DAFNE Web Tools for Data Handling

*M. Masciarelli, G. Mazzitelli "**DAFNE Web Server Data Access Facility**" DAFNE Technical Note C-19, April 2001*

*G. Mazzitelli, F. Murtas, P. Valente. **"The KLOE/DAFNE Status Logging, Analysis and Database System"**. ICALPLCS2001, 27-30 November, 2001. San Jose, California, USA*

*G. Mazzitelli, A. Stella**. "DAFNE Server Data Access Facility Update"** DAFNE Technical Note C-20, March 2002*

G. Mazzitelli,

13 October 2002

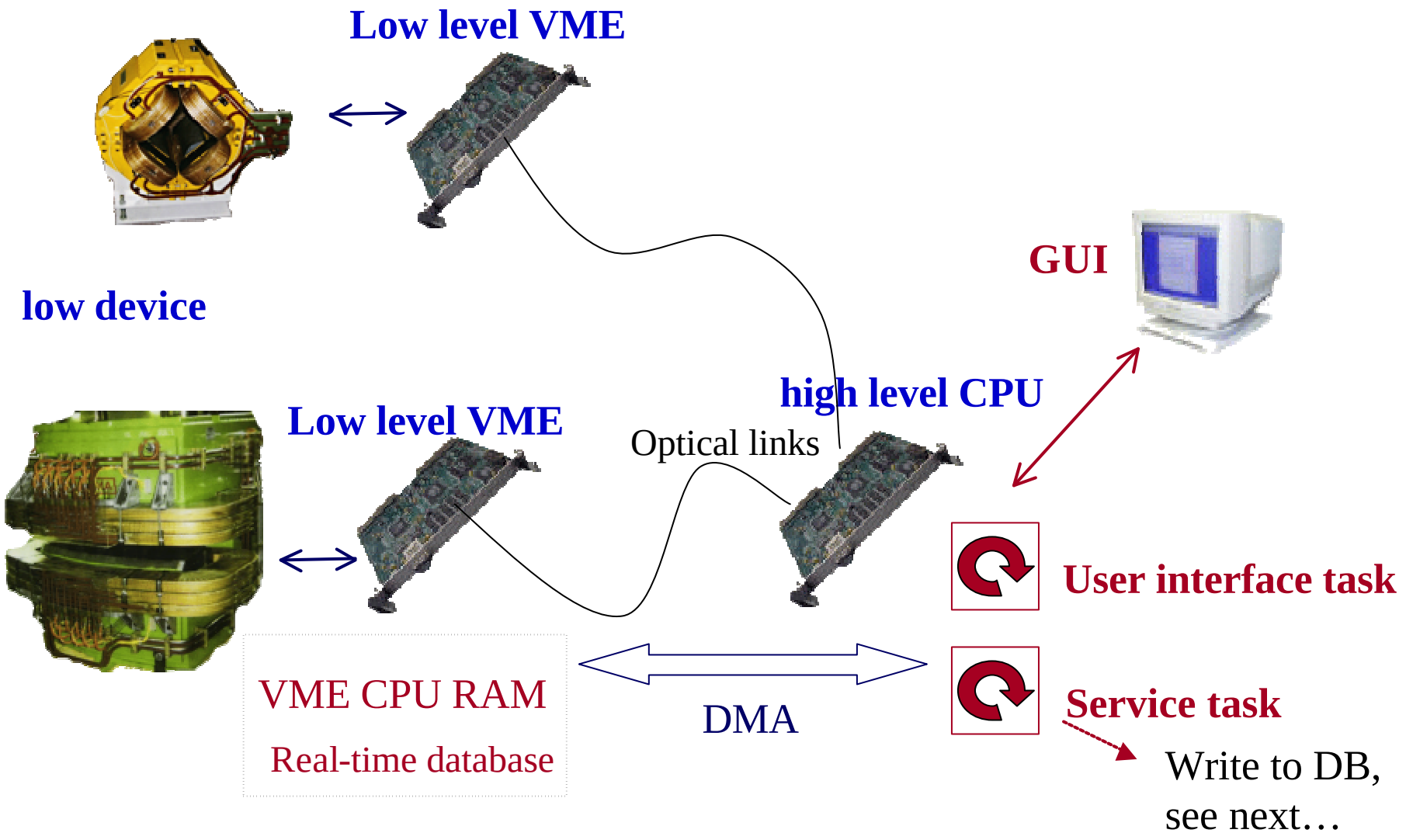
Overview

- System architecture (DAFNE/KLOE)
- Vocabulary: HTLM, apache server, CGI, LV plot sever, SMS, MAIL gateway
- File system and access to data
- Tips Netscape/Explorer, access to LNF ip-node…

