CAT Control Software

F. Machefert

Laboratoire de l'Accélérateur Linéaire

Calorimeter upgrade Meeting

Introduction

Purpose

- Control the electronics (configuration)
- Run acquisition tasks in different conditions to test the electronics
  - noise
  - resolution
  - timing studies
  - spill over
  - bit error rate
  - ...
- Be able to integrate in the same test several systems (Front-End, control board, TVB, ...)
- Be user friendly
  - Do not duplicate work : e.g. USB/Specs interfaces written once for all (stored in a library that you simply load at run time)
  - Graphical interface
  - Plotting capabilities to show results online (save and print graphs)
  - Efficient data storage (ROOT)
  - User may integrate the code for his own electronics easily (by creating a loadable external library)
  - Having an easy to use and powerful command interpreter (python)

Presentation of CAT

Cat

Language:

- C++
- Python (user interfacing)

Uses public software:

- ROOT (Data storage - standard in HEP)
- C++ and Python (standard languages)
- wxPython (graphical package for python)
- Boost (wrapping of C++ in Python, C++ functions of the libraries fully accessible from python)

Works on the 2 platforms

- Linux
- Windows (not competed yet)

The new version

Problems of the previous version

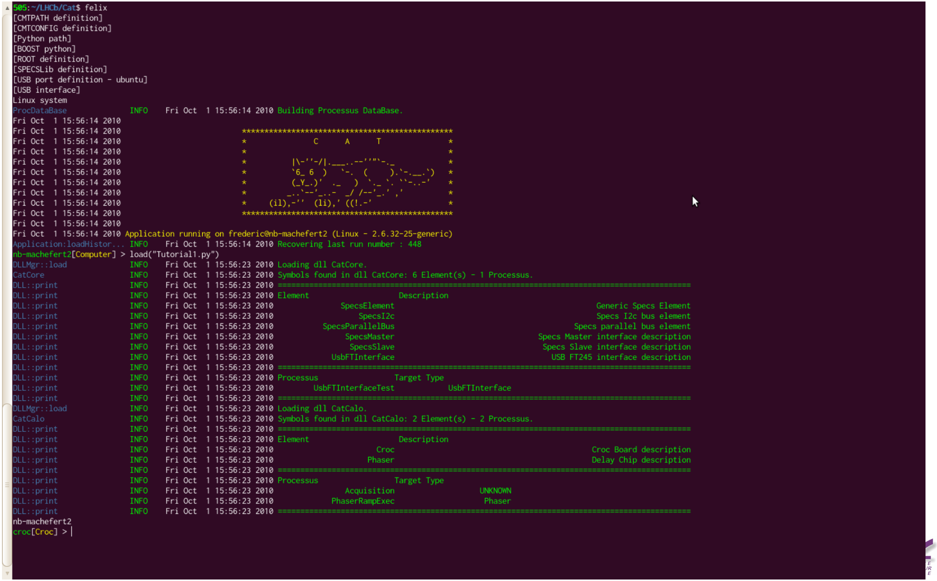
The new version is a re-writing of the version presently used at the pit.
Purpose was to get rid of 2 problems:

1. User command interface was "home-made"
   - It was very painful to code (every instruction was "hard-coded")
   - Not very efficient (could only do what was indeed coded)
   - A typing error could lead to *"segmentation fault"*
2. A private user package had to be integrated by ALL the users
   - User had to include everything in its copy
   - A bug in a small piece of code of a user could prevent everyone from working
   - Could not easily have several versions of a package for test purpose

Solutions

1. Replace the "home-made" command interface by the python interface
   - All python instructions are available (loops, conditions, etc...)
   - The Cat C++ code is interfaced with python (wrapping)
     All C++ functions accessible from the python command prompt (act on the electronics)
   - Convenient functions defined to make the commands unix-like (pwd(), cd(), ls(), tree(), ...)
2. A single compulsory library is needed at the beginning (CatKernel)
   - You load what you need by calling the requested libraries
   - A library is bug? Don't load it at run time or pick-up the previous version.

