Elettra Sincrotrone Trieste

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Executer

A Tango based tool for experiment control

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Necessity for such a tool

- Fermi FEL beamline control systems based on Tango
- Experiment control and data acquisition are therefore based on Tango
- Manage experiments with an instrument that is:
  - Versatile
  - Extensible
  - Integrated in Tango
  - Simple

What is the Executer

- An experiment control and management tool...
- ...but also a Python Tango device server

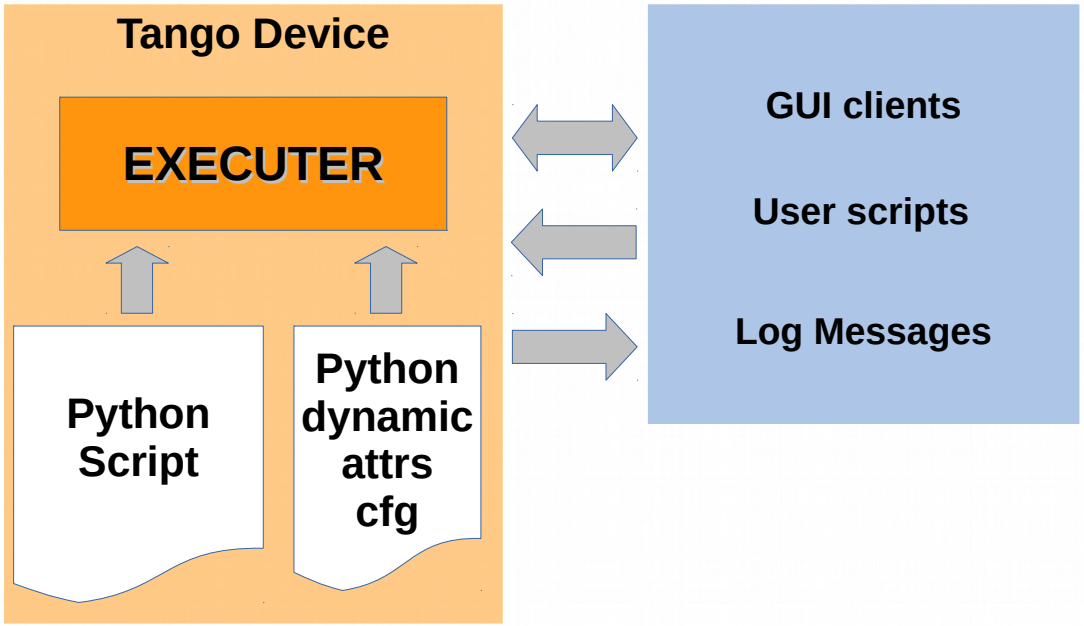
- A device that runs generic Python scripts
  - can interact directly with other Tango objects
  - can embed non-Python code

- Takes advantage of dynamic Tango attributes
  - configured via a Python cfg file
  - Including custom read/write functions