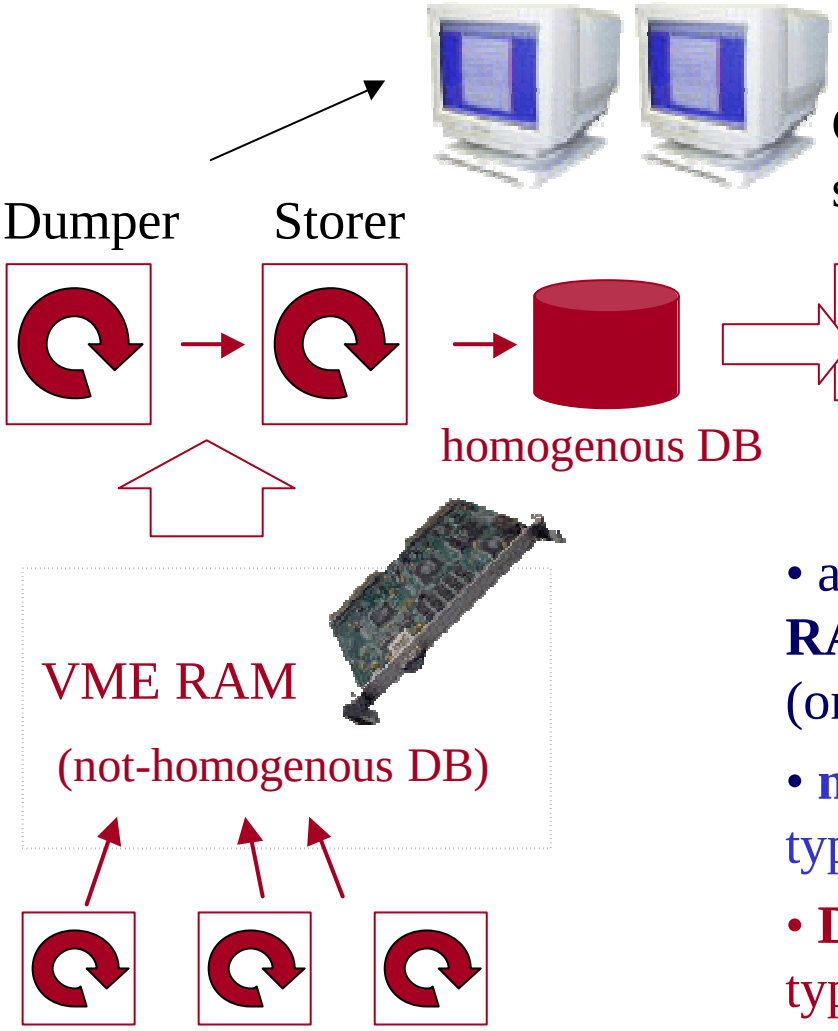
Banner CGI (Unix script language)

```
#!/bin/csh
source /space/daq/.dafneEviroment
echo Content-type: text/html
echo
echo '<HTML>'
echo '<HEAD>'
echo '<META HTTP-EQUIV="Pragma" CONTENT="no-cache">'
echo '<META NAME="Author" CONTENT="Giovanni Mazzitelli">'
echo '<META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">'
echo '<META HTTP-EQUIV="refresh" CONTENT="10;URL=/cgi-bin/banner2">'
echo '<TITLE>banner</TITLE>'
echo '</HEAD>'
echo '<BODY TEXT="#000000" BGCOLOR="#FDFDFD" LINK="#0000FF" VLINK="#551A8B" ALINK="#0000FF">'
set msg = `cat $tempFile/dafne.txt`
echo '<CENTER><FONT SIZE=+1 COLOR="#C51D0C">'
echo $msg
echo '</FONT></CENTER>'
echo '<CENTER>'
echo '<A HREF="/" TARGET="_top">Home</A>   '
echo '<A HREF="/current/" TARGET="mainpage">Summary Plots & Current</A>   '
echo '<A HREF="/vacuum/" TARGET="mainpage">Vacuum</A>   '
echo '<A HREF="/luminosity/" TARGET="mainpage">Luminosity</A>'
echo '</CENTER>'
echo '</BODY>'
echo '</HTML>'
```

