



LMC harmonization through Telescopes

Arcetri Astrophysical Observatory

Taurus GUI for CSP_LMC prototype engineering interface

M.Vela N., C.Baffa, E.Giani,

Introduction

The TAURUS library was developed for connecting client side applications CLI and GUI to TANGO device servers.

TAURUS is built on top of PyTango which is a python binding for the Tango library.

It provides an abstraction layer that allows TANGO to be accessed in a pythonic, object oriented way.

For the GUI part, TAURUS is built on top of the graphical library PyQt which is a python binding for Qt.



The goals of this library are:

- Provide a simple Tango API to the end-user application
 - Speed up development of tango based applications
 - Provide a standardized look-and-feel
-
- **Our goal:** In order to test the Taurus designer tool, here our goal is to develop a GUI that interacts with the CSP_LMC Master device.

Master CSP Device

Device: proto/master/csp

The CSP using the

Device Info

```

- Device Info -----
Device:          proto/master/csp
type_id:         IDL:Tango/Device_5:1.0
iiop_version:   1.2
host:           192.168.17.17 (192.168.17.17)
port:           52088
Server:         BoxCsp/csp
Server PID:     7725
Exported:       true
last_exported:  30th June 2016 at 11:58:13
last_unexported: 30th June 2016 at 11:50:29

- Polling Status -----

Polled attribute name = operationalState
Polling period (mS) = 1000
Polling ring buffer depth = 10
Time needed for the last attributes (operationalState + healthState) = 1000, 1000, 1000, 999
Data not updated since 645 mS
Delta between last records (in mS) = 1000, 1000, 1000, 999

Polled attribute name = healthState
Polling period (mS) = 1000
Polling ring buffer depth = 10
Time needed for the last attributes (operationalState + healthState) = 1000, 1000, 1000, 999
Data not updated since 645 mS
  
```

Refresh

AtkPanel 4.8 : proto/master/csp

File View Preferences Help

proto/master/csp

The device is in ON state.

Simulated Mode	0 enum type	0	...
Administrative Mode	0 enum type	0	...
Observing Mode	1 mask type	0 1	...
Test/Normal Flag	0 enum type	0	...
Flag to specify control mode	1 enum type	0	...
Health Status enum	0 enum type	0	...
Flag of Usage Status	0 enum type	0	...
Operational State	2		...
Redundancy State	0		...
Logging Level	0	0 0 0 . 0 0	...
Logging Message	0	0 0 0 . 0 0	...
Alarm Reporting Level	1	0	...
alarmDestination	none	Not initialised	...
implementedAlarmList	none		...
List of Sub-elements or Components	none		...