Running the program



```
505:~/LHCb/Cat$ felix
[CMTPATH definition]
[CMTCONFIG definition]
[Python path]
[BOOST python]
[ROOT definition]
[SPECSLib definition]
[USB port definition - ubuntu]
[USB interface]
Linux system
ProcDataBase              INFO    Fri Oct  1 15:56:14 2010 Building Processus DataBase.
Fri Oct  1 15:56:14 2010
Fri Oct  1 15:56:14 2010                           ***********************************************
Fri Oct  1 15:56:14 2010                           *               C      A      T               *
Fri Oct  1 15:56:14 2010                           *                                             *
Fri Oct  1 15:56:14 2010                           *          |\-''-/|.___..--''"`-._            *
Fri Oct  1 15:56:14 2010                           *          `6_ 6  )   `-.  (     ).`-.__.`)   *
Fri Oct  1 15:56:14 2010                           *          (_Y_.)'  ._   )  `._ `. ``-..-'    *
Fri Oct  1 15:56:14 2010                           *         _..`--'_..-  _/ /--'_.' ,'          *
Fri Oct  1 15:56:14 2010                           *     (il),-''  (li),' ((!.-'                 *
Fri Oct  1 15:56:14 2010                           ***********************************************
Fri Oct  1 15:56:14 2010
Fri Oct  1 15:56:14 2010 Application running on frederic@nb-machefert2 (Linux - 2.6.32-25-generic)
Application:loadHistor... INFO    Fri Oct  1 15:56:14 2010 Recovering last run number : 448
nb-machefert2[Computer] > load("Tutorial1.py")
DLLMgr::load              INFO    Fri Oct  1 15:56:23 2010 Loading dll CatCore.
CatCore                   INFO    Fri Oct  1 15:56:23 2010 Symbols found in dll CatCore: 6 Element(s) - 1 Processus.
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
DLL::print                INFO    Fri Oct  1 15:56:23 2010 Element                    Description
DLL::print                INFO    Fri Oct  1 15:56:23 2010               SpecsElement                                             Generic Specs Element
DLL::print                INFO    Fri Oct  1 15:56:23 2010                   SpecsI2c                                             Specs I2c bus element
DLL::print                INFO    Fri Oct  1 15:56:23 2010           SpecsParallelBus                                        Specs parallel bus element
DLL::print                INFO    Fri Oct  1 15:56:23 2010                SpecsMaster                                Specs Master interface description
DLL::print                INFO    Fri Oct  1 15:56:23 2010                 SpecsSlave                                 Specs Slave interface description
DLL::print                INFO    Fri Oct  1 15:56:23 2010             UsbFTInterface                                   USB FT245 interface description
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
DLL::print                INFO    Fri Oct  1 15:56:23 2010 Processus                 Target Type
DLL::print                INFO    Fri Oct  1 15:56:23 2010         UsbFTInterfaceTest            UsbFTInterface
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
DLLMgr::load              INFO    Fri Oct  1 15:56:23 2010 Loading dll CatCalo.
CatCalo                   INFO    Fri Oct  1 15:56:23 2010 Symbols found in dll CatCalo: 2 Element(s) - 2 Processus.
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
DLL::print                INFO    Fri Oct  1 15:56:23 2010 Element                    Description
DLL::print                INFO    Fri Oct  1 15:56:23 2010                       Croc                                            Croc Board description
DLL::print                INFO    Fri Oct  1 15:56:23 2010                     Phaser                                            Delay Chip description
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
DLL::print                INFO    Fri Oct  1 15:56:23 2010 Processus                 Target Type
DLL::print                INFO    Fri Oct  1 15:56:23 2010                Acquisition                   UNKNOWN
DLL::print                INFO    Fri Oct  1 15:56:23 2010             PhaserRampExec                    Phaser
DLL::print                INFO    Fri Oct  1 15:56:23 2010 ============================================================================================
nb-machefert2
croc[Croc] > 
```

Script example : electronics definition

```
>from libCatCore import *
>from libCatCalo import *
>loadDll("CatCore")
>loadDll("CatCalo")
>
>opts().setLogOutputLevel(MsgLevel.VERBOSE)
>opts().setLogStorage(False)
>opts().setStoragePath("data")
>opts().setDataStorage(True)
>
>
>cd("")
>create("master","SpecsMaster")
>create("slave","SpecsSlave")
>create("bus","SpecsParallelBus")
>cd("/master/slave")
>create("i2c","SpecsI2c")
>create("phaser","Phaser")
>cd("/master")
>create("croc","Croc")
```

```
Import needed libraries (USB + Calo)
in python
and in C++
.
.
Modify the program options
Do not store log output in a file
Store output in "data" directory
Store data produced on disk
.
Build Electronics hierarchy
Go to the top (the computer itself)
Create a SpecsMaster (in computer)
Create a SpecsSlave (in master)
Create a parallel bus (on slave)
Go back to the slace
Create the i2c bus
Connect a delay chip (i2c)
Go back the master
Connect a CROC (includes everything)
```