DA? NE Controls

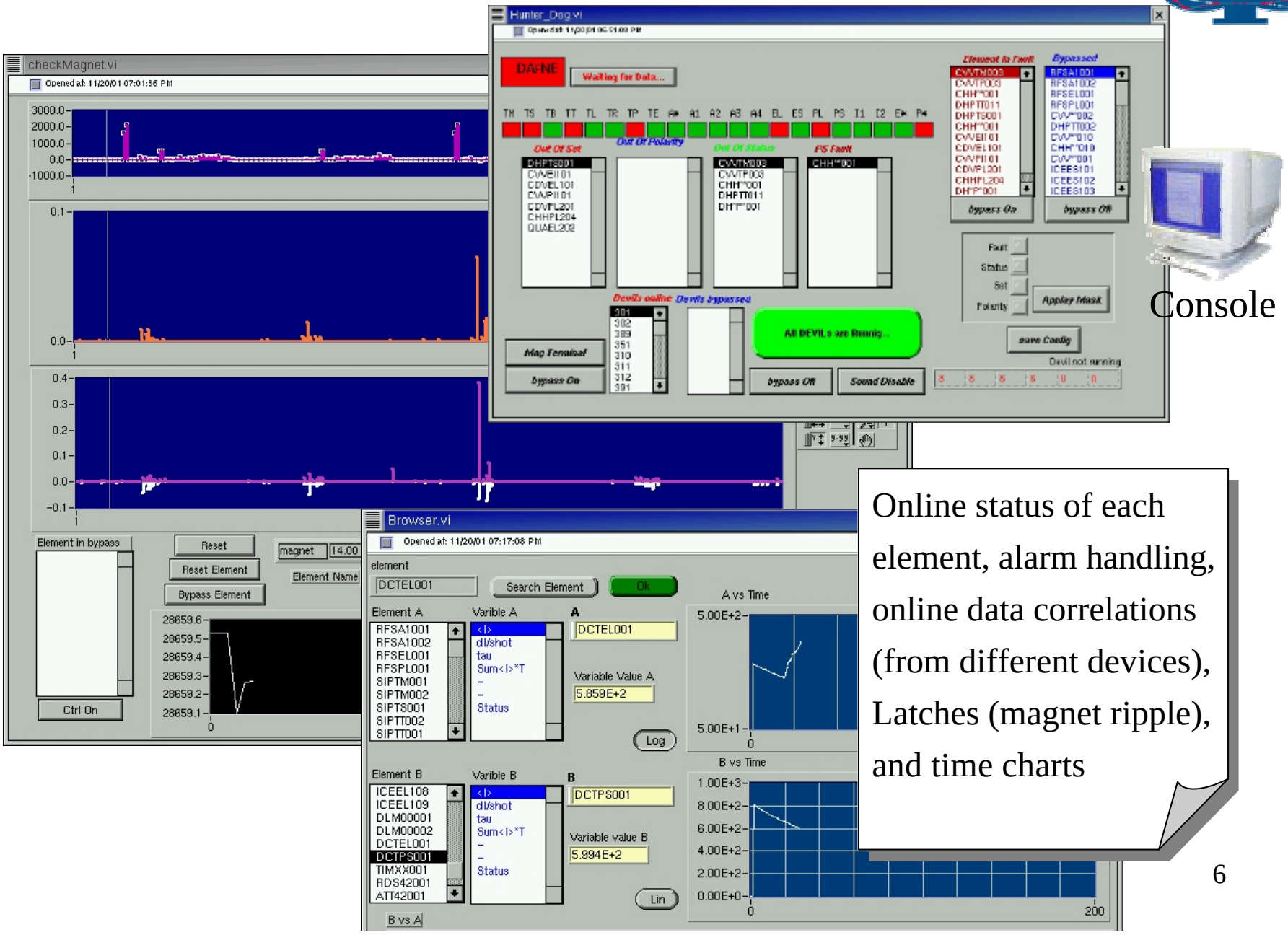


DA? NE DB: General Scheme



- all machine elements data stored to **RAM database** by low level processes (on **VME CPU**)
- **not-homogenous DB** (different data types for each device)
- **Dumper** process: align different data types in **homogenous** format
- **Storer**: synchronize and write data to mass storage