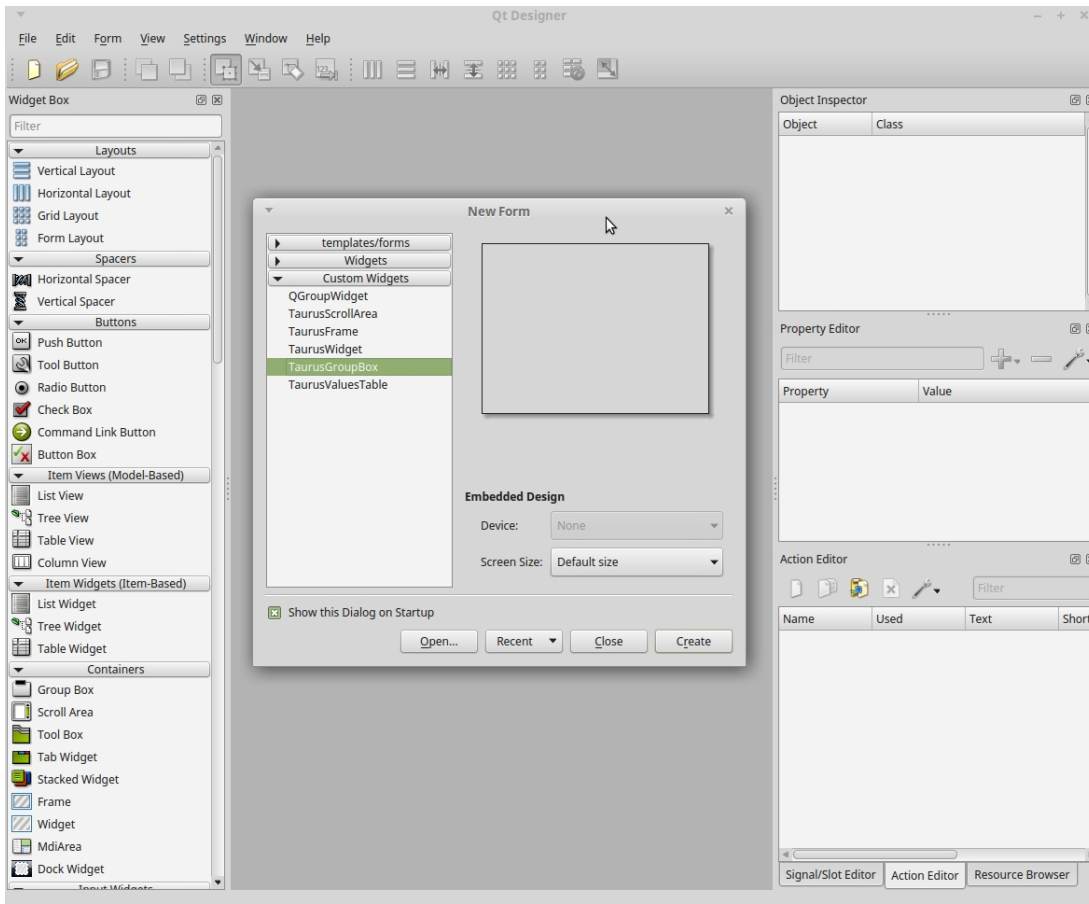
Scalar commandsFifo capabilityAvailable



SW specifications and dependencies

- **Python-Taurus 3.1.0-1.** Framework for Tango Control System CLI (Command line Interface) and GUI(Graphic User Interface) applications.
 - **Python PyTango 8.1.1-1 build 3.** API for the TANGO control system (Python 2).
 - **QT4-designer 4:4.8.5+git192-g085f8.** Graphical designer for Qt 4 applications.
 - **Python v2.7.** Interactive high-level object-oriented language

QT4 Designer interface



The TAURUS library is divided into two parts:

- The core module which handles all interaction with PyTango.
- The Qt module which provides a collection of widgets that can be used inside any PyQt based GUI.

In many aspects, TAURUS follows the same approach as the TANGO Java Application Tool Kit.



Our first simple GUI in Taurus

TM System

Scalar CommandsFifo Capability Available

State 

Status **The device is in ON state.**

CBF Operational State	2.00	None	Test mode	0	0
CBF Health Status	0		Simulated mode	0	0
PSS Operational State	8.00		Admon mode	0	0
PST Operational State	8.00		Observing mode	0	0
PSS Health Status	0		Logging Level	0	0
PST Health Status	0		Logging Message	0	0
Used by SubArray	none		Alarm Level	1	0
Used by Capabilities	none		Alarm Destination	3	3
Componets List	none		Capabilities Status	none	
Capabilities List	none		Implement Alarm	none	
Health State	0		Redundancy State	0	
Usage State	0		Operational State	0	



Taurus GUI for CSP_LMC Master

The image displays three overlapping windows of the Taurus GUI for CSP_LMC Master. Each window shows a detailed configuration and status page for a device, organized into a grid of property controls. The top of each window features a 'State' indicator (a green circle) and a 'Status' bar. The main content is divided into several sections, each with a 'property' label and a 'property' value field, often accompanied by a 'property' label and a 'property' value field.

Left Panel:

- State: ON (Green circle)
- Status: [Redacted]
- Operational State: 2
- Health State: 0
- CBF Operational State: 2.00
- CBF Health Status: 0
- PSS Operational State: 2.00
- PSS Health Status: 0
- PST Operational State: 2.00
- PST Health Status: 0
- Componets List: none
- Capabilities List: none
- Used by Capabilities: none
- Usage State: 0

Middle Panel:

- State: ON (Green circle)
- Status: The device is in ON state.
- Operational State: Enum to specify test mode (0=Normal 1=Test)
- Health State: Enum containing the Health Status (0=Normal 1=Degraded 2=Failed 3=Not_Operable)
- CBF Operational State: Type: Read, DevDouble, CBF Operational State
- CBF Health Status: Type: Read, DevDouble, CBF Health Status
- PSS Operational State: Type: Read, DevDouble, PSS Operational State
- PSS Health Status: Type: Read, DevDouble, PSS Health Status
- PST Operational State: Type: Read, DevDouble, PST Operational State
- PST Health Status: Type: Read, DevDouble, PST Health Status
- Componets List: List of Sub-elements or Componets
- Capabilities List: List of implemented capabilities
- Used by Capabilities: List of Capabilities which uses this component
- Usage State: Flag: 0= Idle 1= Active

Right Panel:

- State: ON (Green circle)
- Status: The device is in ON state.
- Test mode: 0
- Simulated mode: 0
- Admon mode: 2
- Observing mode: 2
- Logging Level: 0
- Logging Message: 0
- Alarm Level: 1
- Alarm Destination: none
- Capabilities Status: none
- Implement Alarm: none
- Redundancy State: 0
- Used by SubArray: none



Taurus GUI for CSP_LMC Master

Scalar CommandsFifo Capability Available

Status **The device is in ON state.**

Commands Fifo **(",", ";", ")** ('Not initialised',)

Scalar CommandsFifo Capability Available

Status **The device is in ON state.**

Capability Available **[0 0 0 0 0]**

The graph displays a horizontal blue line at y=0, indicating that the capability available is zero across the entire range of the x-axis.

Discussion and conclusions

A TAURUS GUI that interacts with the CSP_LMC Master device was developed.

Pros and Cons

Taking into consideration the TAURUS goals:

- Provide a simple Tango API to the end-user application
 - Provide a standardized look-and-feel
 - Speed up development of tango based applications
-
- Taurus is very sensible to dependencies these must be exact versions
 - There are many videos tutorial and documentation for using QT on Internet but, not for Taurus.
 - The documentation is incomplete.
 - There aren't more complex examples in the manual





Thanks for your attention!

