Automated Testing Infrastructure for the Software Framework Gaudi

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Why?

Testing is a key part in the release cycle of a software project, but Gaudi didn't have a proper infrastructure to run the tests.

CERN Software Process & Infrastructure group (SPI) and the LCG Application Area use QMTest from CodeSourcery to drive the tests.

What do we have?

Gaudi/LHCb projects are structured in packages managed with the tool CMT.

Tests in Gaudi are mainly based on running applications and check the output.

What do we want?

A testing infrastructure that respect the packaging of the projects.

A flexible way to run a Gaudi application and to analyze the output.

The implementation

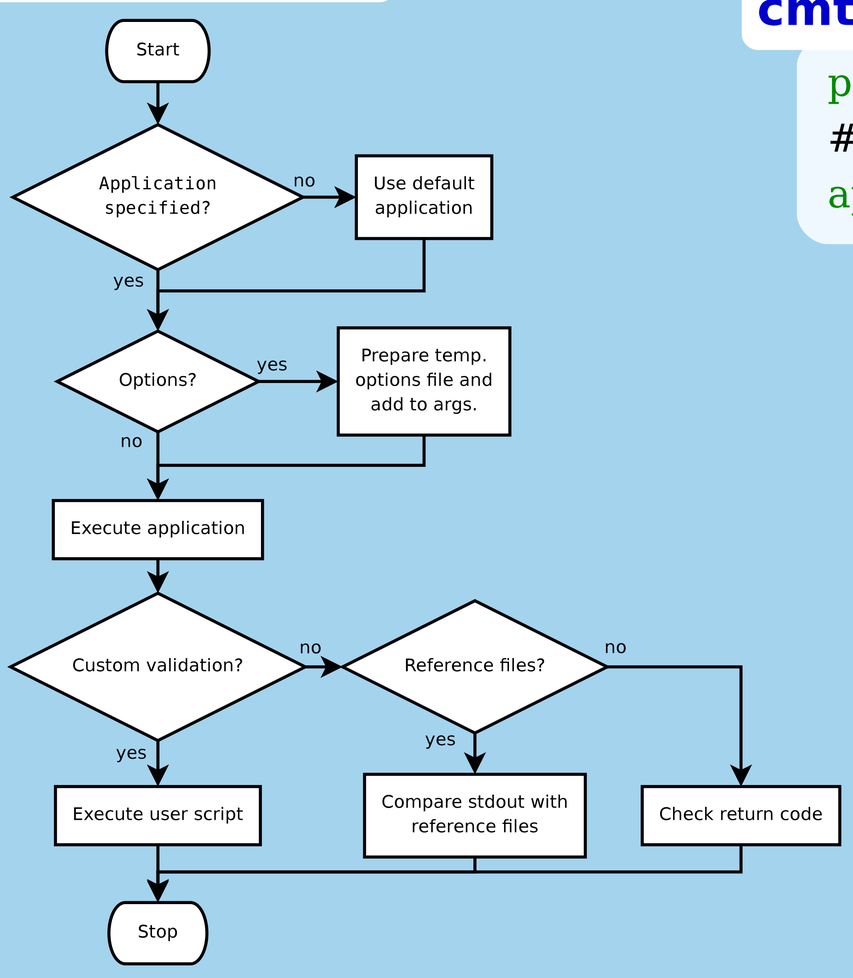
Package Configuration

- CMT patterns to be applied in the packages providing tests.
- CMT actions to execute the tests.
- Python scripts to wrap the calls to the qmtest program.
- Conventional location for test description files (.qmt)

Specialized QMTest class

- Abstracts the ways of executing a test (Gaudi executable, python script, options arguments,...)
- Extensive logs in case of failures
- Allow custom validation code (Python)
- Common utility functions for the custom validation code.
- Smart comparison of reference files

Test execution



cmt/requirements

```
package MyPackage
#...
apply_pattern QMTest
```

qmtest/mypackage.qms/

```
test1.qmt
test2.qmt
test3.qmt
```

output

```
# cmt TestPackage
--- TEST RESULTS -----------------------------------
  mypackage.test1                          : PASS
  mypackage.test2                          : PASS
  mypackage.test3                          : FAIL
    Unexpected standard output.
```

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References

QMTest - http://www.codesourcery.com/qmtest
CMT - http://www.cmtsite.org
Gaudi - http://cern.ch/proj-gaudi/
LHCb - http://cern.ch/lhcb