Tutorial-1a.py

Tutorial-1b.py

Running a task

The computer is always defined (in the CatKernel library)

You can run a program on the computer (100 events)

```
>run(‘‘TestSuite’’,’’/computer’’,100)
```

or

```
>cd()
>run(‘‘TestSuite’’,obj(),100)
```

Running the USB interface

Defining a USB hardware:

```
>cd()
>create("usb","UsbFTInterface")
>usb=cat.computer().child("usb")
>usb.setSerialNum("Wilky_05")
>usb.setDeviceDesc("Carte Test_Wilky")
>usb.init()
>usb.setWordSize(WordSize.U32)
```

Making a simply test in a python script

```
>r=[]
>w=range(int(’12345678’,16),int(’12345678’,16)+10)
>r=[]
>usb.write(8,w)
>usb.read(8,10,r)
>print w
>print r
```

Tutorial-2a.py

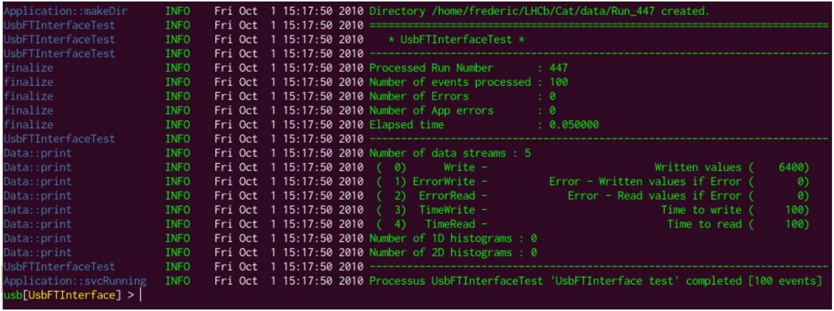
Tutorial-2b.py

Running a program on the hardware

Running an automatic program (100 events)

```
>p=proc("UsbFTInterfaceTest")
>p.setAddress(8) # define the fifo address where to write/read
>p.setParam(64,100.,20.)  # 64 mots - mean=100 - sigma=20
>run(‘‘UsbFTinterfaceTest’’,usb,100)
```

Tutorial3.py



```
Application::makeDir      INFO    Fri Oct  1 15:17:50 2010 Directory /home/frederic/LHCb/Cat/data/Run_447 created.
UsbFTInterfaceTest        INFO    Fri Oct  1 15:17:50 2010 ==========================================================================
UsbFTInterfaceTest        INFO    Fri Oct  1 15:17:50 2010    * UsbFTInterfaceTest *
UsbFTInterfaceTest        INFO    Fri Oct  1 15:17:50 2010 --------------------------------------------------------------------------
finalize                  INFO    Fri Oct  1 15:17:50 2010 Processed Run Number       : 447
finalize                  INFO    Fri Oct  1 15:17:50 2010 Number of events processed : 100
finalize                  INFO    Fri Oct  1 15:17:50 2010 Number of Errors           : 0
finalize                  INFO    Fri Oct  1 15:17:50 2010 Number of App errors       : 0
finalize                  INFO    Fri Oct  1 15:17:50 2010 Elapsed time               : 0.050000
UsbFTInterfaceTest        INFO    Fri Oct  1 15:17:50 2010 --------------------------------------------------------------------------
Data::print               INFO    Fri Oct  1 15:17:50 2010 Number of data streams : 5
Data::print               INFO    Fri Oct  1 15:17:50 2010  (  0)      Write -                           Written values (    6400)
Data::print               INFO    Fri Oct  1 15:17:50 2010  (  1) ErrorWrite -         Error - Written values if Error (       0)
Data::print               INFO    Fri Oct  1 15:17:50 2010  (  2)  ErrorRead -            Error - Read values if Error (       0)
Data::print               INFO    Fri Oct  1 15:17:50 2010  (  3)  TimeWrite -                            Time to write (     100)
Data::print               INFO    Fri Oct  1 15:17:50 2010  (  4)   TimeRead -                             Time to read (     100)
Data::print               INFO    Fri Oct  1 15:17:50 2010 Number of 1D histograms : 0
Data::print               INFO    Fri Oct  1 15:17:50 2010 Number of 2D histograms : 0
UsbFTInterfaceTest        INFO    Fri Oct  1 15:17:50 2010 --------------------------------------------------------------------------
Application::svcRunning   INFO    Fri Oct  1 15:17:50 2010 Processus UsbFTInterfaceTest 'UsbFTInterface test' completed [100 events]
usb[UsbFTInterface] > 
```

