EPICS to TANGO Translator

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Outline

- Motivation

- Constraints

- Implementation

- Issues
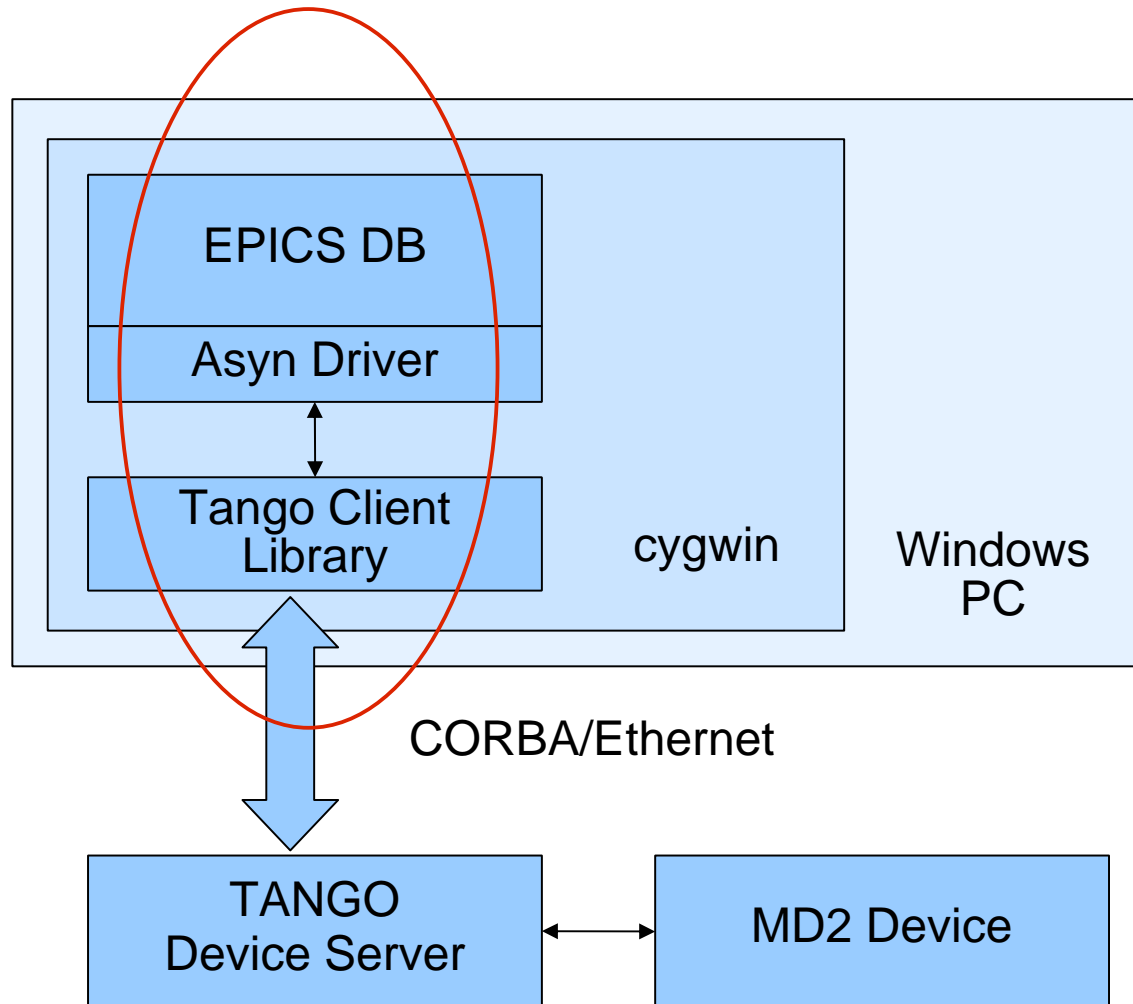
- Tango/Tine translators

- Conclusion

Motivation: Supported in TANGO, we want it speak EPICS

- Microdiffractometer MD2 developed by Maatel, France on license from EMBL

- Existing device support in TANGO Control System

- EPICS support required for EPICS customers

- Generic EPICS Support needed

  - Should work with future changes in the TANGO Device Server with least changes and if possible, no coding

