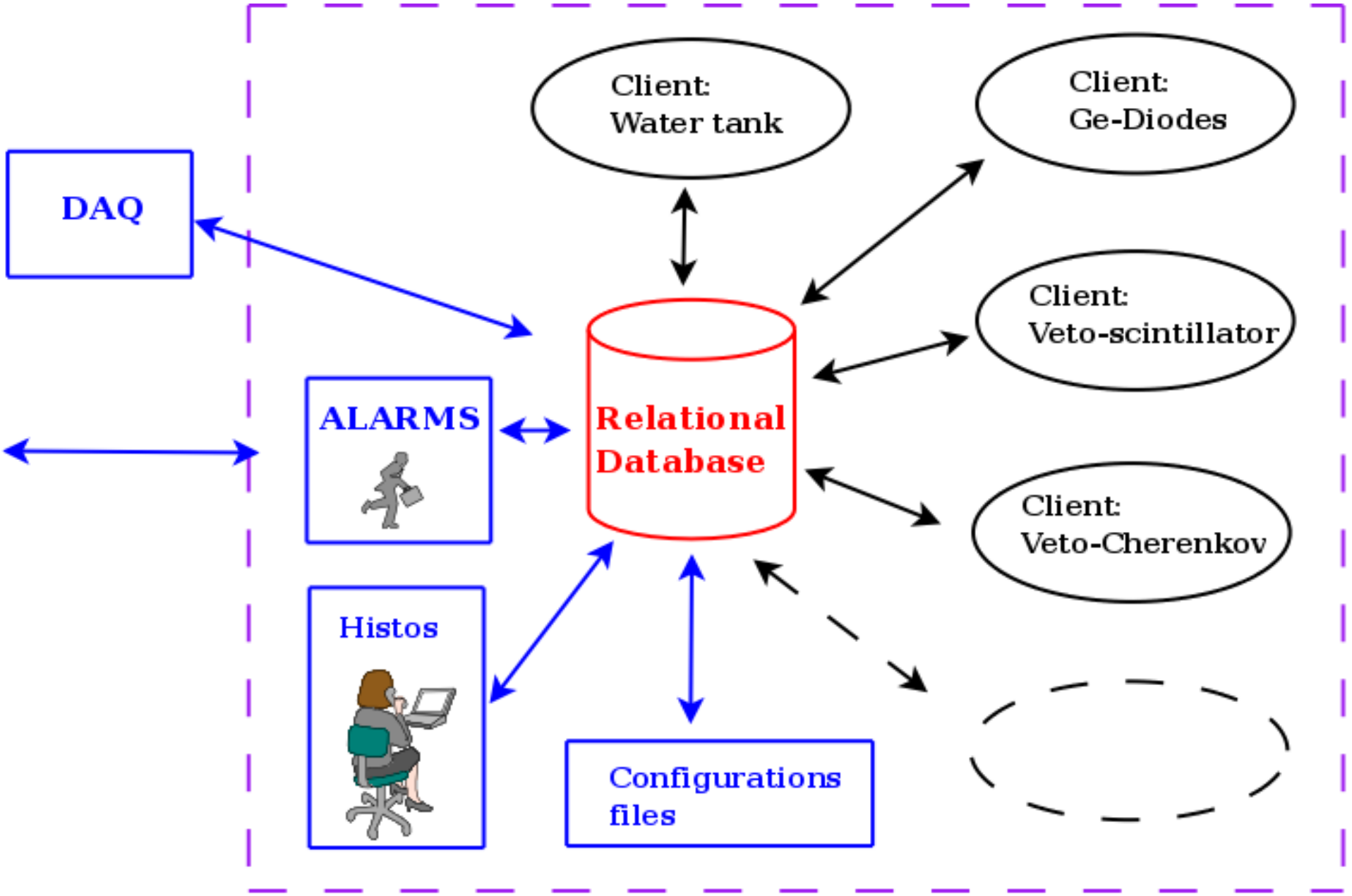
Ideas for the slow control of GERDA experiment

Riccardo Brugnera, Alberto Garfagnini, Luca Stanco, V. Sugonyaev

Padova University and INFN Padova

Main items of a slow control system

- Read and store all the sensible parameters: *HV, LV, I, T,* ... ;
- Retrieve from a database these values for successive work ;
- Produce alarms in case of serious problems;
- Produce online histograms for the sensible parameters;
- Raise and lower *HV, LV,* ...
- Transfer the whole detector system from the safe stand–by mode into the running state (or viceversa) activating *LV, HV*, ...
- Load experiment configuration files.


