# Integrating TINE @ the BlissFramework

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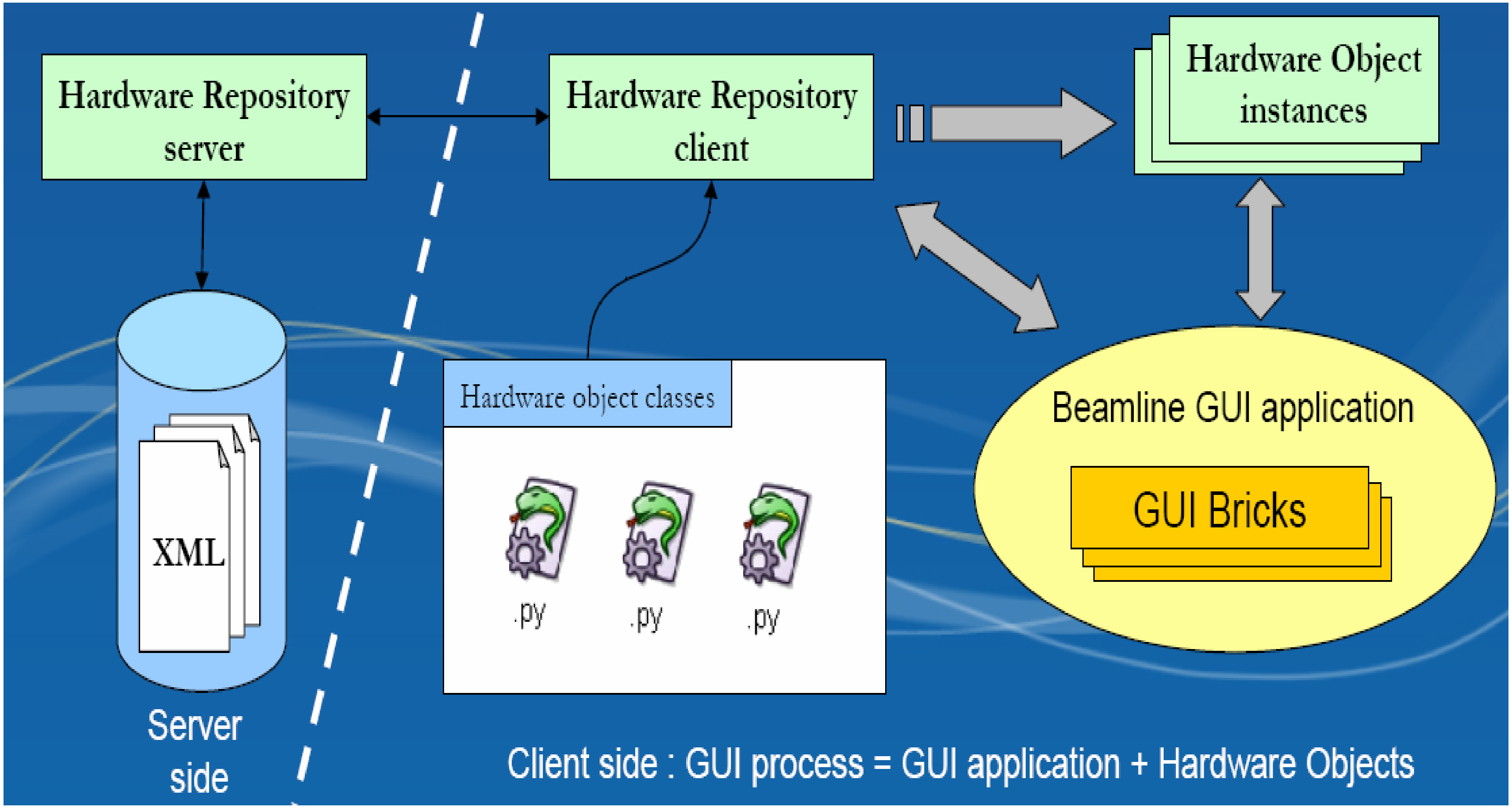
EMBL

# Bliss GUI Framework

- ESRF project (started at 2003)
- Set of tools and libraries to create GUIs for the beamlines
- Implemented in Python (with graphical toolkit QT)
- Includes a GUI editor
- Multiplatform
- Separation between the graphics and the hardware functionality
  - Bricks
  - Hardware Objects (HO)
- Support for different control systems (Spec, Taco, Tango)

