



TANGO at LIONS

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Plan

- CEA / LIONS Description
- How we start to use Tango
- Device Servers
- The Python interface
- The Graphic User Interface using Jdraw
- In the Future
- Conclusion

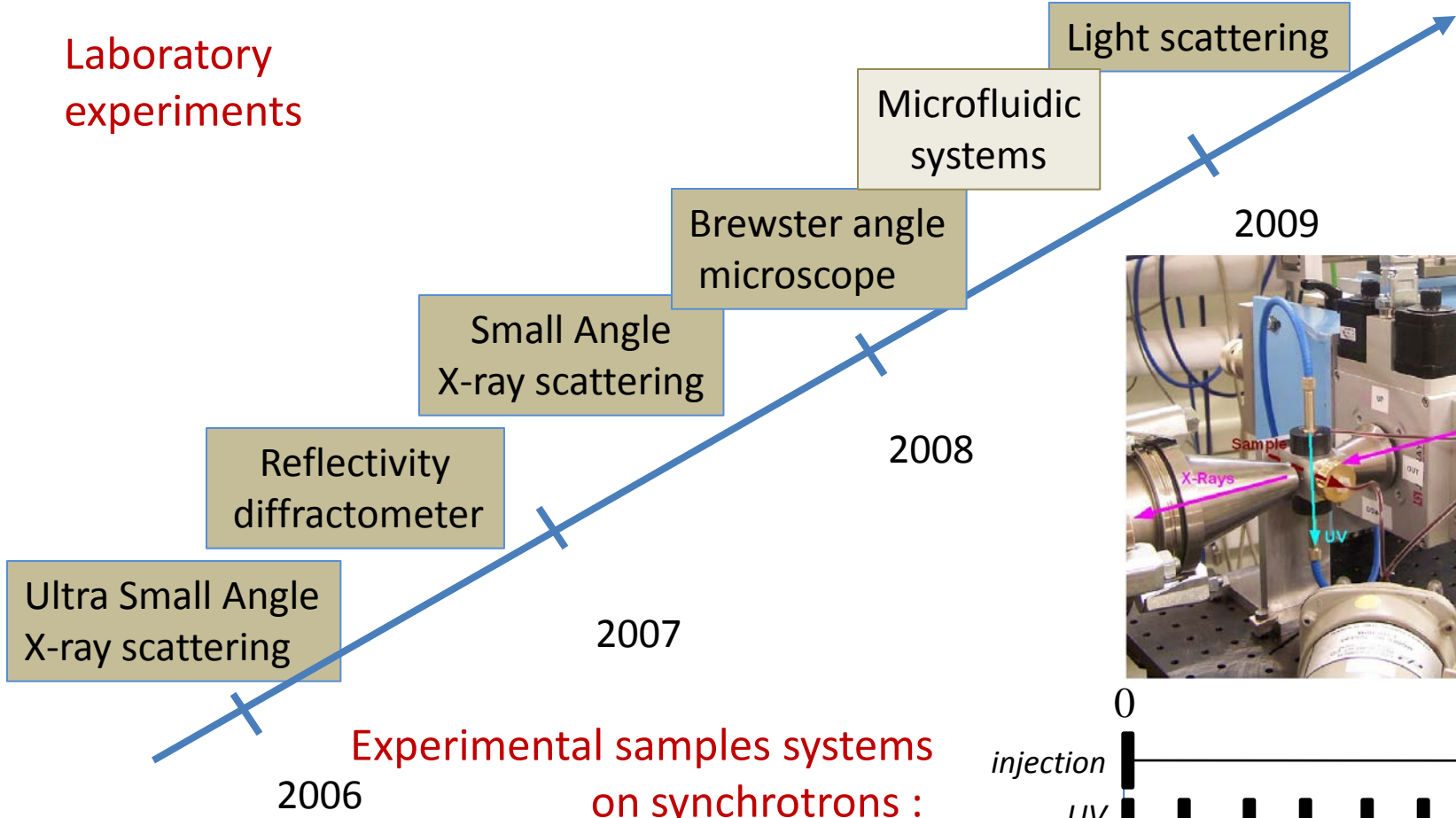
CEA / LIONS

- CEA : French nuclear and technological research institute
- LIONS (Laboratoire Interdisciplinaire sur l'Organisation Nanométrique et Supramoléculaire) : fundamental research on nanochemistry and nanoscience
 - Interdisciplinary group with chemists, physicists, theorists,...
 - Knowledge of the “nano object”
 - Home made experiments
 - Use of synchrotron
 - 40 researchers
 - 1 computer scientist
- Need of a standard in control command software
- Need of flexibility in GUI