Plotting from the command mode

Data storage is coded in the C++

- they can be looked at with root (external session)
- But the data are directly accessible from the python shell

Fast plot capabilities

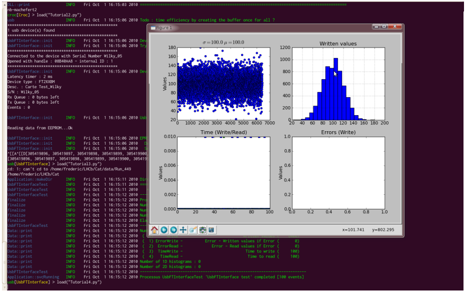
```
>import matplotlib.pyplot as plt
>p=proc("UsbFTInterfaceTest")
>plt.subplot(2,2,1) plt.plot(p.data(0), ’bo’) plt.title(r’$\sigma=’+str(p.sigma())+’\
\mu=’+str(p.mean())+’$’) plt.ylabel(’Values’)
>plt.subplot(2,2,2) plt.hist(p.data().vector(0), 20) plt.title(p.data().title(0))
plt.grid(True)
>plt.subplot(2,2,3) plt.plot(p.data(3), ’bs’, p.data(4), ’g^’) plt.title(r’Time
(Write/Read)’) plt.ylabel(’Values’)
>plt.subplot(2,2,4) plt.plot(p.data(1), ’k’) plt.title(r’Errors (Write)’)
plt.ylabel(’Values’)
>plt.show()
```

Tutorial4.py

Plots

Plots may be

- saved
- printed
- zoomed
- Text can be written on plot in latex mode

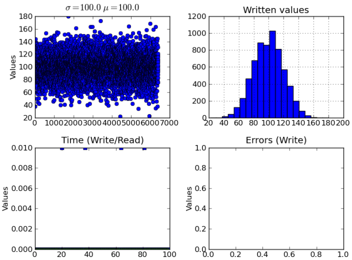


```
DLL::print              INFO    Fri Oct  1 16:15:03 2010 ========================================
nb-machefert2
croc[Croc] > load("Tutorial2.py")
usb                     INFO    Fri Oct  1 16:15:06 2010 Todo : time efficiency by creating the buffer once for all ?
*******************************************
1 usb device(s) found
*******************************************
UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010 Dev
UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010 Try
*******************************************
Connected to the device with Serial Number Wilky_05
Opened with handle : 08B40AA8 - internal ID : 1
*******************************************
UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010 Dev
Latency timer : 2 ms
Device type : FT2XXBM
Desc. : Carte Test_Wilky
S/N : Wilky_05
Rx Queue : 0 bytes left
Tx Queue : 0 bytes left
Events : 0

UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010 Usb

Reading data from EEPROM...Ok

UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010 EPR
UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010   D
UsbFTInterface::init    INFO    Fri Oct  1 16:15:06 2010   S
^[[A^[[D[305419896, 305419897, 305419898, 305419899, 305419900,
[305419896, 305419897, 305419898, 305419899, 305419900, 30541
usb[UsbFTInterface] > load("Tutorial3.py")
cd: 1: can't cd to /home/frederic/LHCb/Cat/data/Run_449
/home/frederic/LHCb/Cat
Application::makeDir    INFO    Fri Oct  1 16:15:11 2010 Dir
UsbFTInterfaceTest      INFO    Fri Oct  1 16:15:11 2010 ===
UsbFTInterfaceTest      INFO    Fri Oct  1 16:15:11 2010
UsbFTInterfaceTest      INFO    Fri Oct  1 16:15:12 2010 ---
finalize                INFO    Fri Oct  1 16:15:12 2010 Pro
finalize                INFO    Fri Oct  1 16:15:12 2010 Num
finalize                INFO    Fri Oct  1 16:15:12 2010 Num
finalize                INFO    Fri Oct  1 16:15:12 2010 Num
finalize                INFO    Fri Oct  1 16:15:12 2010 Ela
UsbFTInterfaceTest      INFO    Fri Oct  1 16:15:12 2010 ---
Data::print             INFO    Fri Oct  1 16:15:12 2010 Num
Data::print             INFO    Fri Oct  1 16:15:12 2010  (
Data::print             INFO    Fri Oct  1 16:15:12 2010  (  1) ErrorWrite -        Error - Written values if Error (       0)
Data::print             INFO    Fri Oct  1 16:15:12 2010  (  2)  ErrorRead -           Error - Read values if Error (       0)
Data::print             INFO    Fri Oct  1 16:15:12 2010  (  3)  TimeWrite -                          Time to write (     100)
Data::print             INFO    Fri Oct  1 16:15:12 2010  (  4)   TimeRead -                           Time to read (     100)
Data::print             INFO    Fri Oct  1 16:15:12 2010 Number of 1D histograms : 0
Data::print             INFO    Fri Oct  1 16:15:12 2010 Number of 2D histograms : 0
UsbFTInterfaceTest      INFO    Fri Oct  1 16:15:12 2010 ------------------------------------------------------------
Application::svcRunning INFO    Fri Oct  1 16:15:12 2010 Processus UsbFTInterfaceTest 'UsbFTInterface test' completed [100 events]
usb[UsbFTInterface] > load("Tutorial4.py")
```



