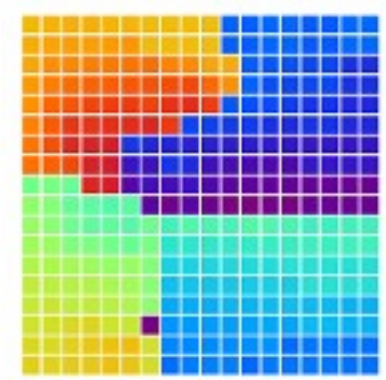
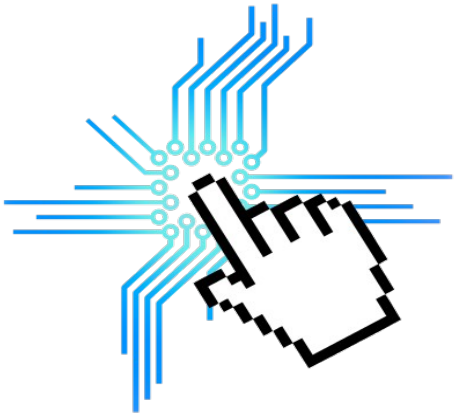


Pyrame & Calicoes
What's new ?

Frédéric Magniette



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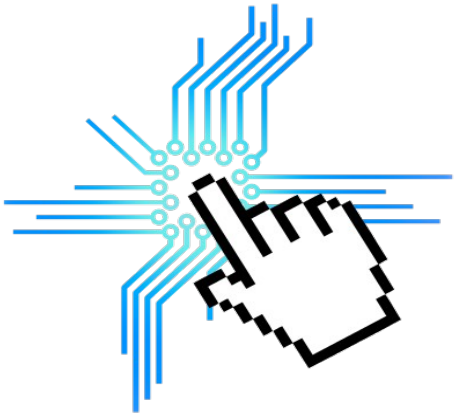
dépasser les frontières

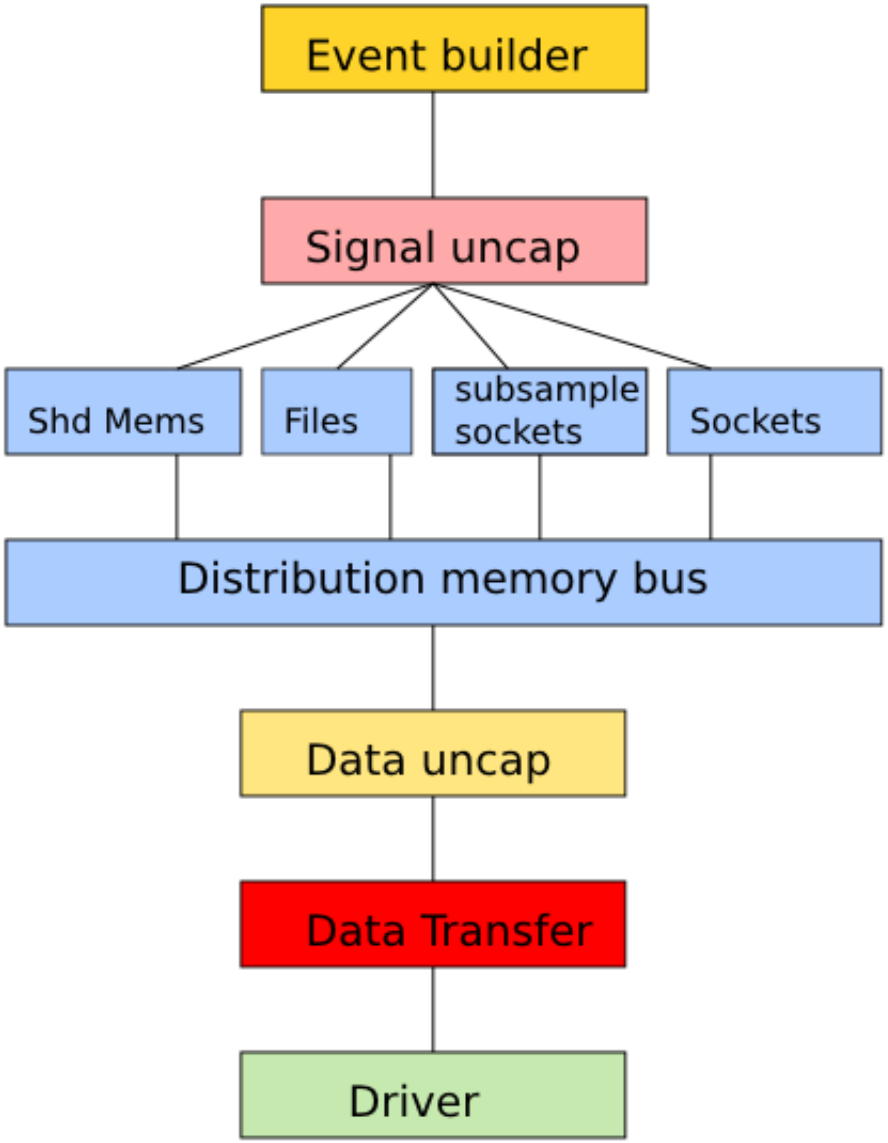


What is Pyrame ?