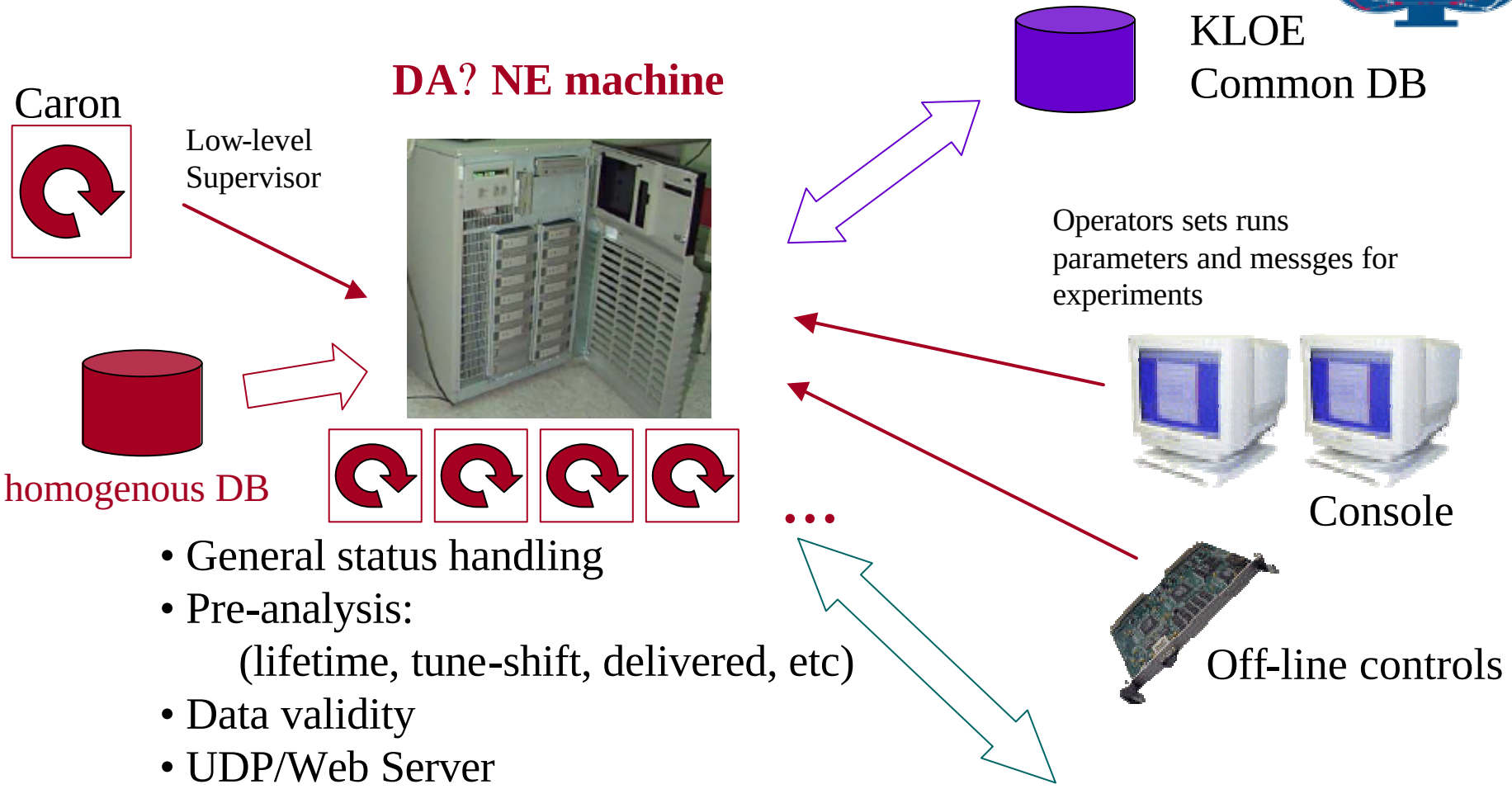
DA? NE DB: Online Tools



Console

Online status of each element, alarm handling, online data correlations (from different devices), Latches (magnet ripple), and time charts

DA? NE Tasks: Monitors, Pre-analysis



- General status handling
- Pre-analysis:
  (lifetime, tune-shift, delivered, etc)
- Data validity
- UDP/Web Server
- Plot Server
- e-mail/SMS gateway
- Service tasks for off-lines controls