Client:
Water tank
Client:
Ge-Diodes
DAQ
Client:
Veto-scintillator
ALARMS
Relational
Database
Client:
Veto-Cherenkov
Histos
Configurations
files

Questionnaire on requirements for GERDA Slow Control System

2. General questions. Part 1

2.1. Name of your sub-detector/sub-system (SD/SS). Name of the person responsible for your SD/SS? (email, phone number)

2.2. What are the time scales/milestones for the construction of your SS/SD?

2.3. Please describe the local Slow Control solution you have anticipated or already designed.

2.4. Would you like to have control over some Detector Control System (DCS)data or just obtain some information from the system? (DCS state, pressures, etc.)

3. Crate control

Standard remote crate control allows reading of crate state (ON/OFF), all available crate voltages and currents, fan speed, power supply and/or air temperatures. It also allows switching crate ON/OFF and bus resetting for a VME crate. Some crates may only have a sub-set of these parameters. The remote control is useful when the crates are far from the control room (in case, if remote control makes from on ground Lab).

3.1. Hardware

3.1.1. How many crates would you like to control from the DCS? How they distributed over the crate type? For Phase I? Phase II?
(*NIM – 2, CAMAC - 3, VME - 3; etc…*)

3.1.2. What are the types of the remote control access of your crates?
(*CAN bus; CAENET; home made control; etc…*)

3.1.3. Do you plan to use non-standard or legacy crates? If so, are formal specifications of control interfaces (or bus-systems) available?

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4. HV control

4.1.1. How many HV channels in total do you like to monitor and/or control? (*16; about 16; between 10 and 20; etc…*) for Phase I? Phase II?

4.1.2. What type(s) of Power Supplies do you use? What type of remote control access do them support?
(CAEN SY527 Mainframe with A734N cards, RS232 and CAENET; LeCroy4032; home made; etc…)

4.1.3. Do you plan to use non-standard or legacy HV supplies?Phase I ? Phase II?

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5. Low voltage control

A typical low voltage is a power supply for the preamplifiers, transceivers, etc.

5.0 . What type of power supply do will use for?
Standard or Home made? Phase I? Phase II?

5.1. How many voltage/current measurements in total do you have? What is the LV range? With what precision do you need to read/set the voltages/currents ?
(0-6V; from –6V to +6V; etc…)

5.2. How often do you need to read/set the low voltages/currents? Do you need to set/read the voltages/currents synchronously?
(each 30 seconds with 0.5% precision, etc…)

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Possible implementations

- **Home made:**
  - development of almost everything from scratch, intensive use of open source software;
  - limited costs;
  - ~ 3 persons for 2 years;
  - not ready for 2009 GERDA run.
- **Use of a commercial product such as *PVSS–II***
  - many tools available;
  - higher probability to be ready for 2009 GERDA run;
  - ... it costs (in some minimal version) ~ 15 keuro.

What is PVSS–II

PVSS–II is the german abbreviation for **"Process visualization and control system II"**, a software package for the field of automation engineering. Its main application is the **operation and supervision of technical installations** using workstations with full–graphics capability.

Its main components and tools:

- ✔ A run time database;
- ✔ Archiving;
- ✔ Alarm generation and handling;
- ✔ A graphical editor;
- ✔ A scripting language;
- ✔ A graphical parameterization tool;
- ✔ Drivers.

What is PVSS–II

It is a trade mark of ETM.

It is widely used by many CERN experiment (ATLAS, CMS, COMPASS,...),

for details see: http://itcobe.web.cern.ch/itcobe/Services/Pvss/

It is without charge for any CERN experiment ... unfortunately GERDA is not.