- Control-command and acquisition framework :
  - Multi-media high performance acquisition chain
  - Control-command generic module (cmdmod)
  - Centralized configuration module (calxml)
  - Driver for standard hardware on testbenchs
    - Power supply (Caen, Hameg, Agilent, Keithley…)
    - Pulse generator (Agilent)
    - Motion controller (Newport)
    - Digital oscilloscopes (Lecroy)

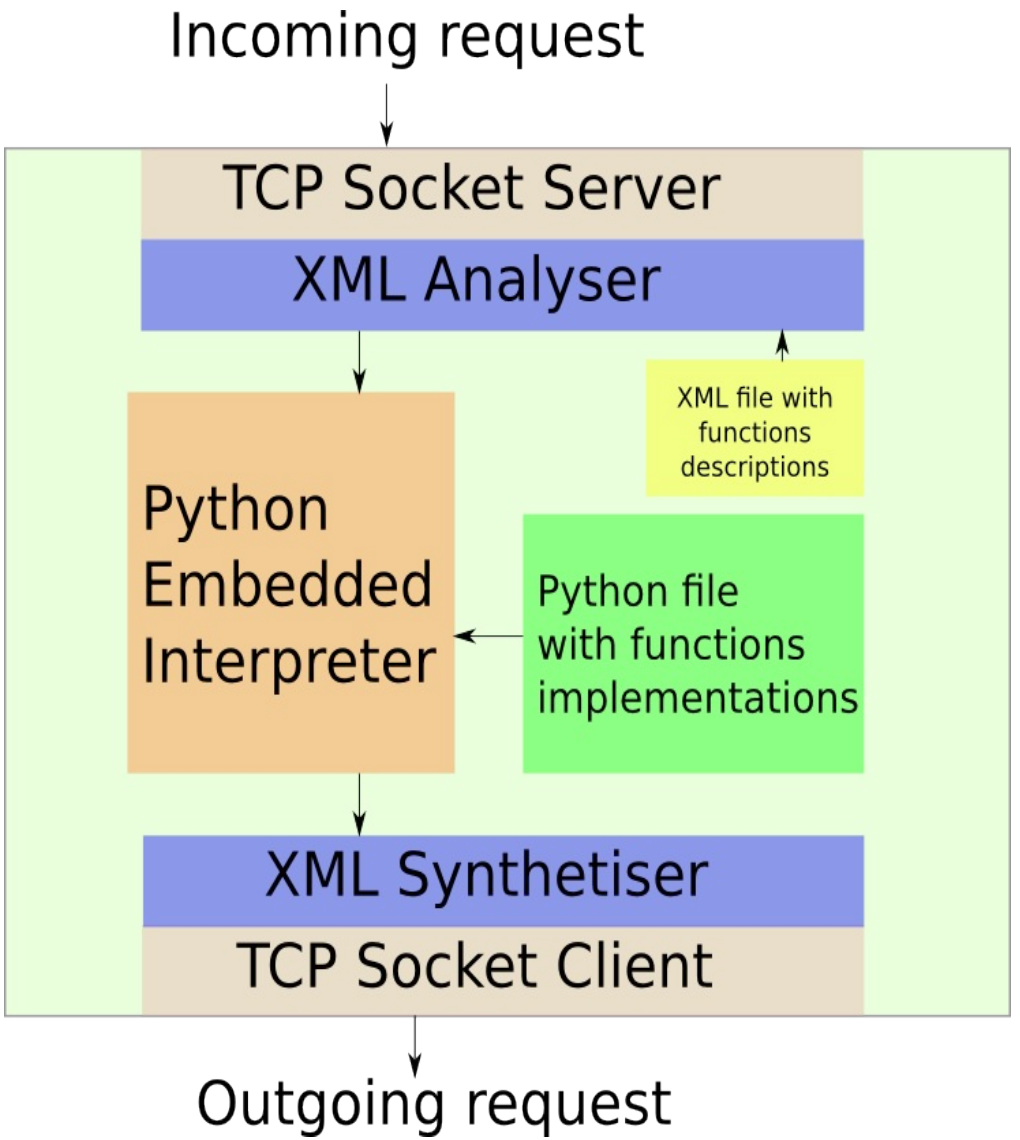
Acquisition chain

- A generic data manipulation framework
  - Getting data from medias (plugin system)
  - Uncapping data (plugin system)
  - Distributing data to files / sockets / shared memory
  - Transform raw data to :
    - Plain format
    - High level events



