



MXCuBE Qt4
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JOIN THE DARK SIDE



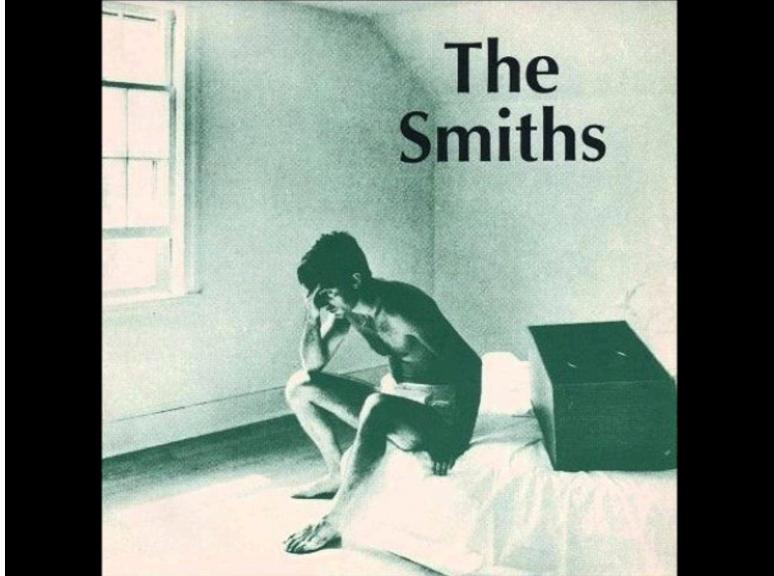
WE GOT COOKIES!

I've been to the dark side...



**THEY LIED ABOUT THE
COOKIES**

memegenerator.net





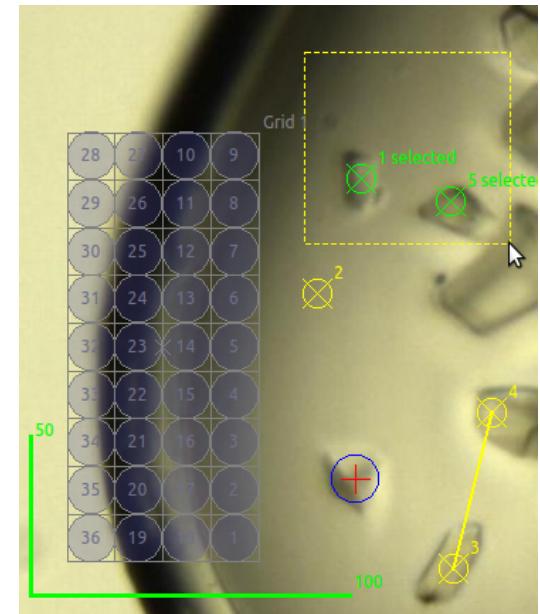
28.06.16

Content

- Current status
- Updated bricks, widgets and features
- Grids scans and overlays
- Conclusions

Current status

- Work just on Qt4 version (in 2016: 64 commits, 24k++, 18k--).
- Used at both beamlines in the production mode.
- Graphics part split in two modules (both 1.5k lines of code):
 1. Qt4_GraphicsManager (pylint score 8.63),
 2. Qt4_GraphicsLib (pylint score 7.71).
- Documentation for developers is available.
- Implemented objects and features:
 1. Static objects: centering points, lines, grids with overlays.



Current status

2. Dynamic objects: centering lines, distance and angle measurement tools, omega rotation axis, message box.
3. Graphical beam size definer* **.
4. Saving and loading graphical objects from file.
5. Graphic item manager.
6. Keyboard shortcuts.

X: 579 Y: 588				
<input checked="" type="checkbox"/> Graphics items				
All shapes				
Display	<input type="checkbox"/> Points	<input type="checkbox"/> Lines	<input type="checkbox"/> Grids	<input type="checkbox"/> Display all
No.	Type	Visible	Selected	Used for collection
1	Point 1	True	True	False
2	Point 2	True	True	False
3	Line 1	True	True	True
4	Grid 1	True	True	0

Selected:

Points

Lines

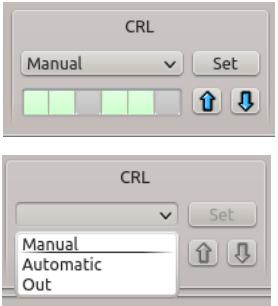
Grids

* Loop: beam_size_definer.ogv

* Plate: beam_size_definer_2.ogv

Updated bricks, widgets and features

1. CRLBrick



2. ExporterBrick

Type	Method Parameter
void	abort()
boolean	checkPosition...
boolean	checkSyncMo...
String	checkTaskRes...
State	getDevicesta...
double[]	getMotorDyn...
double[]	getMotorLimi...
double	getMotorMax...
double	getMotorPosi...
State	getMotorStat...
int	getPhasedoot...
String[]	getTaskInfoIn()
boolean	isTaskRunning...
double	readPhotodio...
void	restartBoole...
void	saveAperture...
void	saveBeamsto...
void	saveCapillary...
void	saveCentring...
void	setCentringC...

