TANGO KERNEL DEVELOPMENT STATUS

Reynald Bourtembourg
On behalf of the TANGO Controls Collaboration
• Roadmap
• Bonus
Roadmap from ICALEPCS 2015 (as described in WEA3O01):

1) Improve documentation
2) Move to Git
3) Remove CORBA completely
4) Grow the community
5) REST API
6) Web browser application
7) Secure encryption
8) Database performance
9) Device class Marketplace
10) Long Term Support
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14) Replace Boost.Python
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ROADMAP #1: IMPROVE DOCUMENTATION

Re-factor and consolidate documentation

http://tango-controls.readthedocs.io
ROADMAP

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ROADMAP #2: MOVE TO GIT

Sourceforge / subversion

http://sourceforge.net/projects/tango-cs/

Github / git

https://github.com/tango-controls

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ROADMAP #2: MOVE TO GIT

3rd party tools for free!

- Travis CI
- AppVeyor
- Codecov
- SonarCloud
- Read the Docs
- versioneye
- CodeBeat
- Codacy
Pull Requests

Source: https://medium.com/@swinkler/git-workflow-explained-a-step-by-step-guide-83c1c9247f03
ROADMAP #2: MOVE TO GIT

Pull Requests

This code should be extracted into method add_forwarded_attribute(Tango::Attr* fwd_attr)

I agree. Well actually I would create method add_forwarded_attribute(Tango::FwdAttr* fwd_attr)

I think that maybe its better to include this code in existing add_forwarded_attribute method

// the root_attribute parameter then we have to get its __root_att property from tango DB

// prior to calling validate_fwd_att()
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ROADMAP #3: REMOVE CORBA COMPLETELY

- Introduce an abstract transport layer
- Replace CORBA as synchronous communications protocol with a pluggable protocol layer
- remove all dependencies on CORBA
  - serialisation library
  - data types
- use ØMQ as first implementation
ROADMAP #3: REMOVE CORBA COMPLETELY

cppTango (C++ Tango library):
- Code restructured
- CORBA notifd events related code purged in Tango V10
- Proof of concept refactoring to:
  - Isolate CORBA code
  - Implement DevVarDoubleArray type using an architecture allowing plugins
  - Replace omni_threads with C++ 11 threads

Compatibility will be preserved all along the way!
- Runtime compatibility
- Source code compatibility with minor changes
  - Setup CI for cross-version checking
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New contributing members in the TANGO Controls Steering committee:

- INAF
- SKA Office
- SKA South-Africa

Core members:

- ALBA
- Elettra Sincrotrone Trieste
- ESRF
- SOLEIL Synchrotron

Other contributing members:

- MAX IV
- DESY
- SOLARIS
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ROADMAP #5: REST API

Implement a REST API for TANGO

https://github.com/tango-controls/rest-api
ROADMAP #5: REST API

ROADMAP #5: REST API

REST API implementation: mTangoREST.server
https://bitbucket.org/hzgwpn/mtangorest.server/wiki/Home
ROADMAP #5: REST API

REST API implementation #2: RestDS / WebSocketDS

http://tangodevel.jinr.ru/git/tango/web/RestDS
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ROADMAP #6: WEB BROWSER APPLICATION

Implement a device browser for the web
ROADMAP #6: WEB BROWSER APPLICATION

https://github.com/tango-controls/tango-webapp
ROADMAP

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ROADMAP #7: SECURE ENCRYPTION

Implement a secure encrypted protocol for public networks

- Security managed by infrastructure
  - VPN
  - Web server
  - HAProxy
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ROADMAP #8: DATABASE PERFORMANCE

Improve to remove bottlenecks for memorized attributes

✓ Implemented since 2016
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ROADMAP #9: DEVICE CLASS MARKETPLACE

Implement a marketplace
ROADMAP #9: DEVICE CLASS MARKETPLACE

UNDERSTANDING ONLINE STAR RATING:

⭐⭐⭐⭐⭐ [HAS ONLY ONE REVIEW]
⭐⭐⭐⭐⭐ EXCELLENT
⭐⭐⭐⭐⭐ OK
⭐⭐⭐⭐⭐ CRAP
⭐⭐⭐⭐⭐
⭐⭐⭐⭐⭐
⭐⭐⭐⭐⭐
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[Image] xkcd.com/1098
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ROADMAP #10 LONG TERM SUPPORT

Provide upgrades for older versions

- Long Term Support for Tango 9
  (min 5 years after 1\textsuperscript{st} Tango V10 stable release)

- Bug fixes

- Simple new features

- \texttt{tango-9-lts} branch on Github:
  \url{https://github.com/tango-controls/cppTango/tree/tango-9-lts}
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ROADMAP #11: TANGO VIRTUAL MACHINE

Upgrade Tango Box virtual machine to latest TANGO SW versions
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ROADMAP #12: AUTO-GENERATE UNIT TESTS

POGO to generate unit tests automatically
ROADMAP #12: AUTO-GENERATE UNIT TESTS
ROADMAP #12: AUTO-GENERATE UNIT TESTS

JTango Maven archetype → Simple Unit tests
ROADMAP #12: AUTO-GENERATE UNIT TESTS

Capture of controller description (M&C ML)

Auto-Generate

Controller (TANGO Device)  Test Case

Controller view in TANGO (POGO)

Auto-Generate

Controller (TANGO Device)

Auto-Generate

SimLib configuration view

SimLib JSON
ROADMAP

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ROADMAP #13: SYSML SUPPORT

Add support for using SysML to specify device servers

Generated SysML View
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ROADMAP #14: REPLACE BOOST.PYTHON

Replace Boost.Python in PyTango with a lighter weight solution

Proof of Concept tests in progress

https://github.com/pybind/pybind11
C++ TANGO LIBRARY STATUS

- Code restructured
- Autotools → CMake
- Continuous integration with Travis CI, using docker containers
- Continuous integration with AppVeyor for Windows
- Bug fixes
- New features:
  - DevEnum labels for DevEnum command parameters
  - DevPipeBlob in command parameters
  - Tango 10 frequent development releases to Bintray (www.bintray.com/tango-controls) as Debian packages for Tango
  - Major releases packaging will go to official repositories
JTANGO STATUS

- Code restructured
- Bug fixes
- Mavenization
- Automatic deployment on Bintray

www.bintray.com/tango-controls
Soon on Maven Central

 JTANGO STATUS

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News since latest ICALEPCS

- PyTango 9.2.2 released in September 2017:
  - Pipes
  - Dynamic commands
  - Forwarded Attributes
  - Mandatory properties
  - Interface Change Events
- 2 modules for unit-testing added
- Bug fixes
- Code refactoring
- More Unit Tests
- Code quality check with pylint and flake8
- official tango-controls conda channel

https://github.com/tango-controls/pytango
LABVIEW BINDING

https://github.com/tango-controls/labview-binding
CONCLUSION

TANGO collaboration contract ensures sustainability
More details on Thursday:
TANGO HEADS FOR INDUSTRY presented by A. Götz (THCPL05)

Photo: Albert Gea / Reuters
Many thanks to the TANGO Controls community and kernel team! Thank you for your attention!

Questions?

www.tango-controls.org