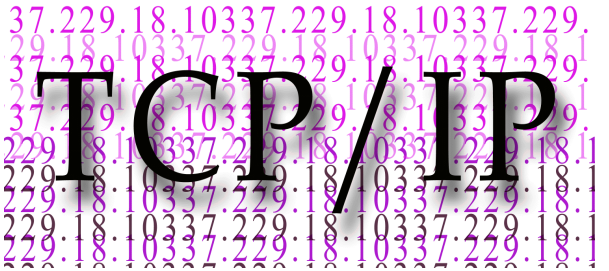
The command module (cmdmod)

- Generic Python system
- Handle the communication and command parsing
- Take care of code distribution



A communication protocol

Commands are XML through TCP sockets



Command example :

```
<cmd name="set_rgen_dif"><param>0</param>
<param>120</param><param>50</param>
<param>1000</param></cmd>
```

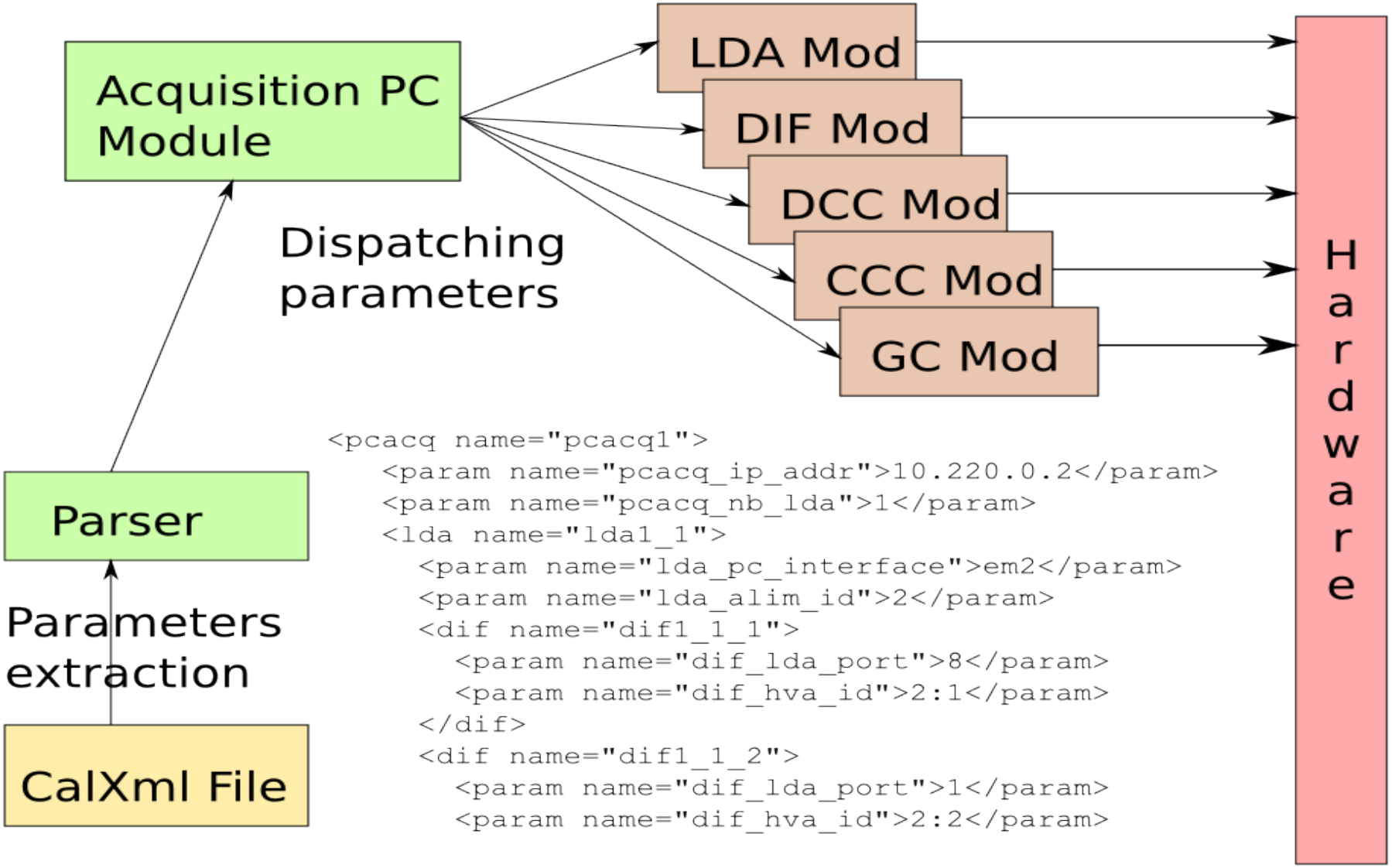
Answer code :