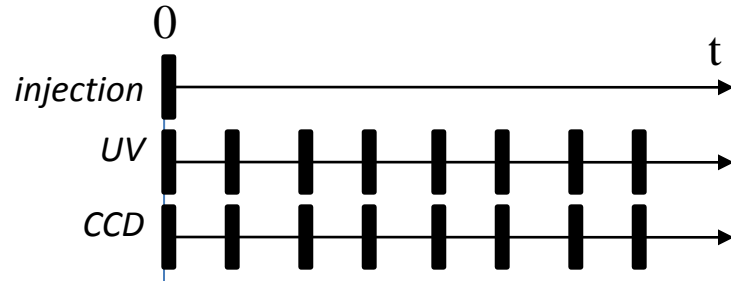
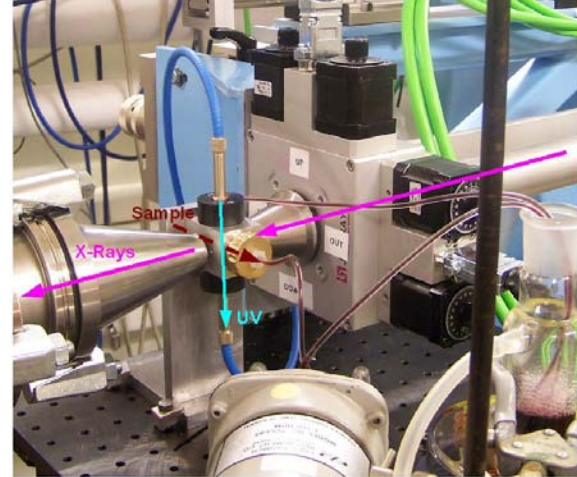


How we start to use TANGO

Laboratory experiments



Experimental samples systems on synchrotrons :
 ESRF (ID2, BM2, ID10...)
 SOLEIL (Swing, Ode)



Device Servers

50 Devices Servers home made and 1 (GPIB) from Soleil

Commandment n°1 for a good DS : « Choose the appropriate language »

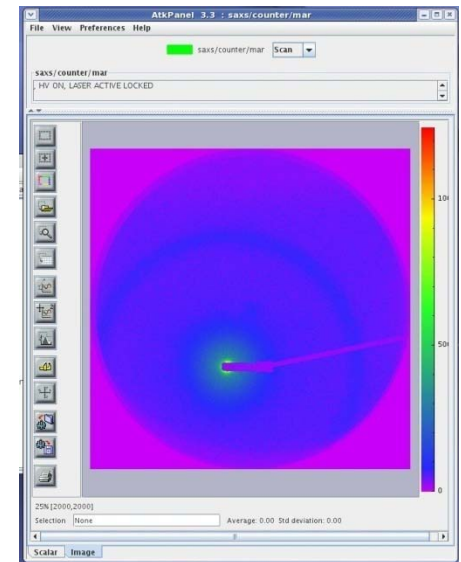
- ➔ C++ for servers using dll or where performance are needed
- ➔ Python for servers using serial protocol or data treatment

Some devices servers :

- Stepper motor driver
 - a versatile stepper motor controller from Trinamatics
 - Low cost
 - RS232 port
 - Python
- C++ Mar 300 detector device server
 - One month spend to adapt the (damn) c code
 - A fully fonctionnable device server on linux
 - Not really redistributable



