Python for User Interfaces at Sirius (THAPL04)

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Motivation

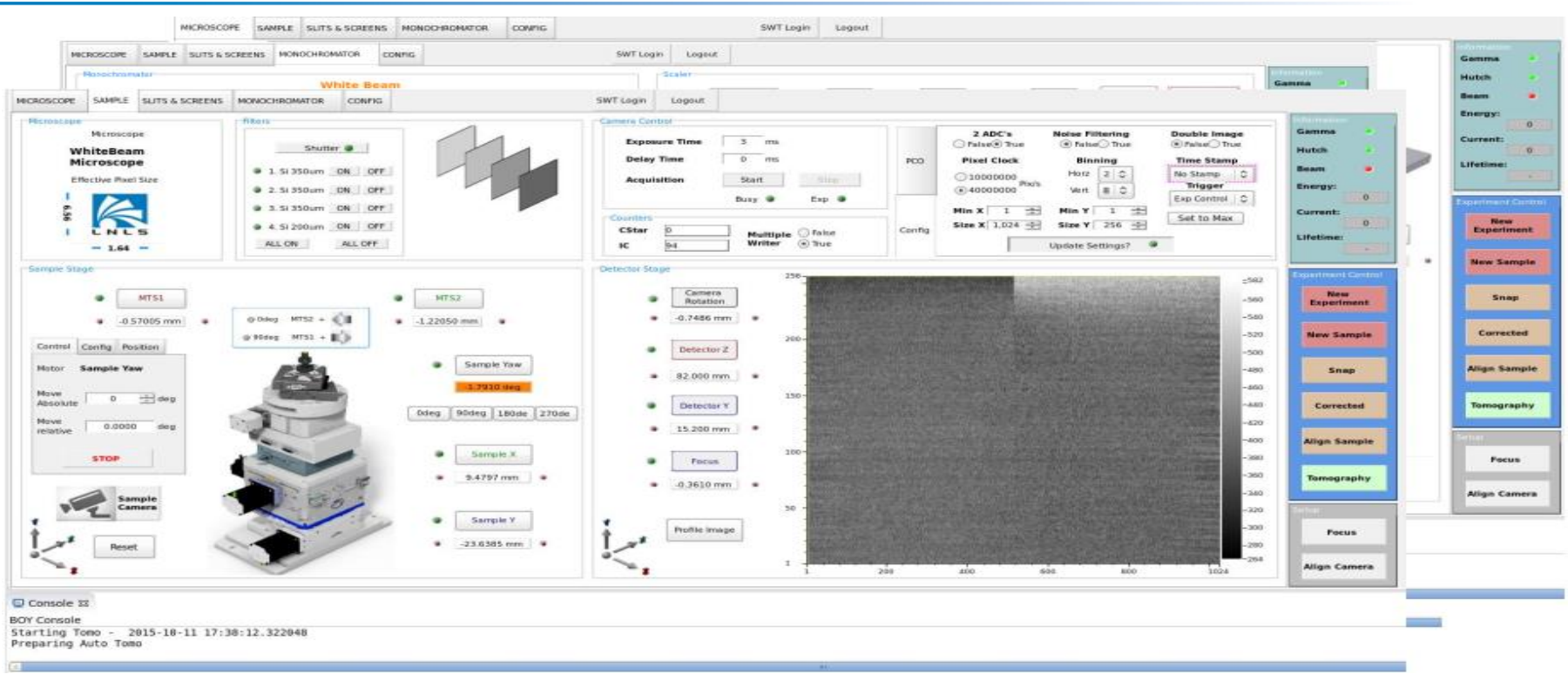
➔ **EPICS**
- ✓ **Devices control via RS232/Ethernet;**
- ✓ **PVs (Process Variables) available on network, providing monitoring and "instant" operation;**

➔ **Python**
- ✓ **Scripts to coordinate actions on beamlines with a set of devices synchronously;**
- ✓ **PyEPICS, Py4Syn*;**