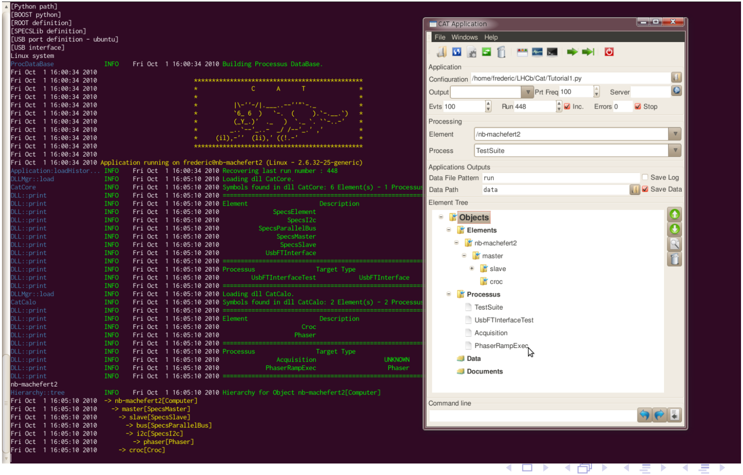
Graphical Interface : loading a script

The graphical interface of cat uses the previous program (runs on top of it)

- load the same scripts

The log output appears in the background

The main configurations parameters are accessible from the graphical interface



```
[Python path]
[BOOST python]
[ROOT definition]
[SPECSLib definition]
[USB port definition - ubuntu]
[USB interface]
Linux system
ProcDataBase              INFO    Fri Oct  1 16:00:34 2010 Building Processus DataBase.
Fri Oct  1 16:00:34 2010
Fri Oct  1 16:00:34 2010                           *************************************************
Fri Oct  1 16:00:34 2010                           *              C      A      T                  *
Fri Oct  1 16:00:34 2010                           *                                               *
Fri Oct  1 16:00:34 2010                           *          |\-''-/|.___..--''"`-._              *
Fri Oct  1 16:00:34 2010                           *          `6_ 6  )   `-.  (     ).`-.__.`)    *
Fri Oct  1 16:00:34 2010                           *          (_Y_.)'  ._   )  `._ `. ``-..-'     *
Fri Oct  1 16:00:34 2010                           *        _..`--'_..-  _/ /--'_.' ,'            *
Fri Oct  1 16:00:34 2010                           *     (il),-''  (li),' ((!.-'                  *
Fri Oct  1 16:00:34 2010                           *************************************************
Fri Oct  1 16:00:34 2010
Fri Oct  1 16:00:34 2010 Application running on frederic@nb-machefert2 (Linux - 2.6.32-25-generic)
Application:loadHistor... INFO    Fri Oct  1 16:00:34 2010 Recovering last run number : 448
DLLMgr::load              INFO    Fri Oct  1 16:05:10 2010 Loading dll CatCore.
CatCore                   INFO    Fri Oct  1 16:05:10 2010 Symbols found in dll CatCore: 6 Element(s) - 1 Processus
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
DLL::print                INFO    Fri Oct  1 16:05:10 2010 Element                    Description
DLL::print                INFO    Fri Oct  1 16:05:10 2010               SpecsElement
DLL::print                INFO    Fri Oct  1 16:05:10 2010                   SpecsI2c
DLL::print                INFO    Fri Oct  1 16:05:10 2010           SpecsParallelBus
DLL::print                INFO    Fri Oct  1 16:05:10 2010                SpecsMaster
DLL::print                INFO    Fri Oct  1 16:05:10 2010                 SpecsSlave
DLL::print                INFO    Fri Oct  1 16:05:10 2010             UsbFTInterface
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
DLL::print                INFO    Fri Oct  1 16:05:10 2010 Processus                 Target Type
DLL::print                INFO    Fri Oct  1 16:05:10 2010         UsbFTInterfaceTest            UsbFTInterface
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
DLLMgr::load              INFO    Fri Oct  1 16:05:10 2010 Loading dll CatCalo.
CatCalo                   INFO    Fri Oct  1 16:05:10 2010 Symbols found in dll CatCalo: 2 Element(s) - 2 Processus
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
DLL::print                INFO    Fri Oct  1 16:05:10 2010 Element                    Description
DLL::print                INFO    Fri Oct  1 16:05:10 2010                       Croc
DLL::print                INFO    Fri Oct  1 16:05:10 2010                     Phaser
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
DLL::print                INFO    Fri Oct  1 16:05:10 2010 Processus                 Target Type
DLL::print                INFO    Fri Oct  1 16:05:10 2010                Acquisition                   UNKNOWN
DLL::print                INFO    Fri Oct  1 16:05:10 2010             PhaserRampExec                    Phaser
DLL::print                INFO    Fri Oct  1 16:05:10 2010 =======================================================
nb-machefert2
Hierarchy::tree           INFO    Fri Oct  1 16:05:10 2010 Hierarchy for Object nb-machefert2[Computer]
Fri Oct  1 16:05:10 2010  -> nb-machefert2[Computer]
Fri Oct  1 16:05:10 2010    -> master[SpecsMaster]
Fri Oct  1 16:05:10 2010      -> slave[SpecsSlave]
Fri Oct  1 16:05:10 2010        -> bus[SpecsParallelBus]
Fri Oct  1 16:05:10 2010        -> i2c[SpecsI2c]
Fri Oct  1 16:05:10 2010          -> phaser[Phaser]
Fri Oct  1 16:05:10 2010      -> croc[Croc]
```