  - Should be running on a Windows machine
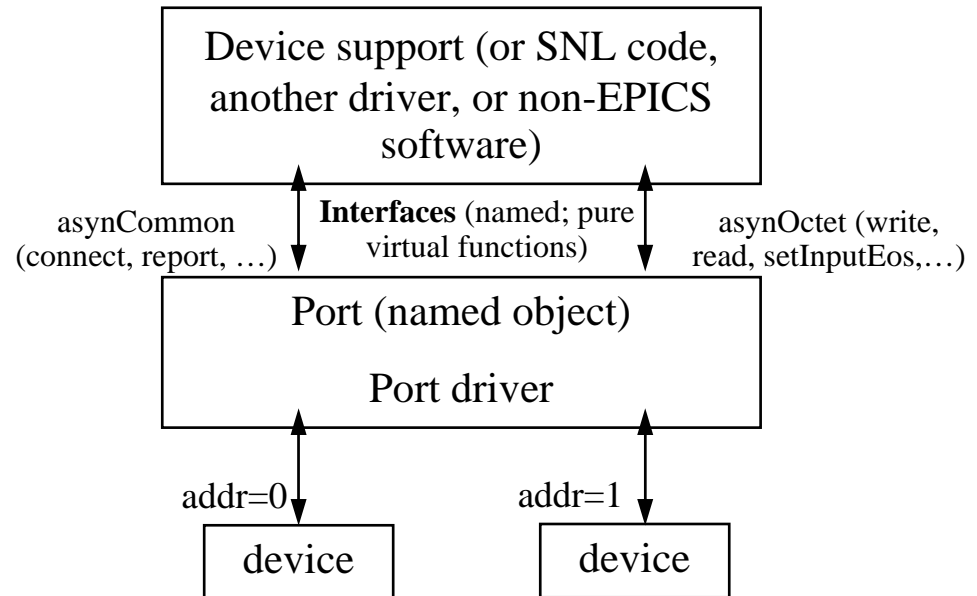
Building blocks of the solution

- TANGO interface library

- Communication handled through Asyn driver

- Generic approach for command calls and attribute manipulation

- Clearly defined format for command calls and attributes

- Support for all major TANGO datatypes

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Building blocks of the solution

EPICS DB

Asyn Driver

Tango Client
Library

cygwin

Windows
PC

CORBA/Ethernet

TANGO
Device Server

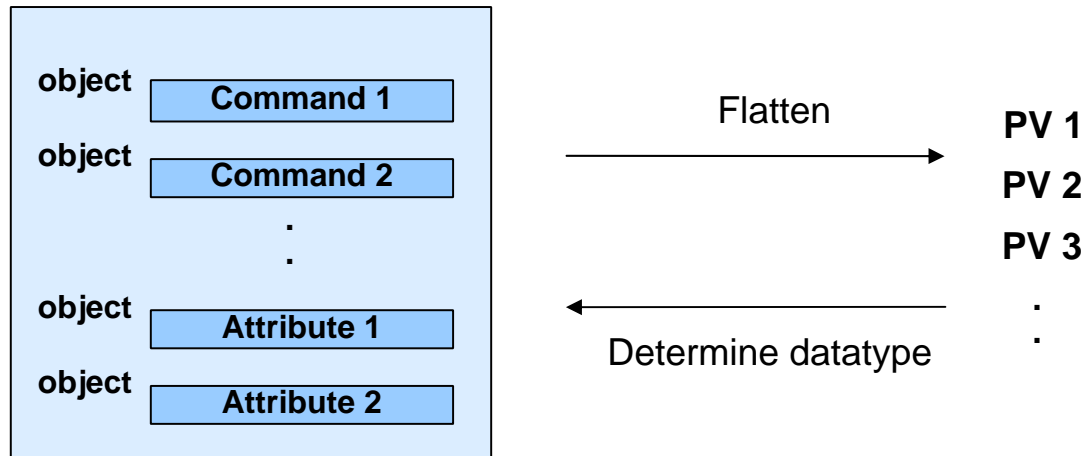MD2 Device

Asyn Driver

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- Standard driver framework for EPICS IOCs
  - In principle in can be used with other control systems (uses libCom library only)
- Name comes from the support for asynchronous devices (serial, GPIB), but now also supports synchronous register-based devices
- Main benefits of use:
  - Defined interfaces and structure (easier code maintenance)
  - Lots of testing and debugging features already provided
- If there is no other significant reason, I recommend it for new drivers

Device support (or SNL code, another driver, or non-EPICS software)

asynCommon (connect, report, …)   **Interfaces** (named; pure virtual functions)   asynOctet (write, read, setInputEos,…)

Port (named object)

Port driver

addr=0   addr=1

device   device

Asyn architecture

Implementation (1/2)

- Command and attribute naming convention
    - type
    - name
    - datatype

  example:

 *@asyn($(PORT),$(ADDR))attr_ArchivePath_str*

  @asyn($(PORT),$(ADDR))cmd_MoveDevices_arrayof_shtout

- All records are processed during initialization

- TANGO device server is queried for required commands or attributes

- The mapping is stored in a table inside the driver

- If the command does not exit in the driver, an error message is displayed and the record's requests are ignored

- Future changes only require changes in the database (and screens)

- Cygwin environment makes EPICS run on the same platform as the TANGO device server, making all one software package.