A numerical value (0 for chess and 1 for suc

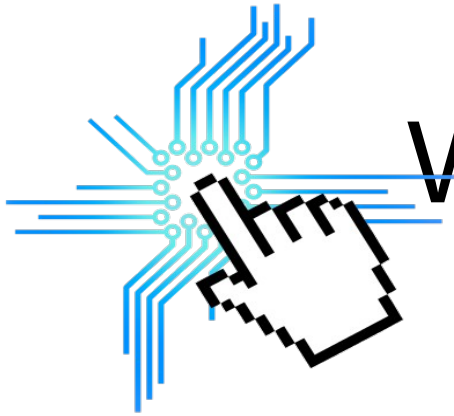
An error string

```
<res retcode=1><![CDATA[random generator setted]]></res>
```

Centralized configuration module



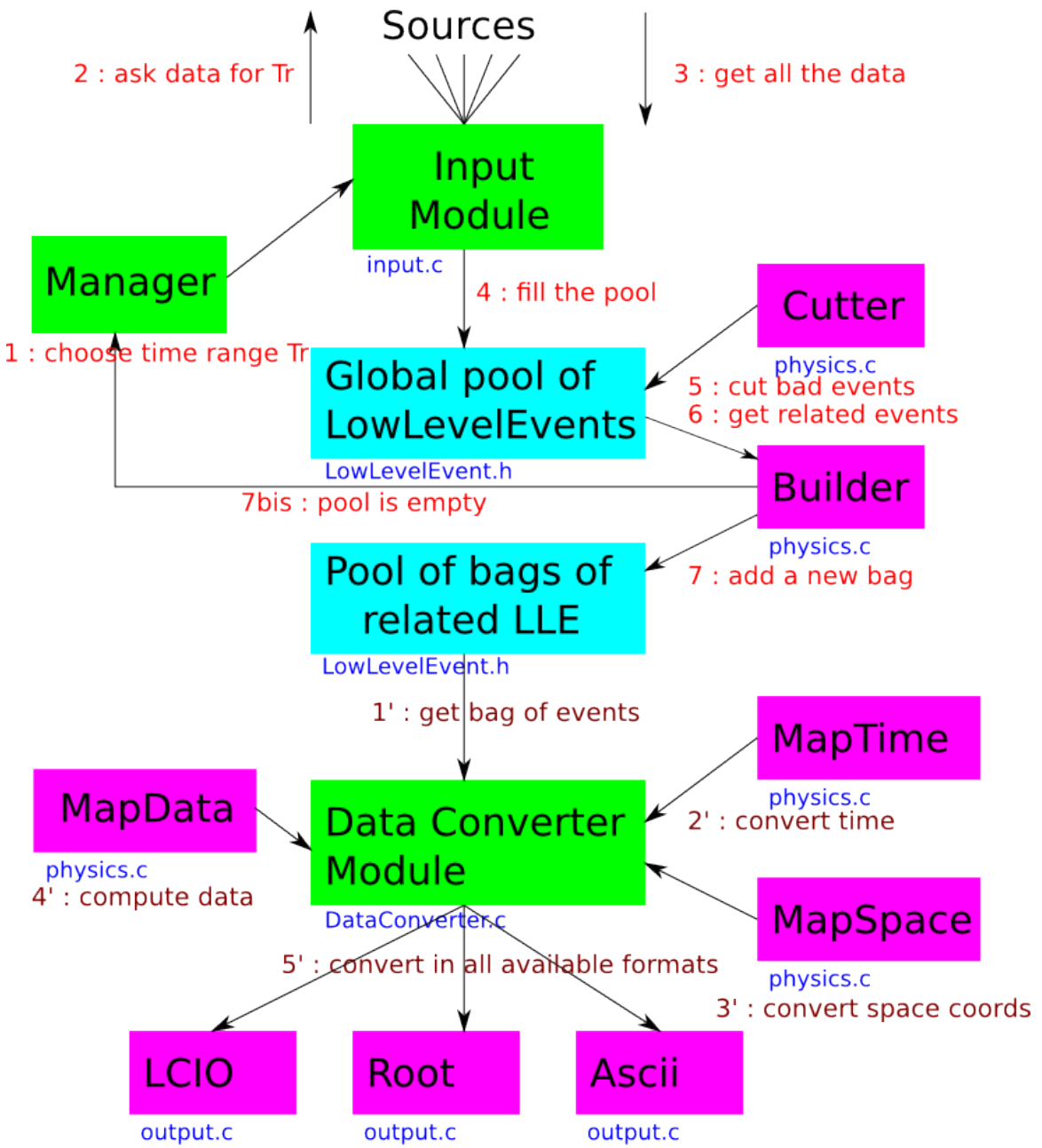

```
<pcacq name="pcacq1">
   <param name="pcacq_ip_addr">10.220.0.2</param>
   <param name="pcacq_nb_lda">1</param>
   <lda name="lda1_1">
     <param name="lda_pc_interface">em2</param>
     <param name="lda_alim_id">2</param>
     <dif name="dif1_1_1">
       <param name="dif_lda_port">8</param>
       <param name="dif_hva_id">2:1</param>
     </dif>
     <dif name="dif1_1_2">
       <param name="dif_lda_port">1</param>
       <param name="dif_hva_id">2:2</param>
```