What is the Executer

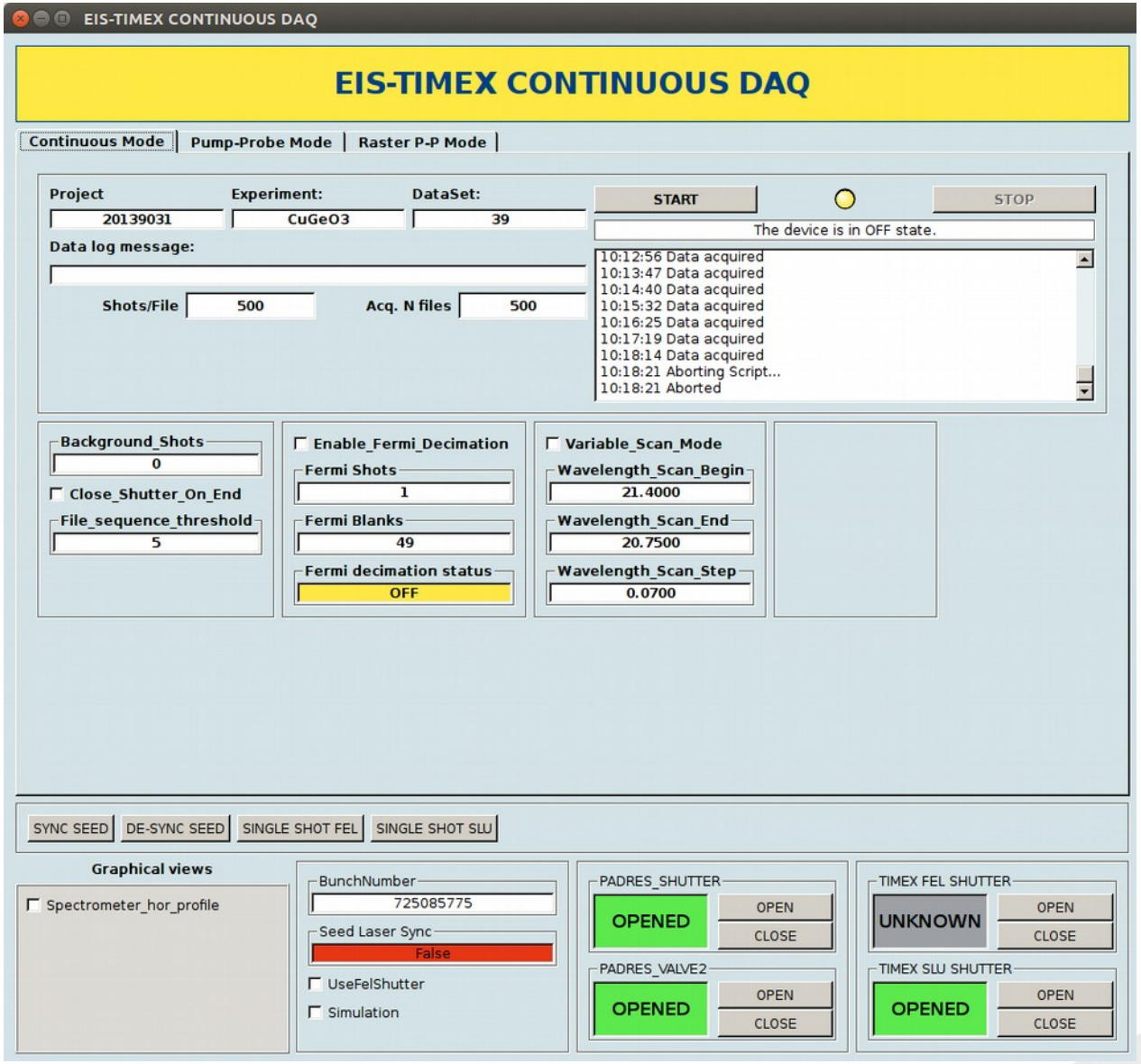
- Each “experiment” or “operation” is codified in a Python script that represents the “flow” of actions
- The main Executer instance will perform
  - Preparatory functions
  - Experimental steps
  - Instrumentation synchronization
  - Start/stop the data collection
  - Finalization
- A separate instance can handle online data post-processing if required