- **Compound TANGO datatypes**

  - In TANGO commands can take or return an argument in form of two dimensional arrays consisting out of pairs of string and long or double values

  - Solution was not found, problem noted

- **EPICS string length limitation**

  - MD2 TANGO device server reports status as long strings

  - Only a minor problem
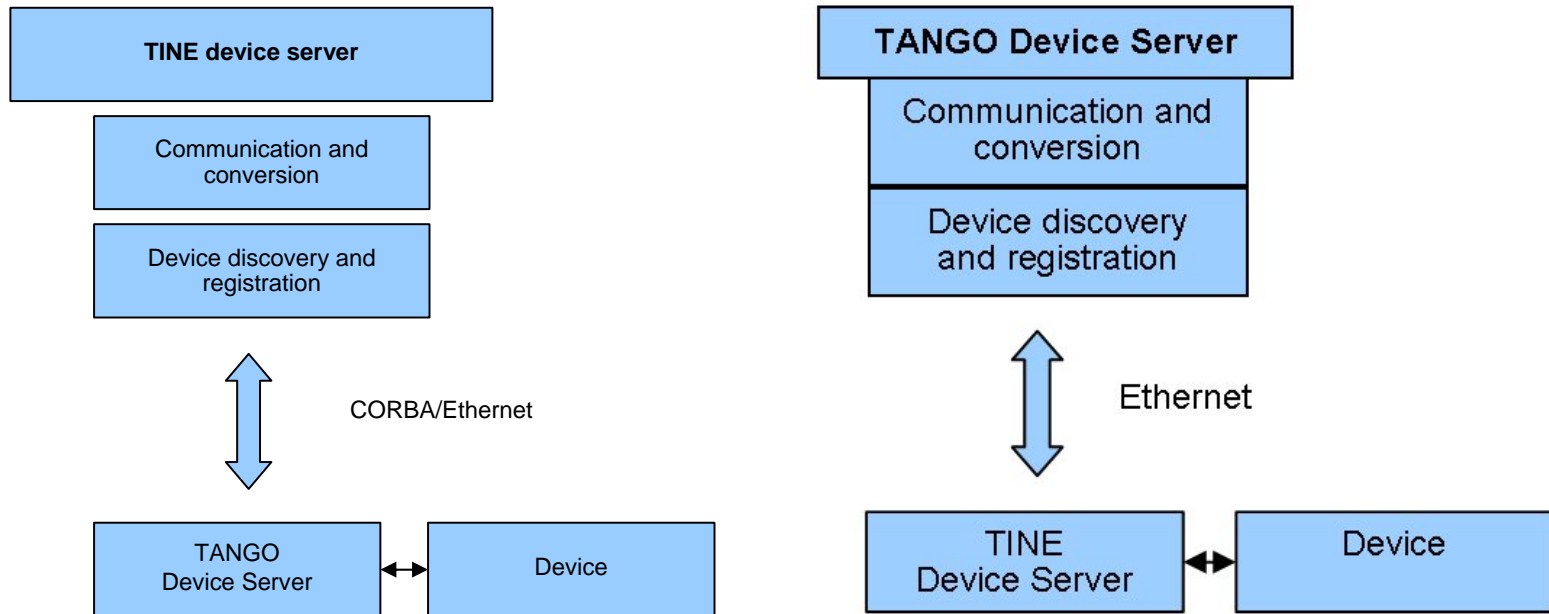
- Developed for EMBL Hamburg in August and September 2007
- Thanks to Phillip Duval from DESY for help on the TINE side

Conclusions

- Translators among control systems are a good way of integrating existing implementations

  - In most cases much better than implementing the whole thing again (cost/benefit)

- Focus on the target and don't reach for a perfect translator (80/20) rule

  - A perfect translator may be harder than re-doing the whole thing in another control system

- Maintenance can be an issue

  - Change control is important

- Need experts for both control systems

Thank You!