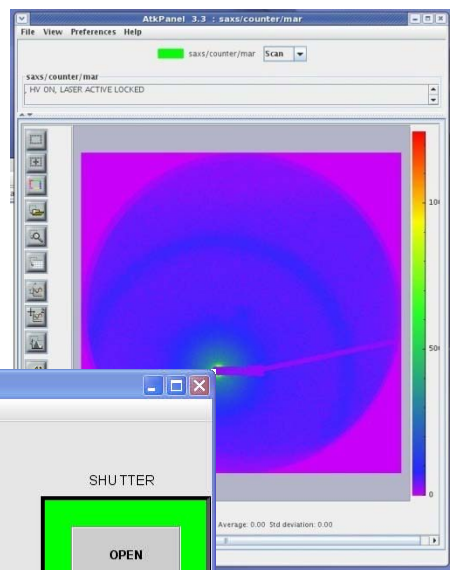
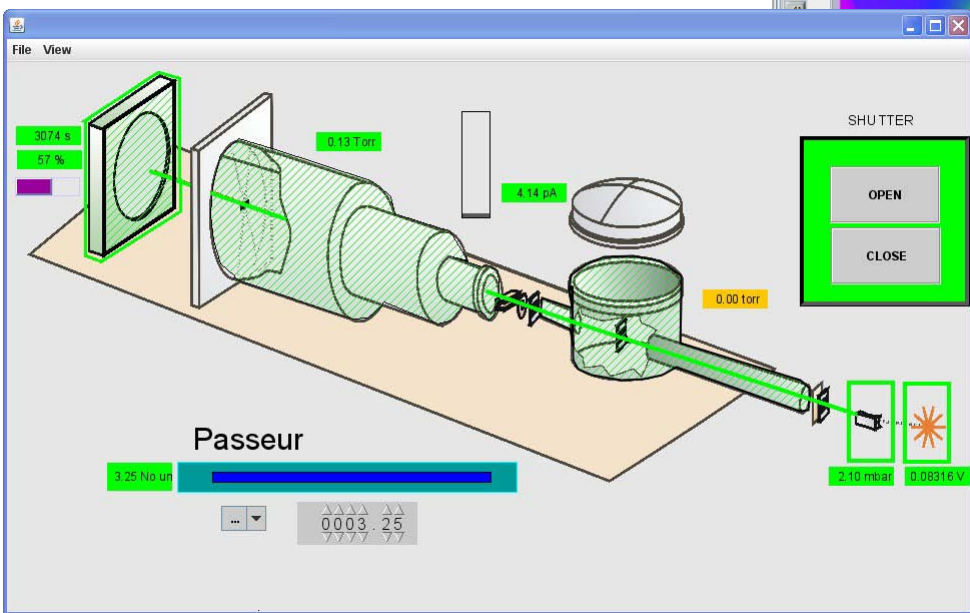
Not on CVS ...



Interface

- Command line with Python (spec like)
- Synoptic with JDraw

```
Python Shell
File Edit Shell Debug Options Windows Help
>>> countMar("XP_050509_300409aT", 7200, 3.25, 1000)
Counting 7200 s for XP_050509_300409aT
Measuring transmission :
0----- % Progress -----100
1000 points
*****elapsed time : 7
222.59699988 s
scanning
>>> saxs.mar.erase()
>>> countMar("XP_050509_290409", 14400, 3.25, 1000)
Counting 14400 s for XP_050509_290409
Measuring transmission :
0----- % Progress -----100
1000 points
*****elapsed time : 1
4495.0899999 s
scanning
>>> saxs.mar.erase()
>>> countMar("XP_060509_050509aT", 7200, 3.25, 1000)
Counting 7200 s for XP_060509_050509aT
Measuring transmission :
0----- % Progress -----100
1000 points
*****elapsed time : 3.489122 in
0----- % Progress -----100
*****
```