Type	Property	Access	Value
String[]	AlarmList	READ_ONLY	[09/06/16 14:...
Position	AlignmentTab	READ_WRITE	ALIGNED
double	AlignmentXP...	READ_WRITE	1.09758848448
double	AlignmentYP...	READ_WRITE	-1.039325915
double	AlignmentZP...	READ_WRITE	-0.11988992.
int[]	ApertureRad...	READ_ONLY	[100, 70, 50, 3...
double	ApertureHori...	READ_WRITE	0.191219673...
String	ApertureName	READ_WRITE	Aperture Penta
Position	AperturePosi...	READ_WRITE	OF
double	ApertureVerti...	READ_WRITE	89.9999564506
String[]	AperturesList	READ_ONLY	[Vento, Tripl...
double	BackLightVector	READ_WRITE	1.0
boolean	BacklightsOn	READ_WRITE	True
double	BacklightLevel	READ_WRITE	9.0
double	BeamPosition...	READ_WRITE	787.0
double	BeamPosition...	READ_WRITE	487.0
boolean	BeamShapeEl...	READ_WRITE	True
double	BeamSizeZer...	READ_WRITE	95.0
double[]	BeamSizeMicr...	READ_WRITE	[100.0, 100.0]
double	BeamSizeVert...	READ_WRITE	95.0

3. LogBarBrick

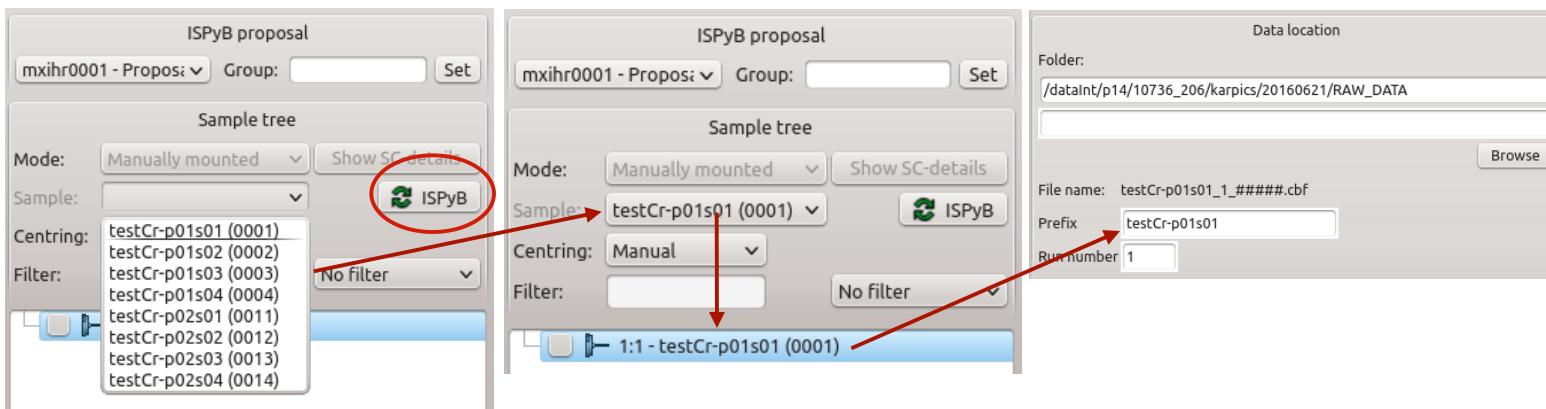
Properties		Values	
1	appearance	tabs	▲
Level	Date	Time	Message
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/detector/simdetector frame-rate
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/detector/simdetector beam-x/y
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /PETRA/ARCHIVER/keyword MachineStateText
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /PETRA/ARCHIVER/keyword curDC
DEBUG	2016-06-23	08:42:44	MachinelInfo: Cryojet channel not defined
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/transmission/attenuators transmission
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/transmission/attenuators status
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/transmission/attenuators limits
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/collection/mx-standard frame
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/collection/mx-standard status
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/collection/mx-standard error
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/fluorescence-scan/fls-scan status
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/fluorescence-scan/fls-scan calibration-consts
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/fluorescence-scan/fls-scan start
DEBUG	2016-06-23	08:42:44	Attaching TINE channel: /TEST/fluorescence-scan/fls-scan status
INFO	2016-06-23	08:42:44	connectNotify statusChanged
INFO	2016-06-23	08:42:44	connectNotify stateChanged
INFO	2016-06-23	08:42:44	connectNotify infoChanged
INFO	2016-06-23	08:42:44	connectNotify selectionChanged
INFO	2016-06-23	08:42:44	connectNotify loadedSampleChanged