CAT Application

Application

Configuration /home/frederic/LHCb/Cat/Tutorial1.py

Output ▾ Prt Freq 100 Server

Evts 100 Run 448 ☑ Inc. Errors 0 ☑ Stop

Processing

Element /nb-machefert2 ▾

Process TestSuite ▾

Applications Outputs

Data File Pattern run ☐ Save Log

Data Path data ☑ Save Data

Element Tree

- Objects
  - Elements
    - nb-machefert2
      - master
        - slave
        - croc
  - Processus
    - TestSuite
    - UsbFTInterfaceTest
    - Acquisition
    - PhaserRampExec
  - Data
  - Documents

Command line

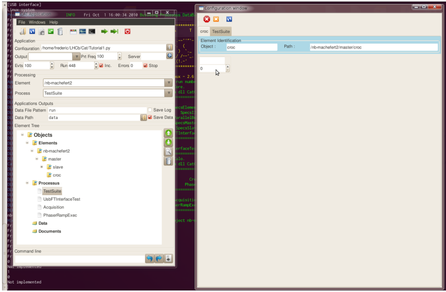
Editing the Hardware/Programs

It is possible to edit both the electronics and the programs with specific panels.

- Previous version of Cat could only configure the hardware through the graphical windows (had to use the command line)

The panels are easy to make

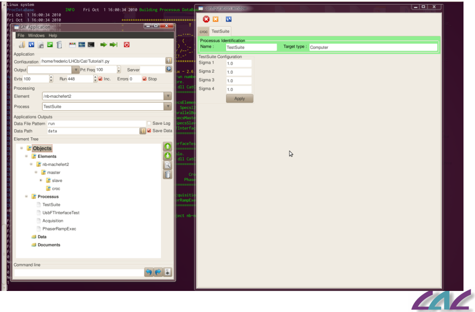
- a graphical tool can be used to make them
- none is defined yet, I simply made a few rudimentary examples (see below)



```
[USB interface]
Linux system
INFO    Fri Oct  1 16:00:34 2010 Building Processus DataB
0
Not implemented
1
0
Not implemented
```

Configuration /home/frederic/LHCb/Cat/Tutorial1.py
Output Prt Freq 100 Server
Evts 100 Run 448 ☑ Inc. Errors 0 ☑ Stop
Element /nb-machefert2
Process TestSuite
Data File Pattern run □ Save Log
Data Path data ☑ Save Data

