Python for User Interfaces at Sirius
(THAPL04)

Douglas B. Beniz
(Brazilian Synchrotron)
douglas.beniz@lnls.br
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;

CS-Studio (Control System Studio*)

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

THAPL04
LabWeb* (Science Studio)


THAPL04
*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

GUI (PyQt)

PyDM Widget

Channel Access

EPICS
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

THAPL04
New PyQt + PyDM based UIs
New PyQt + PyDM based UIs

OceanOptics - QE65000 - PyDM

Detected Temp: -20.0
Percent Complete: 100.0
Acquire Status
Integration: 1.0
Acquisition Mode: Single

Region of Interest

Detector Temp: -20.0
Percent Complete: 100.0
Acquire Status
Integration: 1.0
Acquisition Mode: Single

THAPL04
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...