Interacting with the Executer

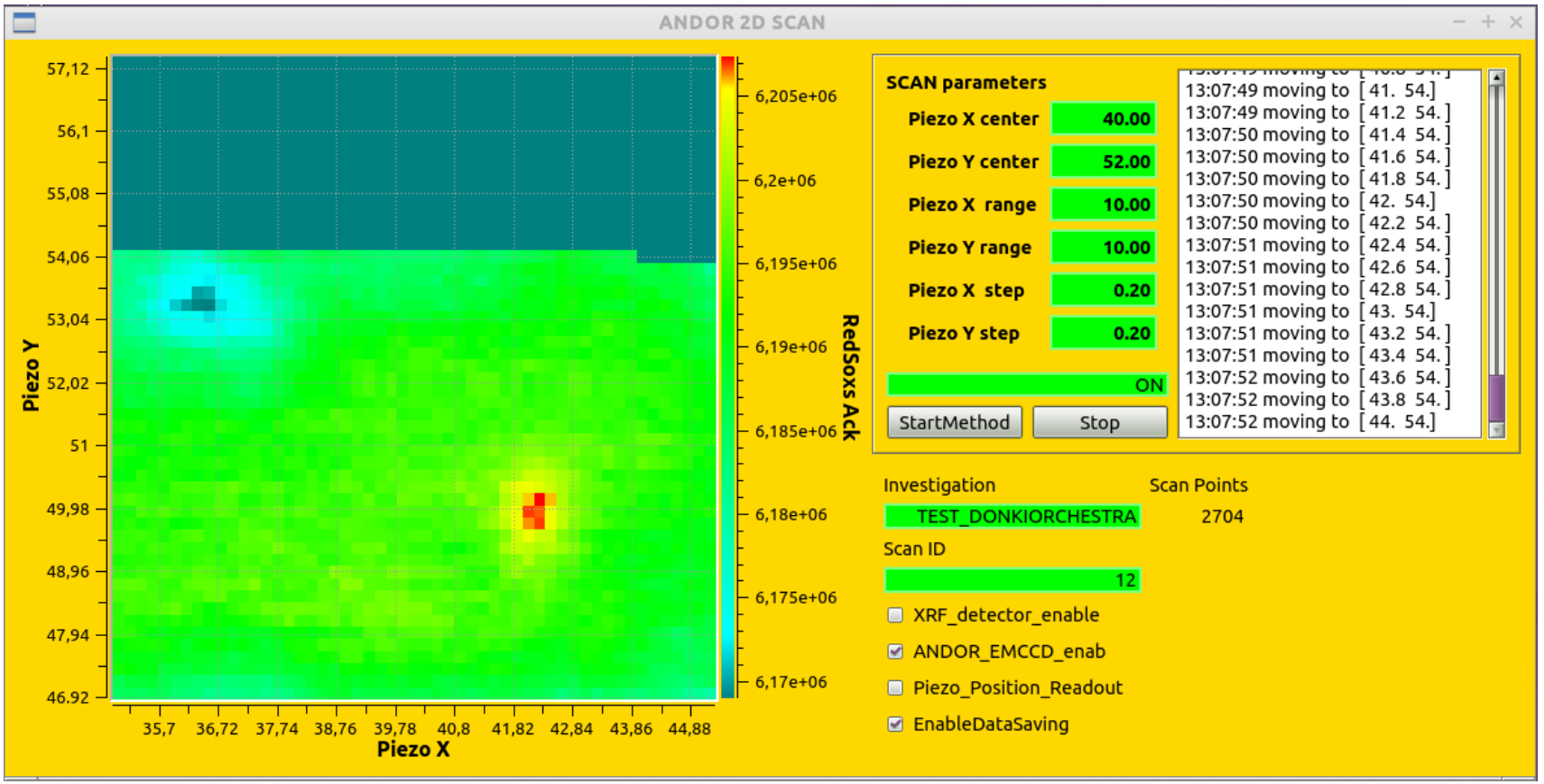


Example (Fermi FEL)