The Python interface

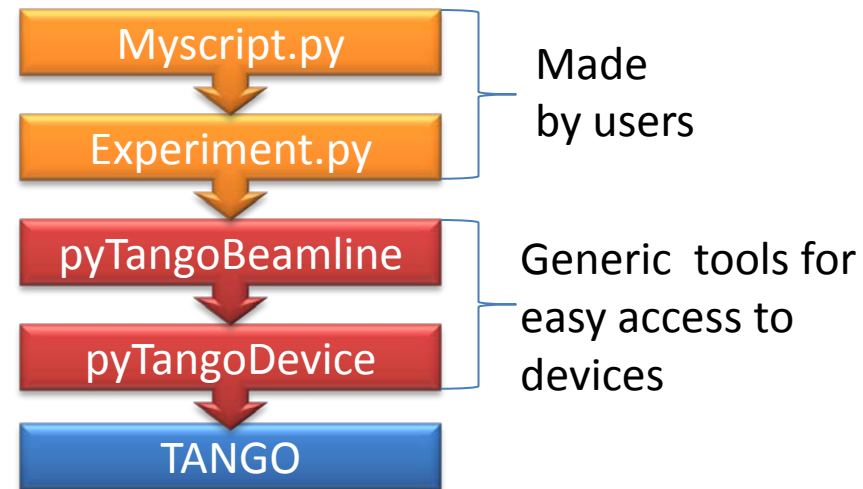
Researchers need a command line interface :

- logic is not fixed in an experiment
- Users can write and change sequences themselves
- Many experiments with different logic

```
Python Shell
File Edit Shell Debug Options Windows Help
found : usaxs/counter/flux_pico ->flux_pico      : ON
found : usaxs/counter/sr400_1  ->sr400_1      : RUNNING
found : usaxs/filters/attenuators ->attenuators : ON
found : usaxs/filters/wheel    ->wheel       : ON
found : usaxs/motors/2alpha_Motor ->t2alpha_Motor : ON
found : usaxs/motors/2theta_Motor ->t2theta_Motor : ON
found : usaxs/motors/alpha_Motor ->alpha_Motor  : ON
found : usaxs/motors/chi_Motor  ->chi_Motor   : ON
found : usaxs/motors/phi_Motor  ->phi_Motor  : ON
found : usaxs/motors/theta_Motor ->theta_Motor : ON
found : usaxs/shutter/shutter  ->shutter    : OPEN
found : usaxs/vacuum/back       ->back       : ON
found : usaxs/vacuum/front      ->front      : ON
found : usaxs/vacuum/generator  ->generator  : ON

>>> usaxs.generator
-- Tango Device Binding to : usaxs/vacuum/generator --
* Added attributes :
Value,
* Added methods :
Init(),
* Added methods : State(), Status(), waitStateON() and get_attribute() for each attribute
Current device state is : ON
>>> usaxs.generator.Value
0.06820758899999999
>>> usaxs.shutter.close()
```