Errors and warnings			
Information (58)			
Debug (17)			
Level	Date	Time	Message
ERROR	2016-06-23	08:45:34	Cannot load Hardware Object "/" : file not found.
WARNING	2016-06-23	08:45:34	BeamlineTest: Beam focusing hwobj is not defined
WARNING	2016-06-23	08:45:34	BeamlineTest: PPU control hwobj is not defined
ERROR	2016-06-23	08:45:34	BeamlineTest: no intensity ranges defined
ERROR	2016-06-23	08:45:34	Cannot load Hardware Object "/door-interlock" : file not found.
ERROR	2016-06-23	08:45:34	Cannot load Hardware Object "/door-interlock" : file not found.
ERROR	2016-06-23	08:45:34	Cannot load Hardware Object "/" : file not found.

Updated bricks, widgets and features

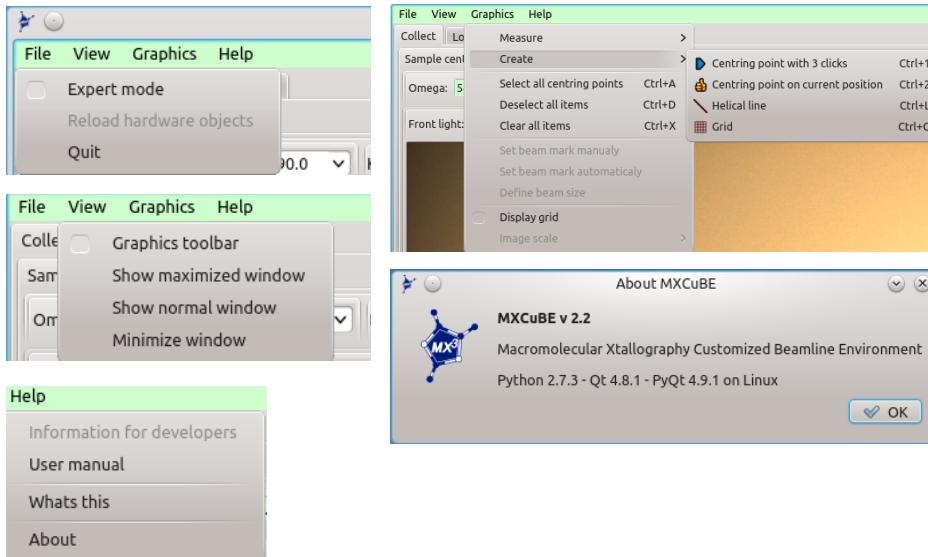
4. Qt4_dc_tree_widget.py

- Disable mount modes if just Manually mounted mode is available.
- Choose mount mode based on mounted sample (sample changer or Plate).
- Filter sample list based on sample name, puck, collection method, etc.
- Link ISPyB sample with manually mounted sample.
- TODO. Add history view.



Updated bricks, widgets and features

- Menu tool brick to add shortcuts to procedures (intensity measurement, beam alignment).
- Minimize, maximize window, help and about.
- New splash image.



Updated bricks, widgets and features

Qt4_ToolsBrick to call methods from hardware objects.

