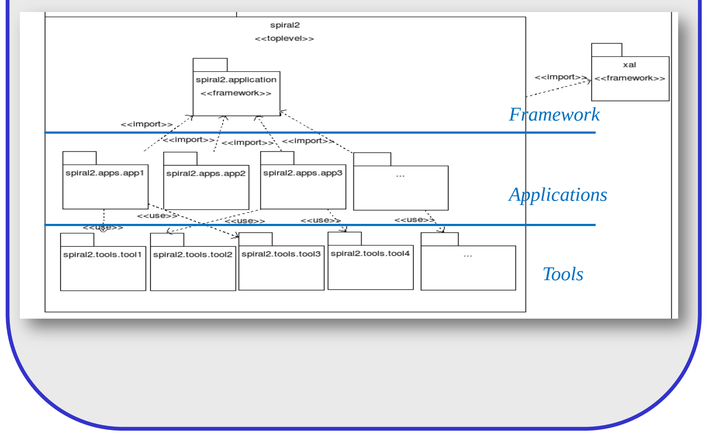
Version Control with SUBVERSION

Manage configuration of JAVA/XAL application

- Only one XML file
- A java singleton manage access to the configuration file
- Two modes : PRODUCTION(PROD) and DEVELOPMENT (DEV)
- Configure access to Logging configuration, log diretcory
- Configure access to databases
- …

Logging System

- SLF4J : enables to change logging system
- Currently LOG4J logging system is used
- XAL JAVA Util Logging logs are redirected to SLF4J
- One XML configuration file
- Three levels



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