➔ **GUIs**
- ✓ **Easy to operate actions (scripts);**
- ✓ **Current tools:**
  - ◆ ***Java based:***
    - CS-Studio (*Control System Studio*);
    - LabWeb (*Science Studio*);
  - ◆ ***Python based:***
    - In-house developed TkInter solution;
    - MXCuBE and in-house solution, both based on PyQt;

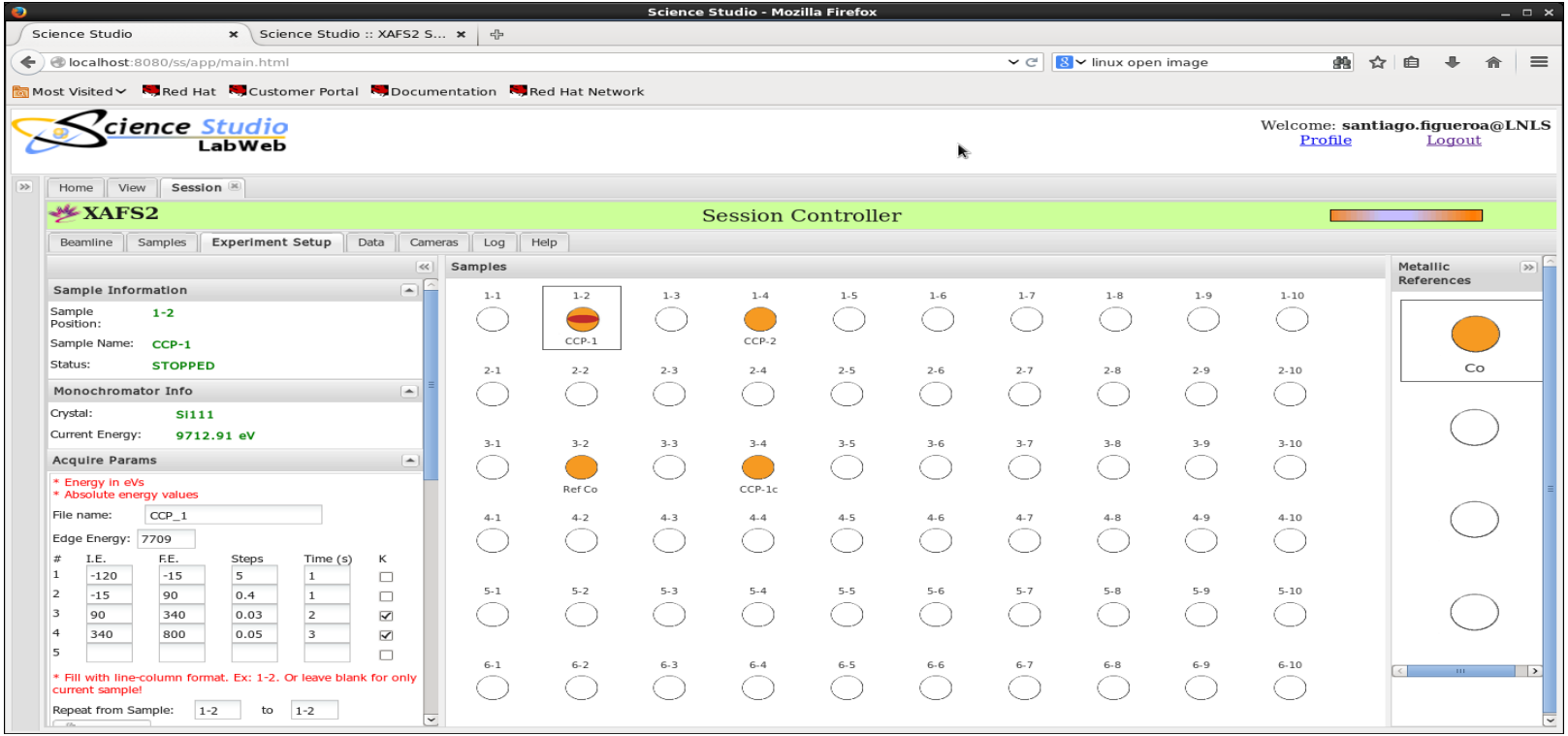
*H. H. Slepicka et. al., 2015, "**Py4Syn: Python for synchrotrons**". J. of Synchrotron Rad., V. 22, pp. 1182-1189.