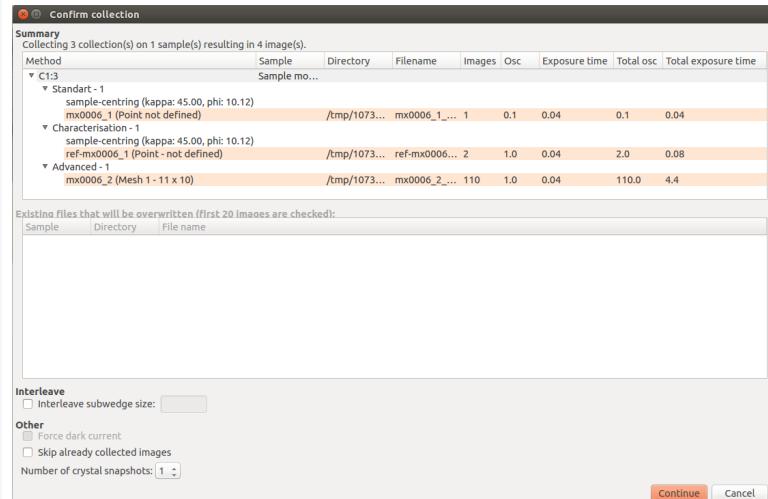
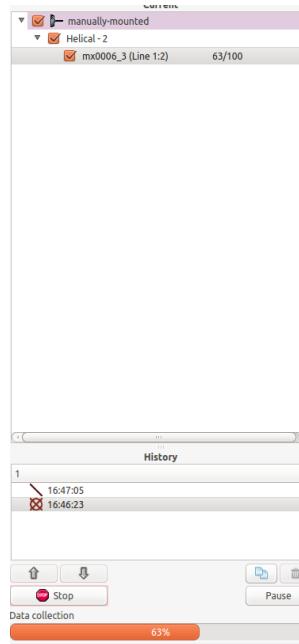
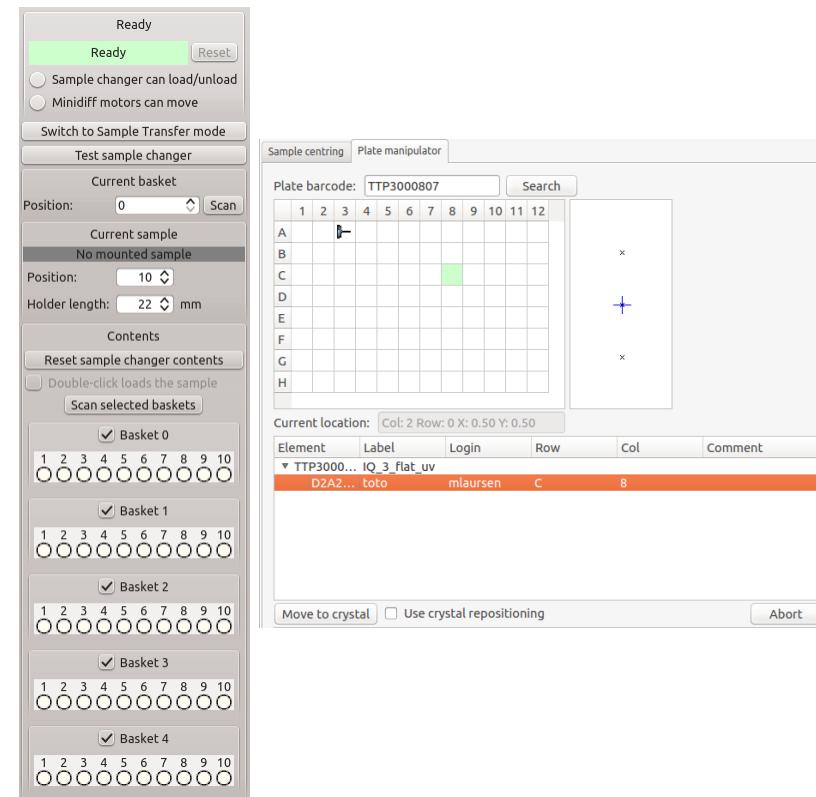
- BeamlineTools and beamline-tools.xml used to define available methods.
- Similar to the command previously in the HutchMenuBrick.
- No need to create bricks for single commands.
- In xml define hardware object, method name, menu caption and icon to display.
- If method not found then menu is not populated.

```
<object class="BeamlineTools">
    <object href="/beamline-test" role="beamline_test"/>
    <object href="/mach-info" role="machine_current"/>

    <tools>
        <tool>
            <hwobj>beamline_test</hwobj>
            <display>Realign beam</display>
            <method>align_beam_test</method>
            <icon>QuickRealign</icon>
        </tool>
        <tool>
            <hwobj>beamline_test</hwobj>
            <display>Measure intensity</display>
            <method>measure_intensity</method>
            <icon>Sun</icon>
        </tool>
    </tools>
</object>
```



Updated bricks, widgets and features



MeshScan and overlays

- Added overlay with possibility to change transparency*.
- Mesh and scan feature. Available also for plates**.
- Added more information about processing parameters and results.
- Added possibility to relaunch parallel processing.
- Processing is based on EDNA Dozor plugin.

*mesh_scan.ogv

**mesh_and_scan_plates.ogv

Conclusions

- Some of mxcube3 ideas (categorized log, etc) implemented in the Qt4 version.
- Would be good to provide similar features for both GUI versions (to keep users happy).
- Would be not difficult to include PySide, PyQt5 (not a priority now).
- At one point remove Qt4_prefix.
- Save gui file as yaml for easy editing.
- Add beam shape markers to keep a record of exposed areas of a crystal.

- Provide (announce) features when they are fully tested.

Thank you for your attention!