# TangoEpics – Motivation

- ## Why EPICS @ ALBA?
  - TMBF Transverse Multi-Bunch Feedback (aka BbB Bunch by Bunch) beam stabilization system. Kindly provided and adapted by DLS: got all necessary software elements (FPGA firmware, EPICS IOC and linux OS for libera BbB hardware plus client GUI and utility scripts)
  - Minimal EPICS setup for only 2 client machines:
    - EPICS base-3.14.12.4
    - PyEpics 3.2.4 (for user python scripts)
    - LabCA 3.4.1 (for user matlab scripts)
    - EPICS edm 1-10 extension (GUI framework)
  - EPICS TMBF control fully functional but then we need archiving: setup, maintain and integrate EPICS archiver? Had enough EPICS, better use a bridge to tango and use regular tango archiver

- ## Why yet another Tango - EPICS bridge server?
  - Tango2Epics: no python, no PV properties (type, dimension, rw …) auto discover
  - TangoCA: no python, no PV properties auto discover, no attributes
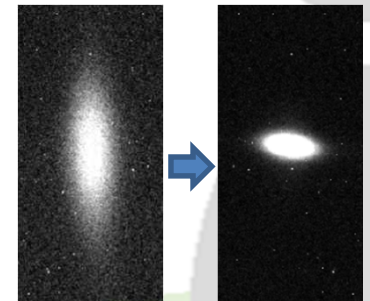
TangoEpics – Detailed interface

- Properties
    - ProcessVariables: list of PV_names + [<TAB> + tango_names]
    - Host (optional): to be preprended to PV_names
    - AutoTranslation (optional, default is [__,-_,:_,._,[_,]_,<_,>_,;_]): comma separated list of EPICS special chars and the corresponding Tango translation (translation may be > 1 char: e.g. "_colon_")
- Attributes
    - EPICS PVs translated to dynamic Tango attributes. Tango naming options:
        - Specify your own tango name: define optional [<TAB> + tango_names]
        - Use EPICS PV name (not recommended if special chars used): define empty "AutoTranslation" property
        - Replace EPICS PV special chars by your own chars: use "AutoTranslation" property
        - Replace all EPICS PV special chars by "_" (default): use default "AutoTranslation" property
    - Attribute properties automatically discovered:
        - type
        - dimension
        - rw access
        - label: original EPICS PV name
- Commands
    - getEpicsName(attr_name)
    - getTangoName(PV_name)
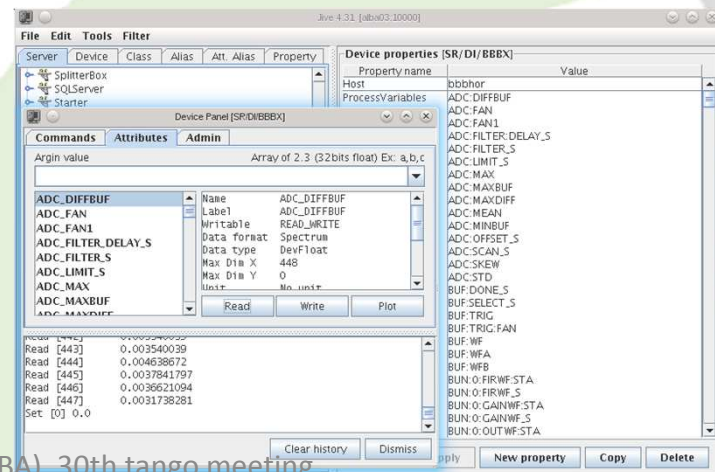
TangoEpics – Status

- Operational and in use at Alba for TMBF archiving (could be used to fully control the system)
- Advantages:
  - Portability (python source)
  - Simple configuration
  - Attribute properties auto discover
  - Performance (uses PyEpics "epics.ca" low level functions for better performance: used at alba accessing 540 PVs)
- Requirements
  - EPICS base (tested with 3.14.12.4)
  - PyEpics (tested with 3.2.4)
- TODO
  - Tango events could be associated to EPICS monitors?
  - Further properties auto discover? No Tango-EPICS interface officially defined:
    - Tango max value + alarms ~=? EPICS upper_[disp,alarm,warning,ctrl]_limit
    - Tango attribute quality ~=? EPICS PV severity
    - …
  - …
- Available at sourceforge
  - DeviceClasses/Communication/TangoEpics
  - https://sourceforge.net/p/tango-ds/code/HEAD/tree/DeviceClasses/Communication/TangoEpics