Object : croc Path : /nb-machefert2/master/croc
0

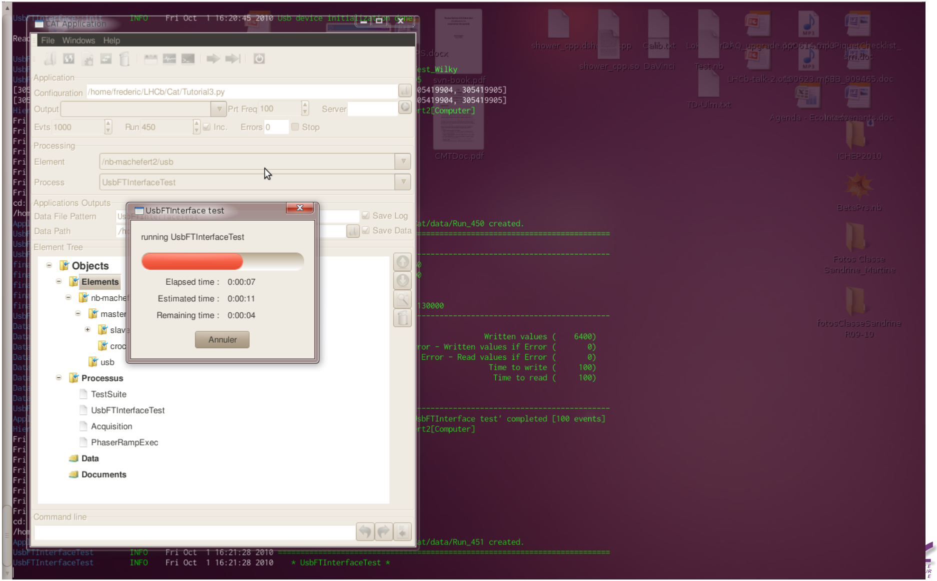


```
Linux system
ProcDataBase          INFO    Fri Oct  1 16:00:34 2010 Building Processus DataBase
Fri Oct  1 16:00:34 2010
Fri Oct  1 16:00:34 2010
```

Configuration /home/frederic/LHCb/Cat/Tutorial1.py
Output Prt Freq 100 Server
Evts 100 Run 448 ☑ Inc. Errors 0 ☑ Stop
Element /nb-machefert2
Process TestSuite
Data File Pattern run □ Save Log
Data Path data ☑ Save Data

Name : TestSuite Target type : Computer
Sigma 1 1.0
Sigma 2 1.0
Sigma 3 1.0
Sigma 4 1.0

Running a program



```
UsbFTInterface::init        INFO     Fri Oct  1 16:20:45 2010 Usb device initialization done
```

```
est_Wilky
5
05419904, 305419905]
05419904, 305419905]
rt2[Computer]

at/data/Run_450 created.
=================================================
-------------------------------------------------
0
0

130000
-------------------------------------------------

                    Written values (     6400)
ror - Written values if Error (        0)
 Error - Read values if Error (        0)
                     Time to write (      100)
                      Time to read (      100)

-------------------------------------------------
sbFTInterface test' completed [100 events]
rt2[Computer]
```

```
at/data/Run_451 created.
UsbFTInterfaceTest        INFO     Fri Oct  1 16:21:28 2010 =================================================
UsbFTInterfaceTest        INFO     Fri Oct  1 16:21:28 2010    * UsbFTInterfaceTest *
```

CAT Application

Application

Configuration /home/frederic/LHCb/Cat/Tutorial3.py

Output

Prt Freq 100

Server

Evts 1000

Run 450

☑ Inc.

Errors 0

□ Stop

Processing

Element /nb-machefert2/usb

Process UsbFTInterfaceTest

Applications Outputs

Data File Pattern UsbFTInterfaceTest

Data Path /h

☑ Save Log

☑ Save Data

Element Tree

- Objects
  - Elements
    - nb-machef
      - master
        - slav
        - croc
      - usb
  - Processus
    - TestSuite
    - UsbFTInterfaceTest
    - Acquisition
    - PhaserRampExec
  - Data
  - Documents