What's new in Pyrame

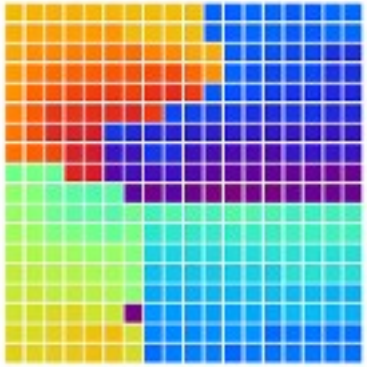
- New configuration module : keep in real time an analog of every configuration values in the system → able to save the running configuration at any time
- New bindings : C++, Labview, Xdaq
- New generic class : ps (power supply), pg (pulse generator) to reduce the specificity of the drivers
- Lot's of new drivers (oscilloscopes, new power supplies, new pulse generators)
- The acquisition time is now multi-media through a plugin system supporting (Raw ethernet, TCP client and server , UDP and USB)
- A time tagging system has been implemented to share clock between multiple channels (extraction and injection)
- The CalXML tool is now completely generic (not related to calicoes anymore)

What's new : the event builder



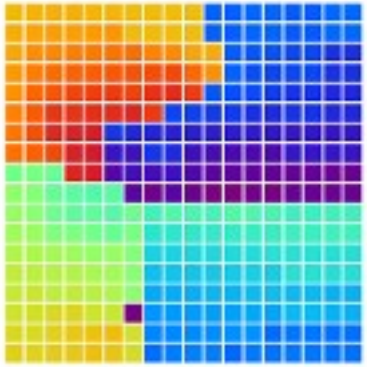
What's new in Pyrame

- Complete online documentation
- Available as open-source software (LGPL Licence)
- Some publications (TWEPP'13, IN2P3 Computing letter)
- External users : CPPM in Marseilles
- A new logo :-)



What is Calicoes ?

- Stands for CALICe OnlinE System
- Acquisition and control-command for the SiW-Ecal
- Based on Pyrame
- Basically just a set of control-commands for all the Ecal specific components : GDCCs, DIFs, Skiroc Chips...



What's new in Calicoes

- Lot's of internal modifications to cope with Pyrame V2
- Lot's of modifications in the high level part to ease the use :
  - Removal of the OFF state, unused
  - Full support of the multiple PCs acquisition
  - New loading/saving configuration primitives through integration of Pyrame V2 config module. Ability to dump the whole configuration in a single file at any time
  - Automatic configuration saving at startacq
  - New naming system of the components to be able to call actions on the slab names instead of the dif number
  - A GUI for the high level part of the detector (state machine and loading/saving config + statistics)

The Software test-beam

- All this feature are still in development
- The release of both Pyrame V2 and Calicoes V2 is planned for the end of July
- To test them intensively, a software cosmic testbeam is planned at LLR the last week of July

The Software test-beam

- Testbeam program (by priority) :
  - Basic test (1 slab)
  - Stress test (6 slabs on a GDCC)
  - Repartition test (2 PC with 2 GDCCs and 3 slabs for each)
  - Corruption test : same seed random pattern generation in DIFs and output comparison
  - Frequency scanning (scan the spill freq and see corruption status)
  - Complete cosmic calibration :
    - Scurve with noise
    - Scurve with one channel injection
    - Comparison of the different calibration algorithm
  - Cosmic data taking (if it remains time)