# Bliss Framework Architecture

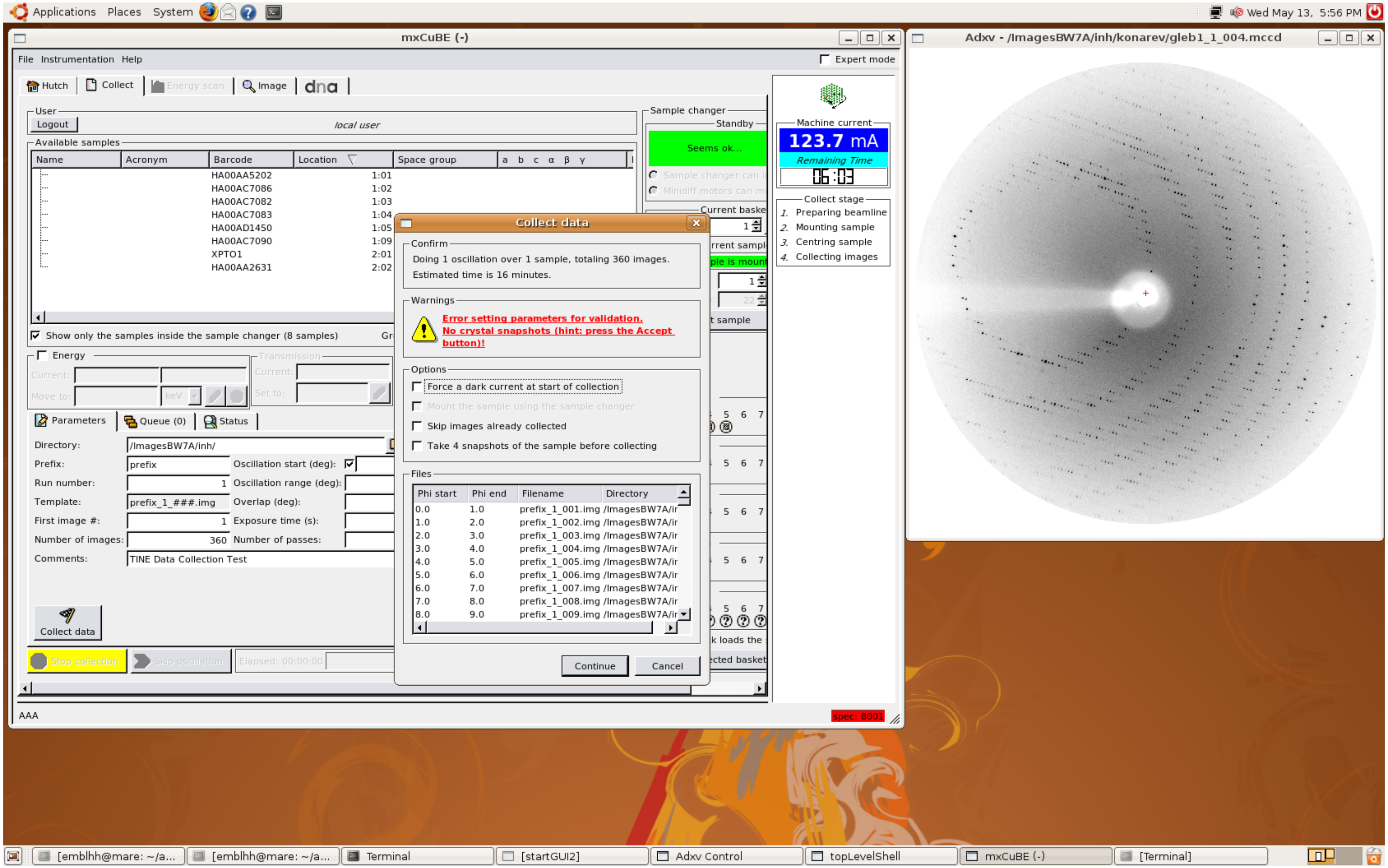

Hardware Repository server
Hardware Repository client
Hardware Object instances
XML
Hardware object classes
.py
.py
.py
Beamline GUI application
GUI Bricks
Server side
Client side : GUI process = GUI application + Hardware Objects