Alarms and e-services

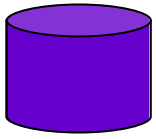
Gateway e-mail

GSM short message

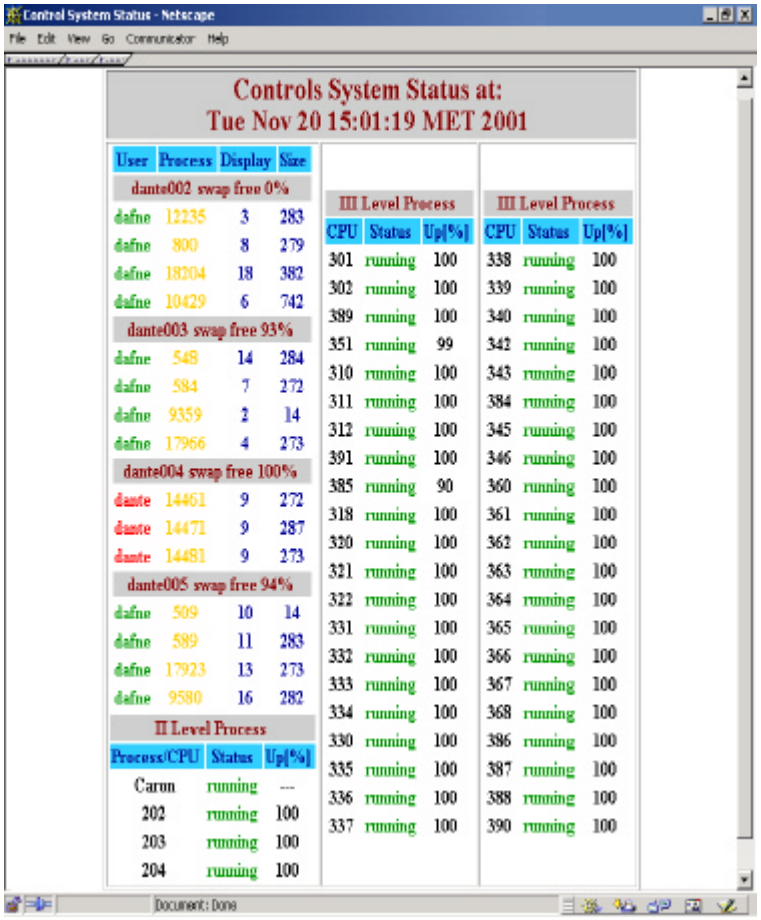
request

request

Data, alarms, statistics



Common DB



Supervisor Status

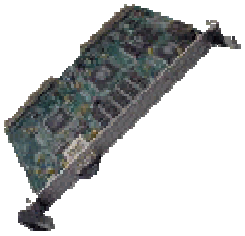
KLOE Slow Control

Serial lines

Power supplies

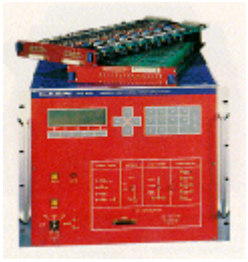
Low voltages

VME CPU



TCP/IP

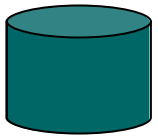
Slow Control machine