Python object generated from Devices servers attributes and commands

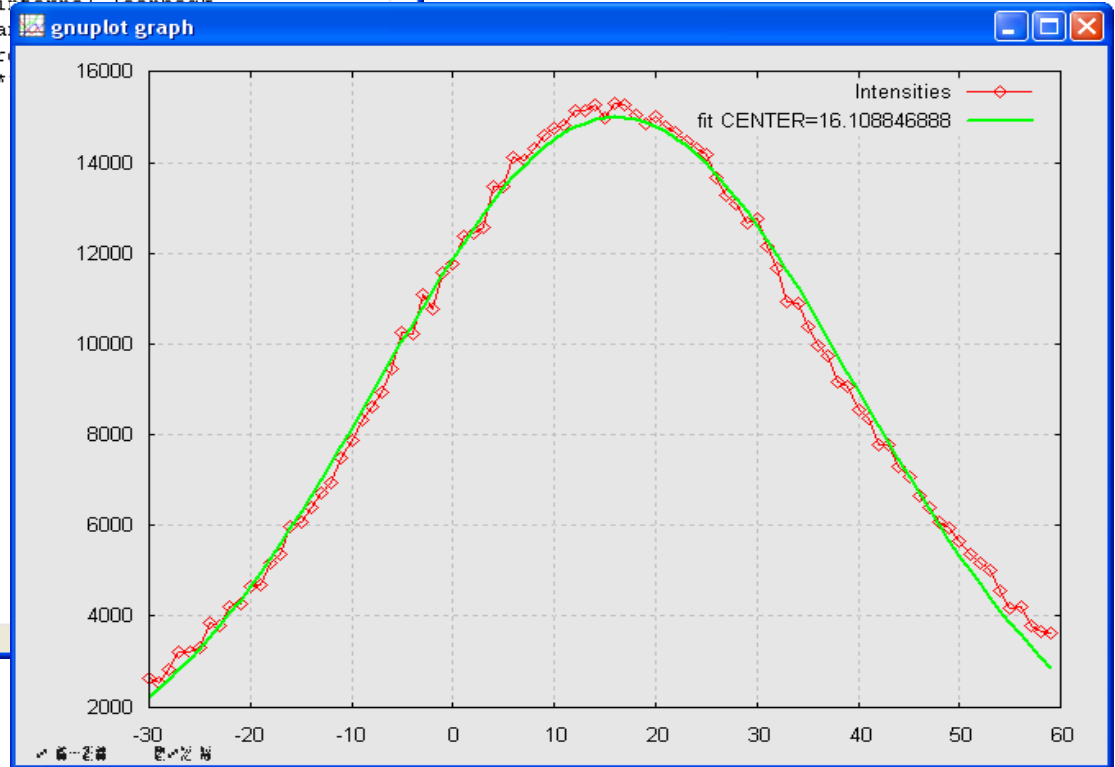


The Python interface : scans

```
Python Shell
File Edit Shell Debug Options Windows Help
Python 2.4.3 (#69, Mar 29 2006, 17:35:34) [MSC v.1310 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.

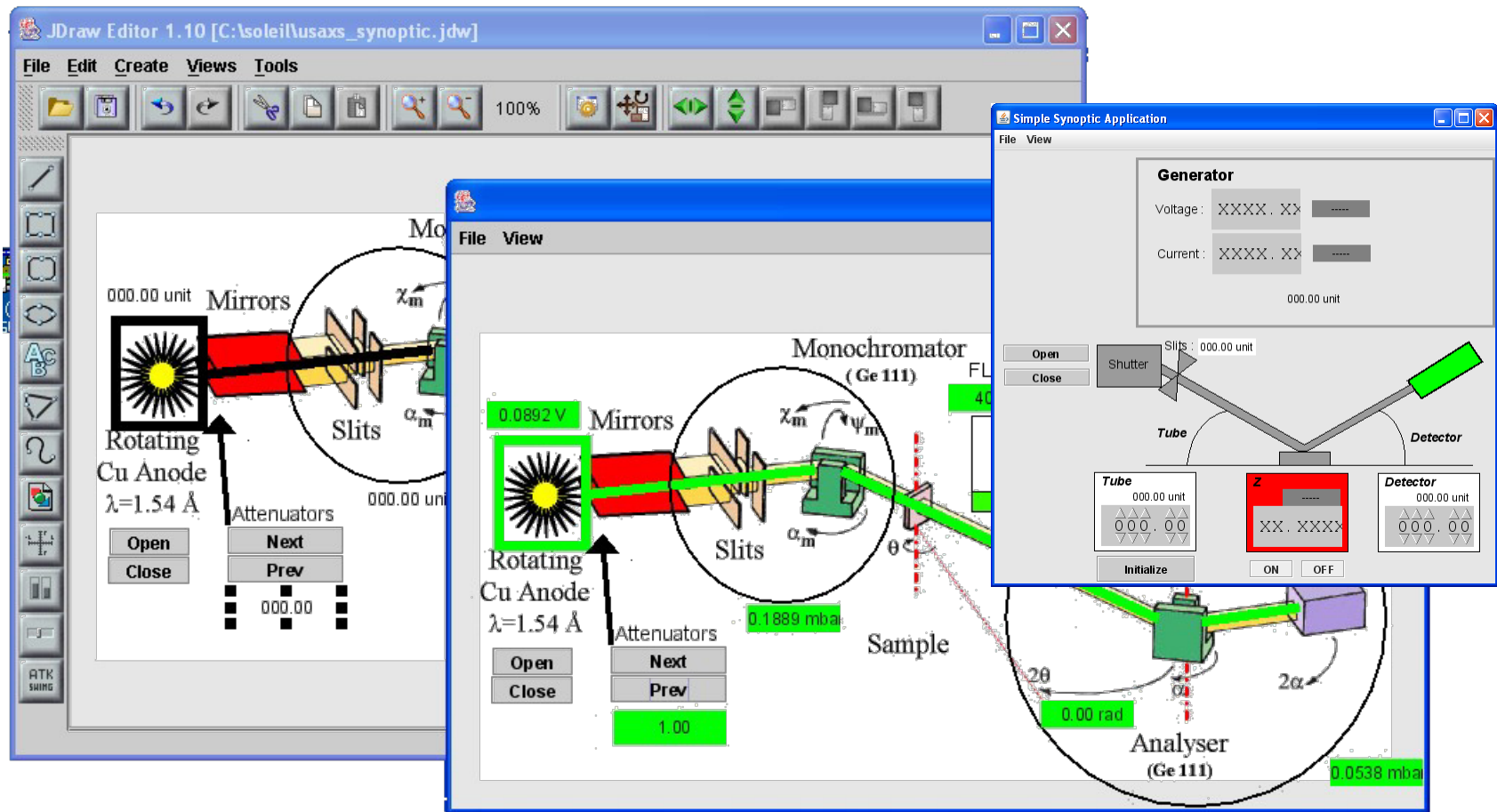
*****
Personal firewall software may warn about the connection IDLE
makes to its subprocess using this computer's internet
interface. This connection is not visible on a
interface and no data is sent to or received fr
*****

IDLE 1.1.3
>>> from Numeric import *
>>> from pyTangoBeamline import *
>>> from scan import *
>>> usaxs=Beamline("usaxs")
Welcome to usaxs ...
Connected to Tango...
>>> g=simpleScan(usaxs.t2theta_Motor.set_position,
                range(-30,60,1)
                ,"test"
                ,usaxs.flux.get_value,
                "Intensities")
```