CS-Studio (*Control System Studio**)



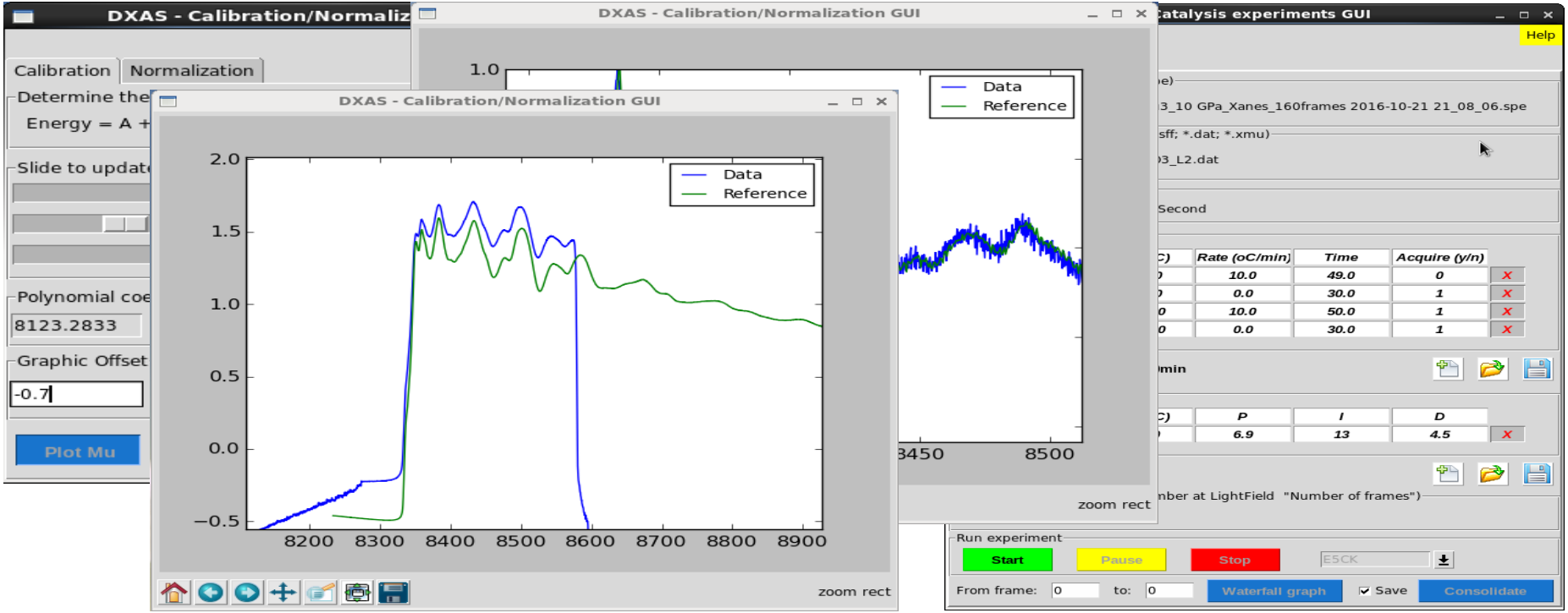
*J.Hatje, M.Clausen et.al., "**Control System Studio (CSS)**", ICALEPCS 2007, Knoxville, MOPB03.

