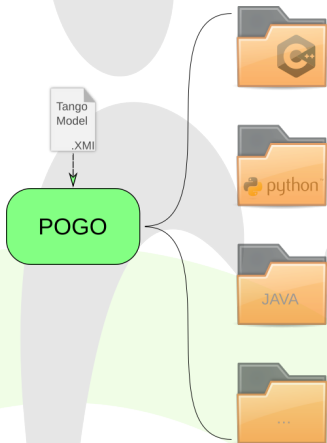


Tango Server code generation

Damien Lacoste
June 9 2026

controls

POGO - Program Obviously used to Generate tango Objects



- ▶ Tango code generator written in java swing.
- ▶ Use a xmi file to describe tango class and device server model.
- ▶ Support device servers with several classes.
- ▶ GUI to create and manage tango class and device server model.
- ▶ Support generators for different languages and uses:
 - ▶ C++ code generator.
 - ▶ java code generator.
 - ▶ Python code generator, in 2 flavors.
 - ▶ HTML documentation generator.
- ▶ Run with java 11+.

- ▶ Protected regions
 - ▶ Recommendation from the author of the code not to use this pattern
 - ▶ Dead code
 - ▶ Force to modify generated files, meaning code generation can wreak havoc
 - ▶ Part of the XText framework that is kind of niche
- ▶ Templates are part of the code, they are not easily extended
- ▶ GUI first, use of the command line is lacking, which is not so nice for CI/CD workflows
- ▶ Maintenance hazard, the code is not easy to maintain

Pogo - A rewrite proposal

- ▶ Using jinja2 templates
- ▶ No more protected regions, code is generated, developers write their own files
- ▶ Written in python, as a CLI tool, and a library (meaning there could be a GUI)
- ▶ Generate a simulated implementation by default, for testing purposes
- ▶ Multiple input format supported
 - ▶ xmi, for compatibility
 - ▶ yaml/json/toml, easy to read and write by humans
- ▶ There is a catch: There will be no easy path to port existing device servers

- ▶ Available templates ✓
 - ▶ C++ ✓
 - ▶ Python ✓
 - ▶ Java ✓
- ▶ Unit tests ✓
- ▶ Integration tests ✓
- ▶ v1.0 production ready ✓

controls

Is there more to it?

A stylized graphic of a person's upper body, rendered in shades of green and grey. The person is wearing a light green shirt and has a grey torso. The word "controls" is written in a light grey, sans-serif font, curving along the bottom edge of the person's shirt.

controls

High level C++ API proposal

Edit



Marius Elvert @ltjax Nov 5, 2020



Okay, so I'm putting my money where my mouth is. We've started on a new code generator, and it's starting to be useful, though we have yet to test it in a production setting.

You start with a definition file in toml. It is meant to be human-readable and editable and be checked into your repository:

```
name = "cool_camera"

[[device_properties]]
name = "index"
type = "long"

[[device_properties]]
name = "address"
type = "string"

[[attributes]]
name = "binning"
type = "long"
access = ["read", "write"]

[[attributes]]
name = "exposure_time"
type = "float"

.. ..
```

Status

Edit

 To do

Assignees

Edit

None - assign yourself

Labels

Edit

None

Parent

Edit

None

Weight

Edit

None

Milestone

Edit

Some day

Iteration

Edit

None

Dates

Edit

Start: None

Due: None

- ▶ Input files are human readable toml
- ▶ No more protected regions, code is generated, developers write their own files
- ▶ Written in C++, self contained executable
- ▶ Templates are embedded in the code, no easy way to customize
- ▶ Not fully compatible, features are missing, all types are not supported
- ▶ Used in production

Pogo

- ▶ Protected regions
- ▶ XML input files
- ▶ GUI only
- ▶ Static templates
- ▶ Difficult to maintain
- ▶ Legacy tool, support many features

Pogo Python

- ▶ Separation of the code
- ▶ Many input formats
- ▶ CLI first, library available
- ▶ Extensible templates
- ▶ Small python codebase
- ▶ Intend to support all features

Hula

- ▶ Separation of the code
- ▶ toml input format
- ▶ CLI only
- ▶ Static templates
- ▶ Small C++ codebase
- ▶ Limited features set

Hula, another proposal

- ▶ A new Tango Software Community project
- ▶ Specifications
 - ▶ Input format
 - ▶ Data model (library)
 - ▶ Templates
- ▶ py-hula as the reference implementation
- ▶ hula as a C++ implementation
- ▶ A place to continue define and build Tango

A large, light gray watermark of a stylized human figure is positioned on the left side of the slide. The figure has a rounded head, a curved torso, and a long, tapering leg. A light green curved band is visible behind the figure's lower half.

Any Questions ?

Thanks !

Eliot Michel
Marius Elvert

HULA



"WANTS

YOU"

© 2000
LUCASFILM

A stylized, light gray silhouette of a person with a large oval head and a pointed bottom, positioned behind the text.

Documentation

[Pogo project repository](#)

[Hula project repository](#)

<https://isocpp.org>

<https://www.python.org>

[Jinja2 documentation](#)

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