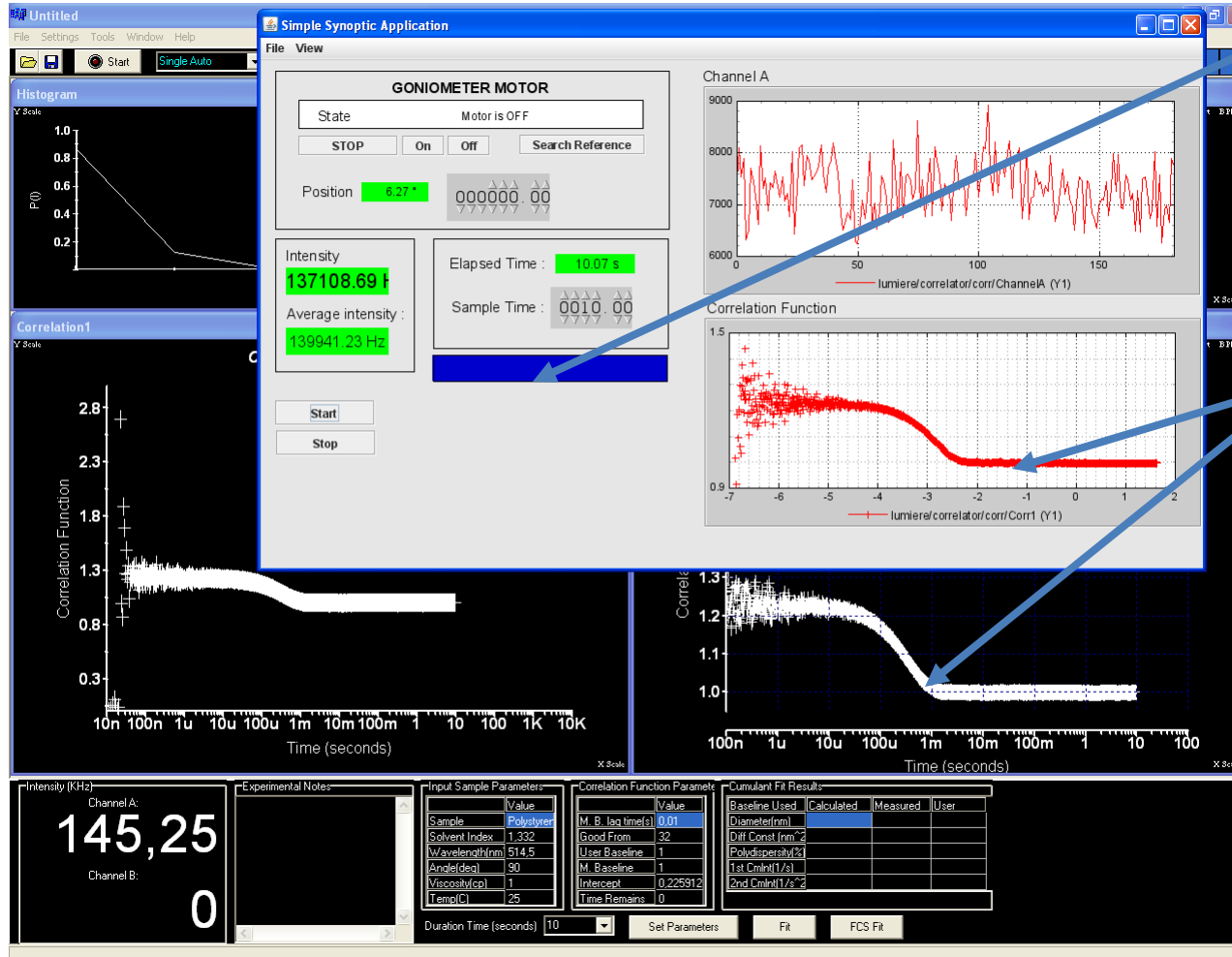


The GUI using Jdraw

We just want to draw !



The GUI using Jdraw

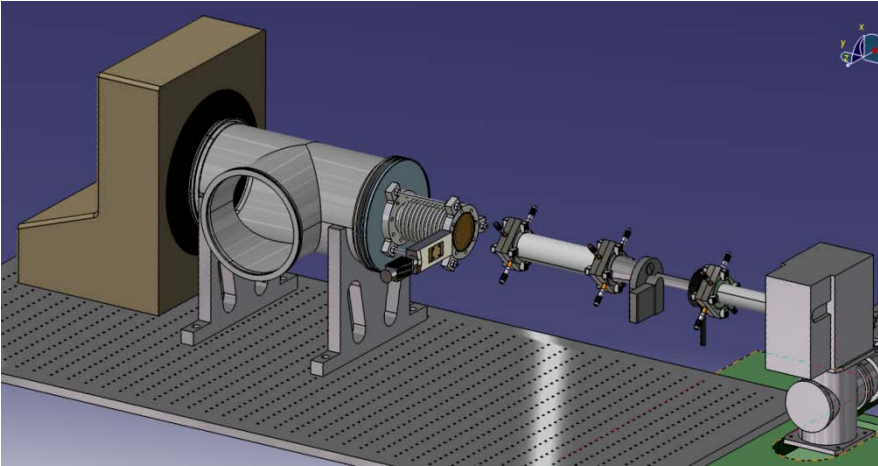


A progress bar with
Maximum value
from device attribute

A custom x scale
(not array index)

And also for non
linear scale (a pair
of x,y values)

Future developments



WAXS project

A collaboration with Orsay university (LPS)

- 10 new devices servers
- 1 ccd camera (basler camera ?)
- Users from other labs
- Automatic data treatments
- Remote access (web interface ?)

Mar 345 detector

- Used at Soleil, LLB, Orsay university, other laboratories
- A **fully fonctionnable C++ Device server**
- On linux ? windows ?



Questions / Conclusions

Relationship with hardware suppliers :

- if we spend one month to develop a Device Server for a detector that is used everywhere ...
- 400 € to get the drivers for Ocean Optics spectrometers (that cost 17k€ !!)
- How to share the device server for a such hardware

Is it possible to use TANGO on small laboratories ?

- **Yes, a powerful and versatile system**
- but one computer scientist is needed
- Experiments suppliers not convinced
- Colleagues not fully convinced (some preferred spec ...)
- At Orsay university (LPS) : Eric Jourdanneau

Some disillusiones :

- Sharing devices servers
- not yet possible to connect our Tango system on synchrotron beamlines (not enough time, or security reasons, and is it a good solution ?)