From Matias Guijarro ESRF

# mxCuBE

- mxCuBE = macromolecular *x*tallography Customized Beamline Environment
- Provides a single user friendly interface to control data collection for PX experiments
- It is build on top of the Bliss Framework
- Connected to Spec, Taco and Tango
- DNA and ISPyB integrated and much more…

# mxCUBE



User
Logout
local user

Available samples

| Name | Acronym | Barcode | Location | Space group | a b c α β γ |
|---|---|---|---|---|---|
| | | HA00AA5202 | 1:01 | | |
| | | HA00AC7086 | 1:02 | | |
| | | HA00AC7082 | 1:03 | | |
| | | HA00AC7083 | 1:04 | | |
| | | HA00AD1450 | 1:05 | | |
| | | HA00AC7090 | 1:09 | | |
| | | XPTO1 | 2:01 | | |
| | | HA00AA2631 | 2:02 | | |

☑ Show only the samples inside the sample changer (8 samples)

□ Energy — Current: — Move to: — keV
Transmission — Current: — Set to:

Parameters | Queue (0) | Status

Directory: /ImagesBW7A/inh/
Prefix: prefix
Run number: 1
Template: prefix_1_###.img
First image #: 1
Number of images: 360
Comments: TINE Data Collection Test
Oscillation start (deg): ☑
Oscillation range (deg):
Overlap (deg):
Exposure time (s):
Number of passes:

Collect data
Stop collection | Skip oscillation | Elapsed: 00:00:00

Sample changer — Standby — Seems ok...
○ Sample changer can l
○ Minidiff motors can m

Machine current: 123.7 mA
Remaining Time: 06:03

Collect stage
1. Preparing beamline
2. Mounting sample
3. Centring sample
4. Collecting images

AAA
spec: 8001

**Collect data**

Confirm
Doing 1 oscillation over 1 sample, totaling 360 images.
Estimated time is 16 minutes.

Warnings
Error setting parameters for validation.
No crystal snapshots (hint: press the Accept button)!

Options
□ Force a dark current at start of collection
□ Mount the sample using the sample changer
□ Skip images already collected
□ Take 4 snapshots of the sample before collecting

Files

| Phi start | Phi end | Filename | Directory |
|---|---|---|---|
| 0.0 | 1.0 | prefix_1_001.img | /ImagesBW7A/ir |
| 1.0 | 2.0 | prefix_1_002.img | /ImagesBW7A/ir |
| 2.0 | 3.0 | prefix_1_003.img | /ImagesBW7A/ir |
| 3.0 | 4.0 | prefix_1_004.img | /ImagesBW7A/ir |
| 4.0 | 5.0 | prefix_1_005.img | /ImagesBW7A/ir |
| 5.0 | 6.0 | prefix_1_006.img | /ImagesBW7A/ir |
| 6.0 | 7.0 | prefix_1_007.img | /ImagesBW7A/ir |
| 7.0 | 8.0 | prefix_1_008.img | /ImagesBW7A/ir |
| 8.0 | 9.0 | prefix_1_009.img | /ImagesBW7A/ir |