Main experiment control panel on Timex beamline



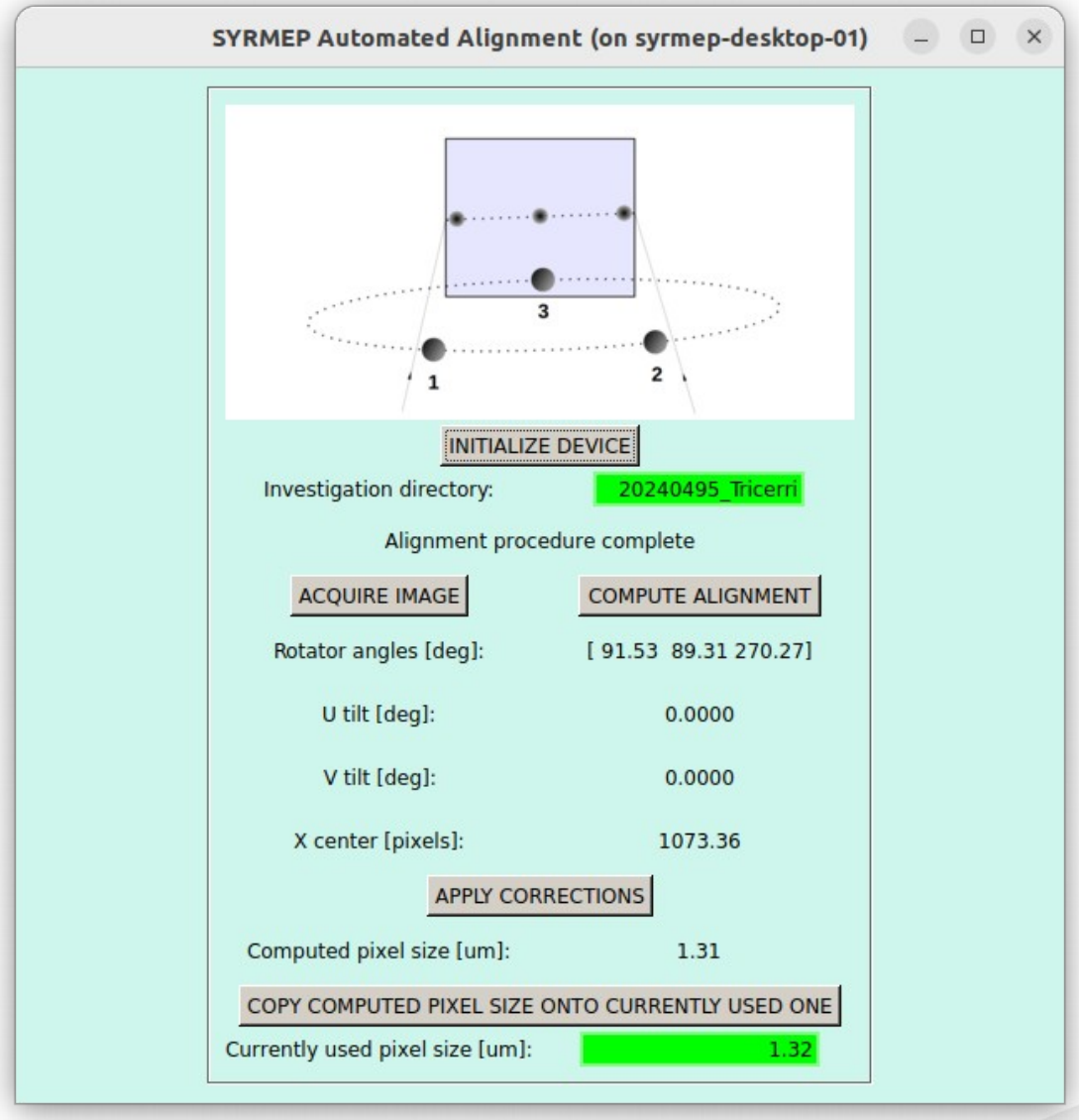
Example (Elettra synchrotron)



GUI panel for a Executer controlled 2D scan,
TwinMic beamline

Example (Elettra synchrotron)

GUI panel for sample stage automatic alignment,
Syrmep beamline



Related tools

- CoLibry: a collection of “internal” Python methods and classes
  - Build executer scripts
  - Help write user scripts
  - e.g.: methods to handle instrument synchronization with FEL pulse
- Dynamic: simplified version of the Executer
  - dynamic attributes only
  - specific tasks via read/write functions
  - e.g.: I/O with a non-Tango compliant “guest” source

Conclusions

- Successfuly used during the past years of Fermi operation
- Used also on Elettra Tango-based beamlines
- Proved to be effective and versatile
- Integrated with other Tango based tools (data acquisition)

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Thank You!

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