Command line

UsbFTInterface test

running UsbFTInterfaceTest

Elapsed time : 0:00:07

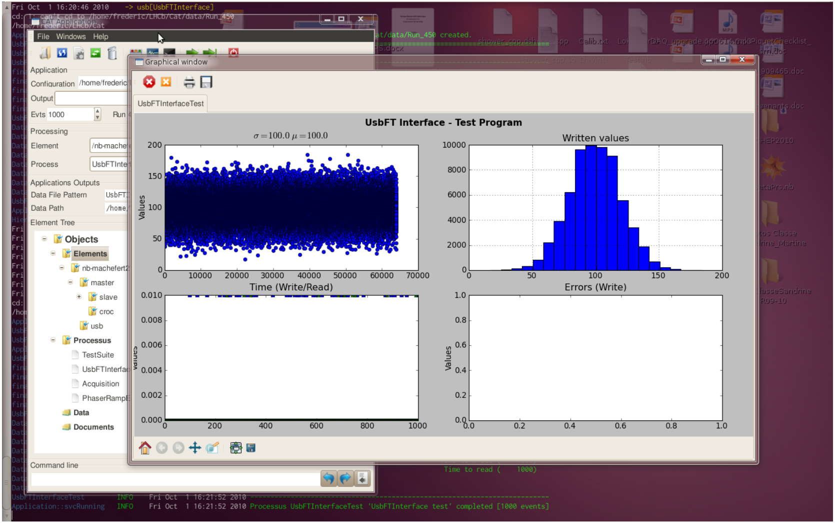
Estimated time : 0:00:11

Remaining time : 0:00:04

Annuler

Getting the results

A plot window pops up when a program ends and is supposed to plot anything.



```
Fri Oct  1 16:20:46 2010    -> usb[UsbFTInterface]
cd: 1: can't cd to /home/frederic/LHCb/Cat/data/Run_450
/home/frederic/LHCb/Cat
at/data/Run_450 created.
Time to read (    1000)
UsbFTInterfaceTest     INFO    Fri Oct  1 16:21:52 2010 -----------------------------------------------------------
Application::svcRunning INFO    Fri Oct  1 16:21:52 2010 Processus UsbFTInterfaceTest 'UsbFTInterface test' completed [1000 events]
```

Configuration: /home/frederic

Evts: 1000

Element: /nb-machefe

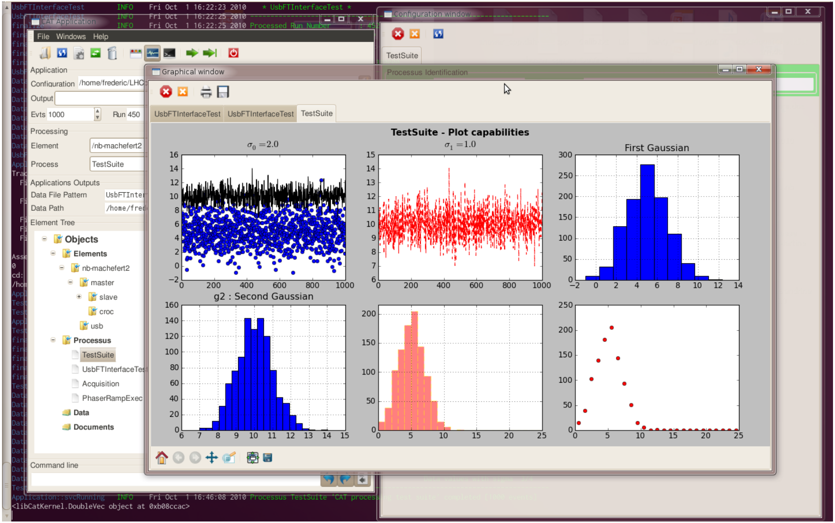
Process: UsbFTInte

Data File Pattern: UsbFT

Data Path: /home/

Keep track of the history

The results appear in a new tab of the plot window → keep track of the previous results.



```
UsbFTInterfaceTest    INFO    Fri Oct  1 16:22:23 2010    * UsbFTInterfaceTest *
UsbFTInterfaceTest    INFO    Fri Oct  1 16:22:25 2010 ------------------------------
finalize              INFO    Fri Oct  1 16:22:25 2010 Processed Run Number          : 452
```

```
Application::svcRunning   INFO    Fri Oct  1 16:46:08 2010 Processus TestSuite 'CAT processing test suite' completed [1000 events]
<libCatKernel.DoubleVec object at 0xb08ccac>
```

Application
Configuration /home/frederic/LHC
Output
Evts 1000 Run 450

Processing
Element /nb-machefert2
Process TestSuite

Applications Outputs
Data File Pattern UsbFTInte
Data Path /home/fred

Conclusion

- Cat is fully usable
- Some functionalities have not been fully implemented
  - Networking (access from the network - DIM server)
- Windows compatibility should not be a problem
  - did not spend much time on it
- The program should be accessible from a svn repository
  - but the Cat program is not enough to have it functional
    - Python
    - C++ compiler
    - Boost
    - ROOT
    - wxWidgets
  - These are all free and “standard” software
  - But they have to be installed on your computer first
- We started to work on the usb interface on the first prototype at LAL