LabWeb* (*Science Studio*)



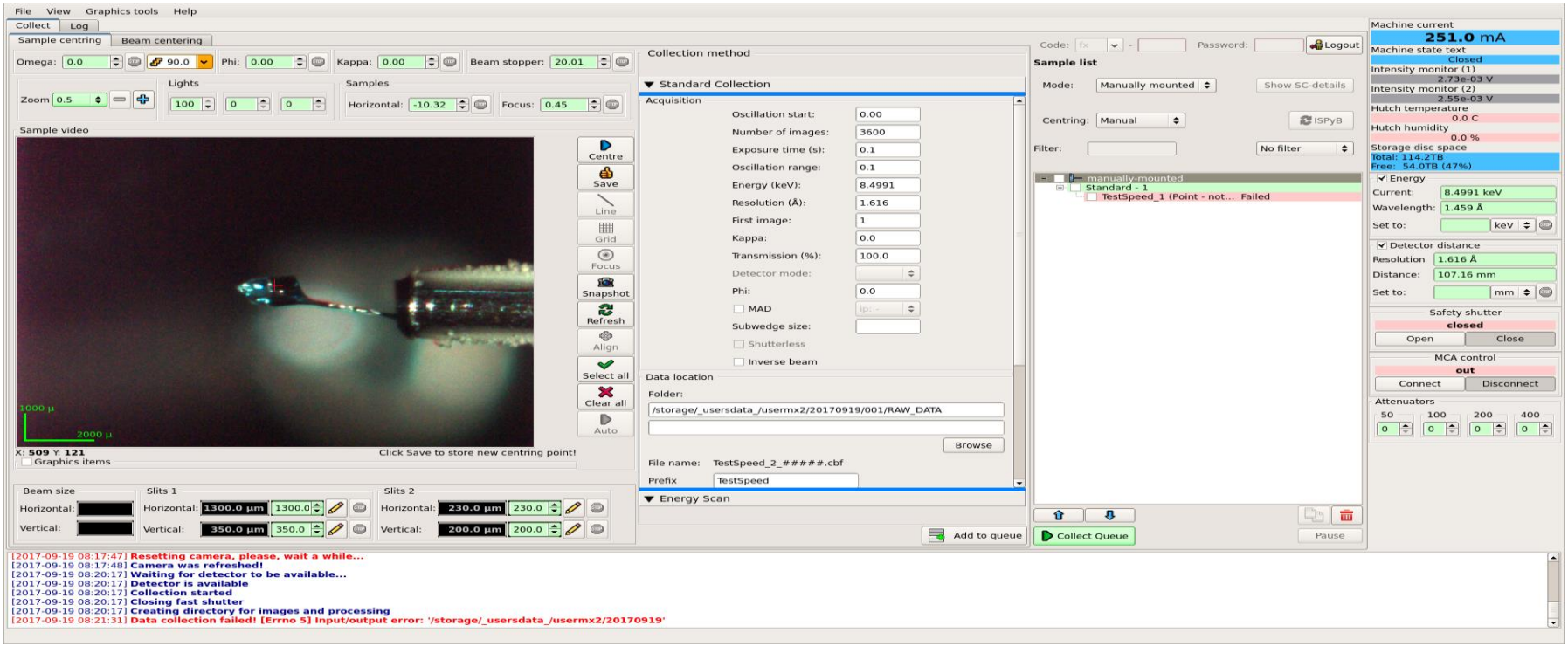
*H. H. Slepicka et.al., "**LabWeb – LNLS Beamlines Remote Operation System**", ICALEPCS 2013, S. Francisco, TUPPC037.