High voltages

Low level process

High level process

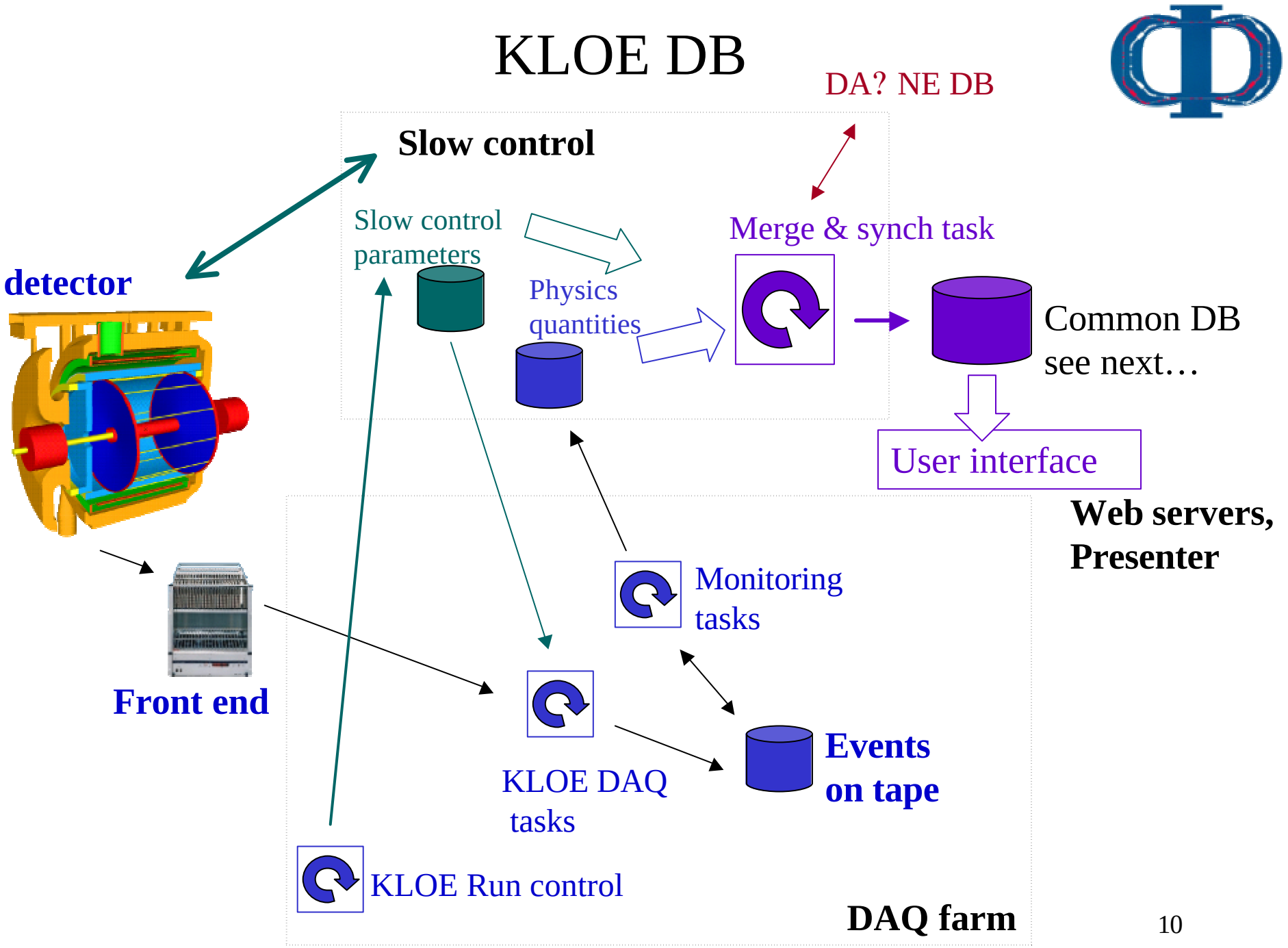


Storage

User interface: **Web server**

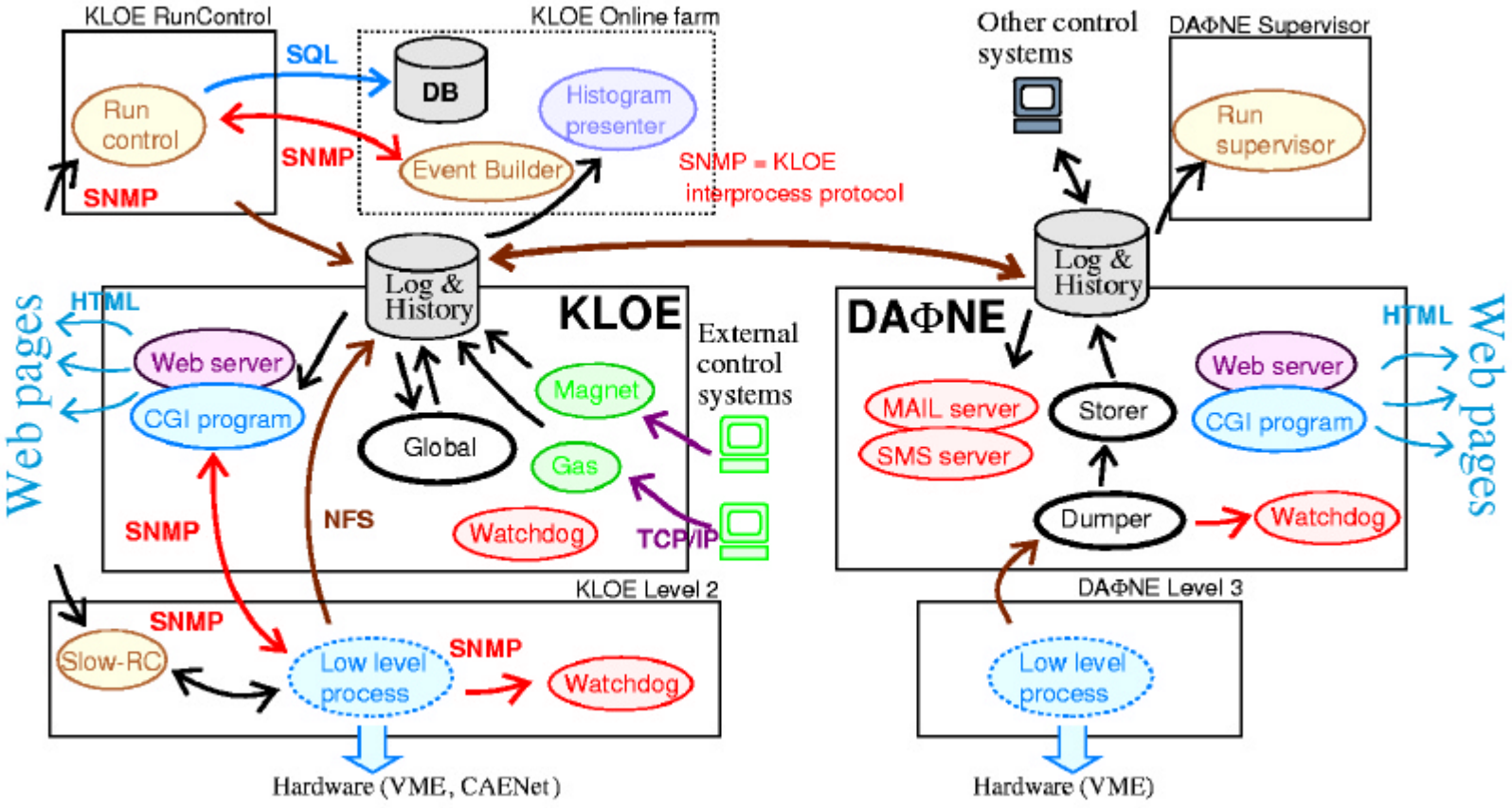
Commands and monitoring

KLOE DB


DA? NE DB
Slow control
Slow control parameters
Physics quantities
Merge & synch task
Common DB see next…
User interface
detector
Front end
Monitoring tasks
KLOE DAQ tasks
Events on tape
KLOE Run control
Web servers, Presenter
DAQ farm