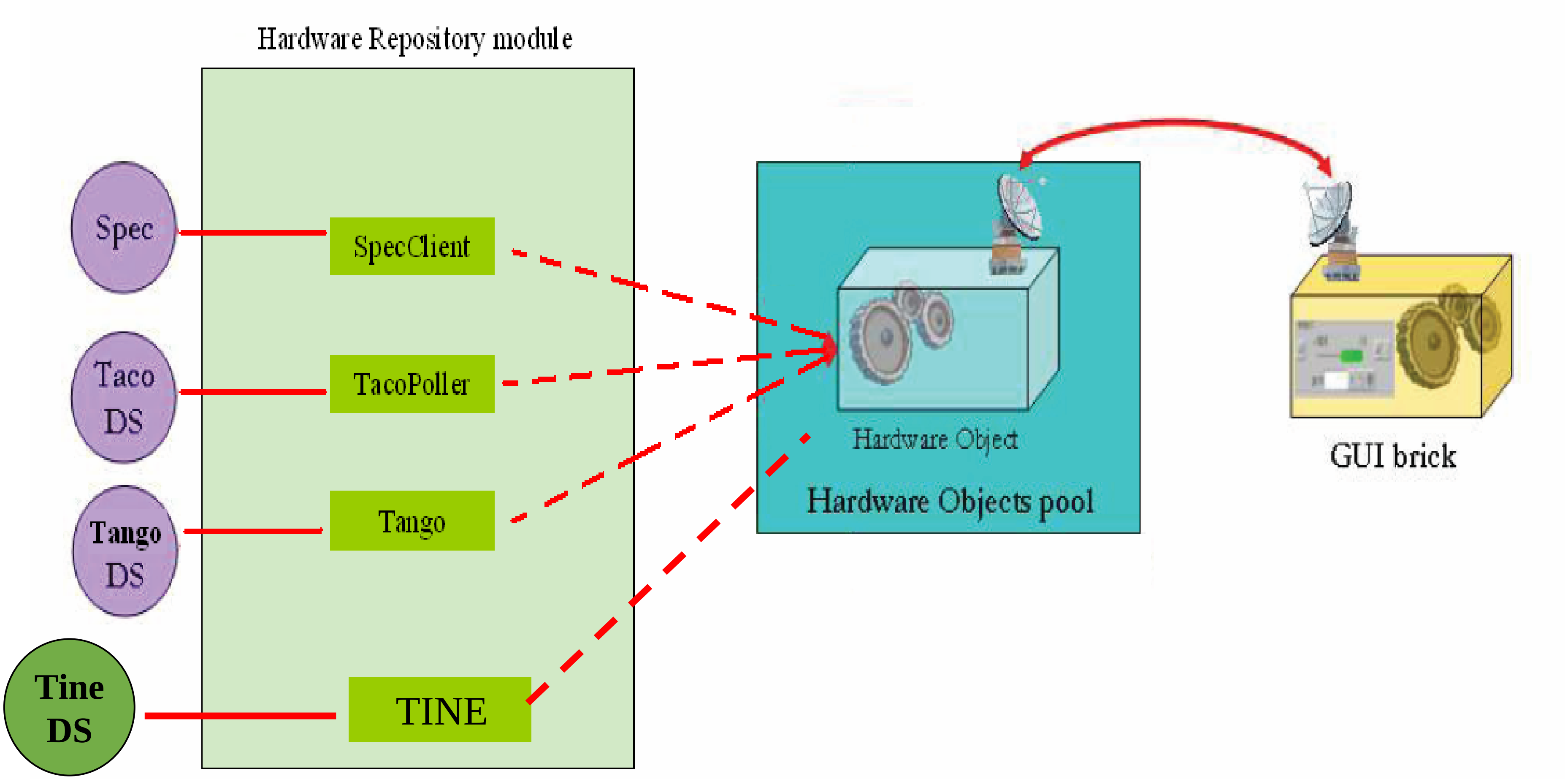
Continue | Cancel

# Our Scenario

- Connection of mxCuBE with our system (using PyTine)
- Control the data collections from this interface
- The Bricks stay exactly the same
- The HO ideally also... but not 100% in reality
- The XML configuration files should be modified

```
<device class = "Attenuators">
<username>Attenuators</username>
<command type="tine" name="setTransmission" tinename="DC/Transmission"
    format=“FLOAT“ size="1" >axis_setPosition</command>
<channel type="tine" name="attfactor" tinename=“DC/Transmission" format="FLOAT"
    size="1“ polling="events">axis_position</channel>
</device>
```

# Our Scenario



# Positive points

- Reusability of the graphical user interface
- Many users know and are used to the system
- Possible to create new bricks
- In some cases we can learnt of the HO
- Source code and support available from ESRF
- Possible collaborations and common developments
- ... We keep our scientists happy

# Acknowledgments

- Working group: Peter Konarev, Andres Pazos, Gleb Bourenkov and Thomas Schneider

- Support from the ESRF: Darren Spruce and Matias Guijarro

# Conclusions

- Official collaboration for the mxCUBE Beamline Control Environment
  - Established at Grenoble last September
  - EMBL Hamburg belongs to it and TINE will be officially supported
  - Other organizations involved: ESRF, Soleil, MAX-Lab, BESSY
- Integration already demonstrated and tested
- A final architecture has been defined compatible with BlissFramework
- Integrated at GIT (fast version control system)

**Thank you !!!**

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