TkInter*



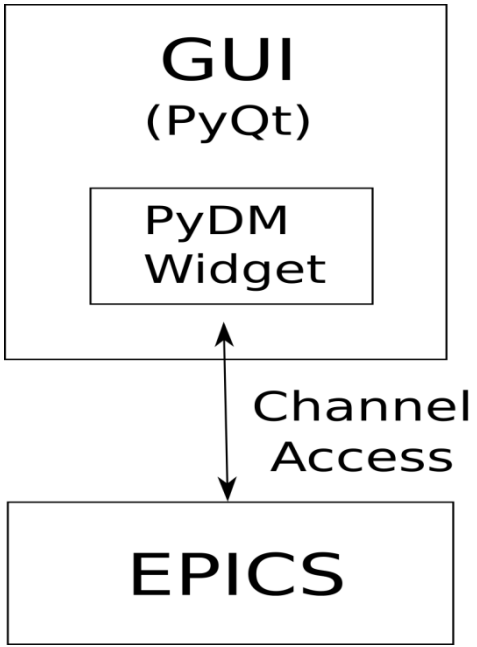
*D. B. Beniz et.al., "**Using TkInter of Python to Create Graphical User Interface (GUI) for Scripts in LNLS**", PCaPAC 2016, Campinas, WEPOPRPO25.

PyQt (MXCuBE*)

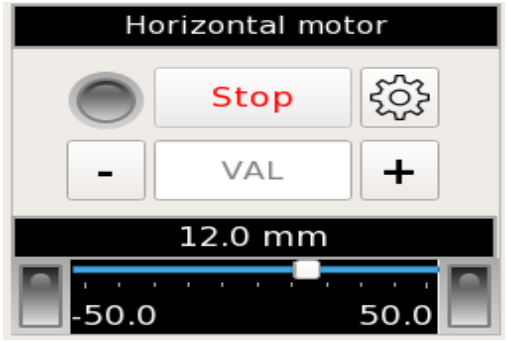


*J. Gabadinho et.al., 2010, "**MxCuBE: a synchrotron beamline control environment customized for macromolecular crystallography experiments**", J. of S. Radiation, V. 17, pp. 700-707.