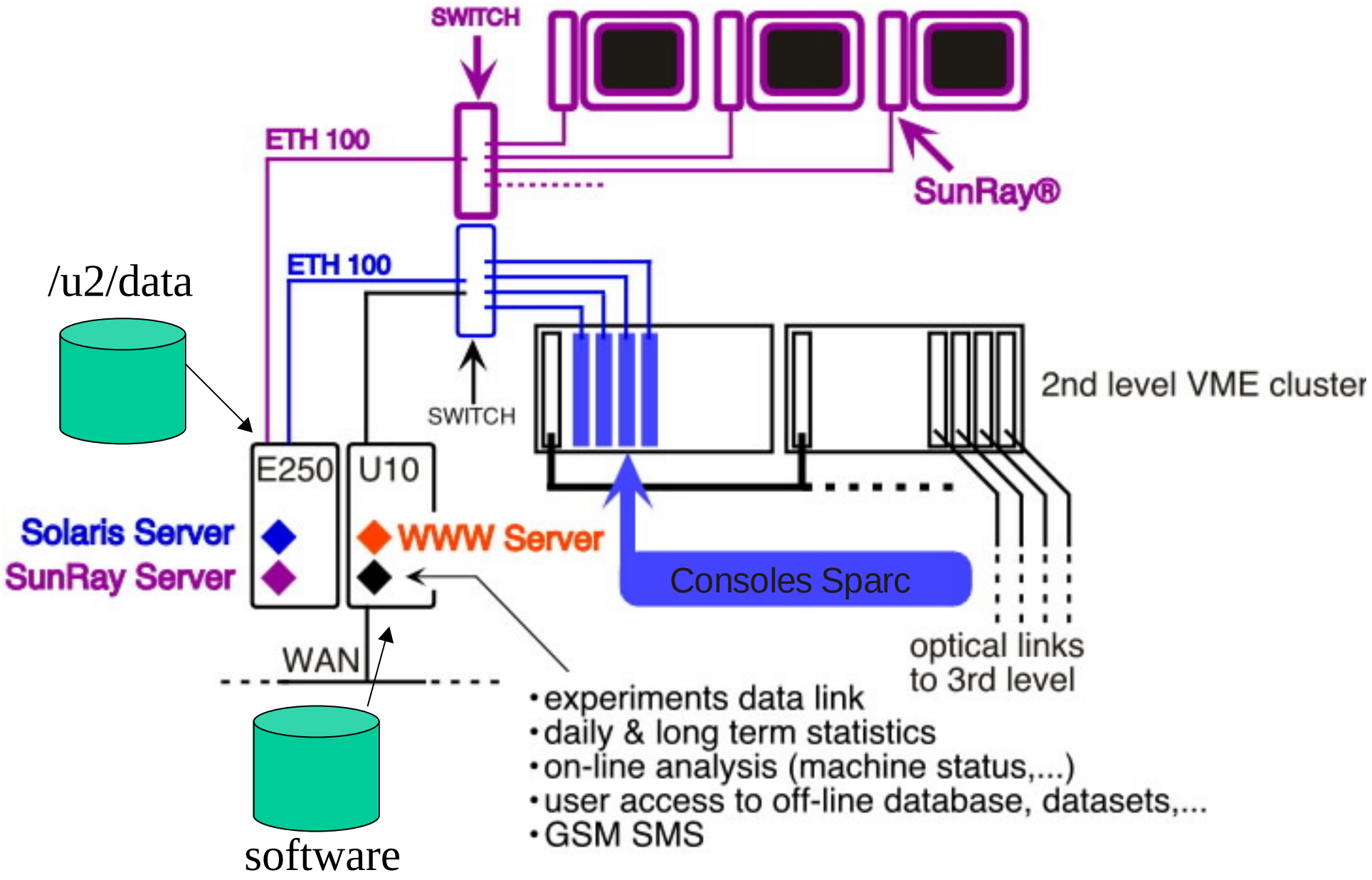
Communication and Common DB

Summarizing…



- Complete integration between the two systems
- All data are accessible from both ends
- Complementary user interfaces (experiment oriented and machine oriented)

DAFNE Control System



Process and Sampling

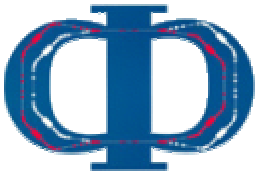
DUMPER: samples all data 2-5 sec (Hunter dog, Browser…)
STORE: gets data from DAMPER every 15 sec and…

1. Write fast status for CGI, Spectrum analyzer…
2. Write plan text file .**raw**, pre analyzed .**dat** sec of selected variables and elements every 15
3. Write **.lv** binary formatted files of all variables of previous selected elements every minute
4. Write **.lv** binary formatted files of all elements every 5 minutes

DAFNE:

1. Synchronize data of different experiments
2. Online analysis (fill, lifetime, delivery luminosity…)
3. Watch dog of all process
4. Web, plot, mail, sms server

File System



- **.lv** binary LABVIEW history files
- **.fast** fast plain text history data
- **.slow** slow plain text history data
- **.raw** fast plain text un-decoded history data
- **.stat** fast plain text status files
- **.dat** generic (analyzed) plain text history files
- **.lumi** DEAR (analyzed) synchronized data
- **The DAFNE file system has the following structure:**
- /u2/data/binary/ DAFNE data binary format
- /u2/data/binlog/ logs information on binary data
- /u2/data/dear/ DEAR history files
- /u2/data/kloe/ not used
- /u2/data/estimated/ estimated DAFNE luminosity
- /u2/data/fast/ fast status file
- /u2/data/history/daily/ daily history of integrated quantity
- /u2/data/history/raw/raw fast logged machine data