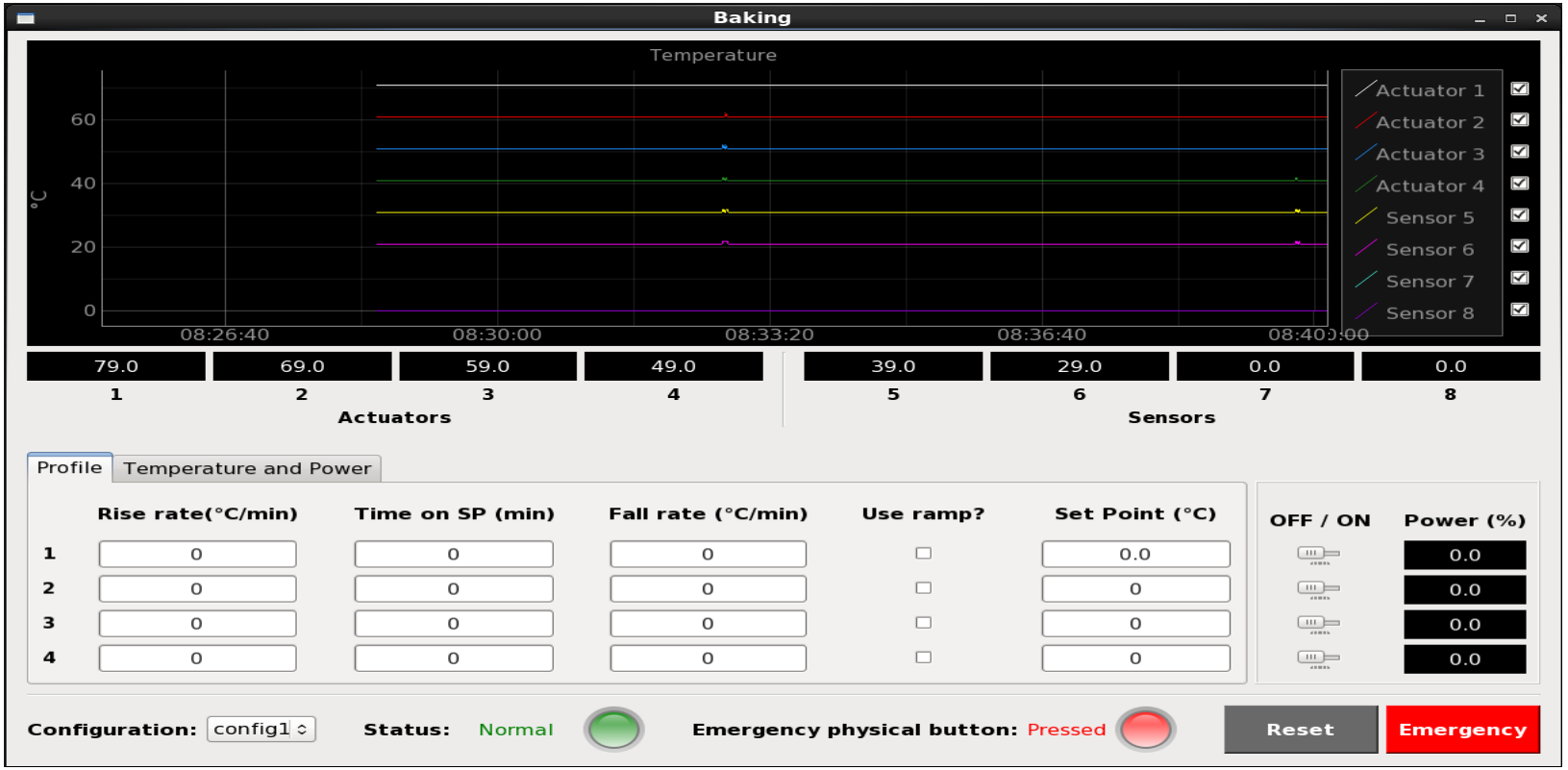
Framework



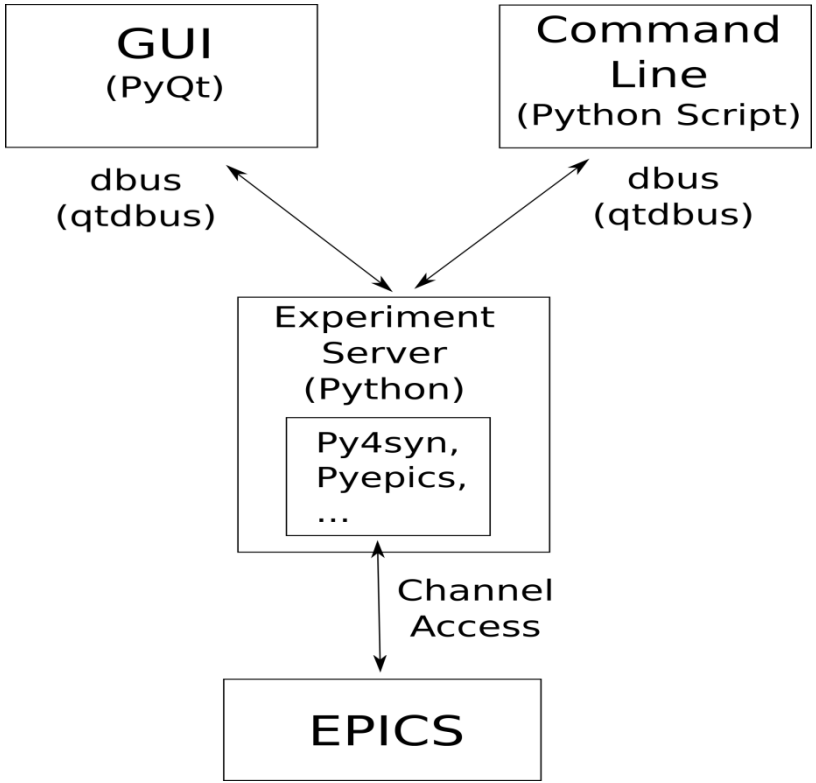
New PyQt + PyDM based UIs



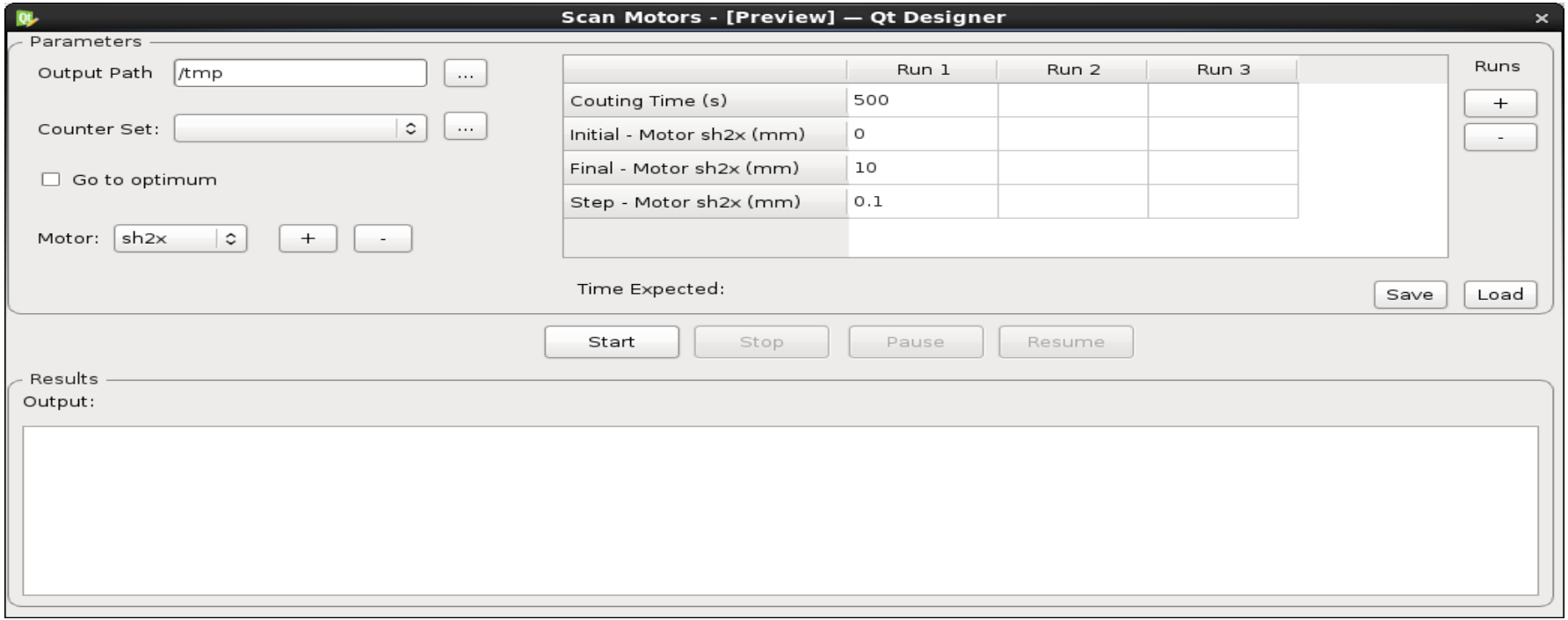
New PyQt + PyDM based UIs



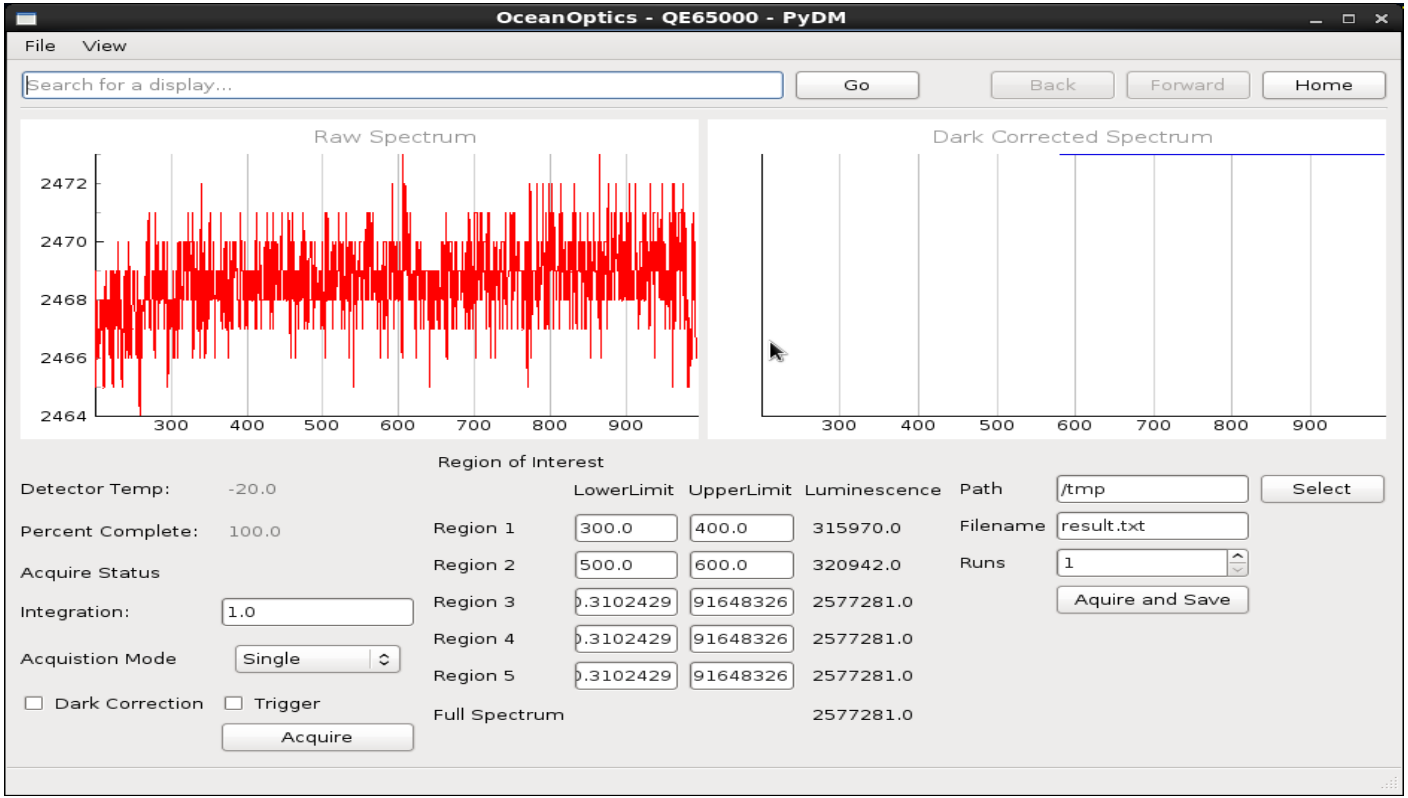
Framework


GUI
(PyQt)
Command
Line
(Python Script)
dbus
(qtdbus)
dbus
(qtdbus)
Experiment
Server
(Python)
Py4syn,
Pyepics,
...
Channel
Access
EPICS

New PyQt + PyDM based UIs



New PyQt + PyDM based UIs



Next steps...

➔ **Standardize common windows**

✓ *To cover as many techniques as possible with single solution*

➔ **Access control**

✓ *Different views for beamline technicians and researchers*

➔ **Web access**

✓ *Proposed framework should facilitate migration to a web interface solution*

Questions...