- /u2/data/history/dat/ decoded fast logged machine data
- /u2/data/monitor/caron/ DEVIL and CARON history files
- /u2/data/monitor/caronlog/ DEVIL and CARON log history files
- /u2/data/monitor/sysreset/ Control System reset log files
- /u2/data/plainFiles/ plain text daily file of the most common variable
- /u2/data/runs/status/ actual status runs information
- /u2/data/runs/logs/ logs of runs information
- /u2/data/runs/report/ 8 hour report information
- /u2/data/slow/ history of slow elements most common variable
- /u2/data/temp/ temporary files
- /kloe/ KLOE history files
- /u2/data/config/ DEAR, KLOE, FINUDA machine parameter

Control System Elements

Magnet (low level RTDB element):

MG1:CurrSett:CurrROut:Polarity:Volt:Fault1:Fault2:Status:
MGO:CurrSett:CurrROut:Polarity:Volt:Fault1:-:Status:
CIT:-:-:-:-:Fault1:-:Status: (correctors main unit)
CHV:CurrSett:CurrROut:-:Volt:Fault1:-:Status:
COR:-:-:-:-:Fault1:-:Status: (correctors main unit)
CHN:CurrSett:CurrROut:-:Volt:Fault1:-:Status:

1. CurrSett: Current setting [A]
2. CurrROut: Current read out [A]
3. Polarity: Polarity read [-1, 0, 1]
4. outVolt: Output voltage [V]
5. Fault1: fault word 1
6. Fault2: fault word 2
7. Status: 0 power off, 1 standby, 2 operational, 3 bad

DC current monitor (low level RTDB element):

DCT:<I>:dI/shot:tau:Sum<I>*T:-:-:Status:

1. <I>: average current, last second [mA]
2. dI/shot: increase of current each shot (not used)
3. tau: lifetime (not used)
4. Sum<I>*T: integrated current [Ah] (online process)
5. not used
6. not used
7. Status: error mask word

Vacuum (low level RTDB element):

VUG:Pressure:-:-:-:-:-:Status:

…

Exercise…

- File system and access to data
- Tips Netscape/Explorer, access to LNF ip-node…