

Thomas Kilgus

**CTEST**

# What is CTest?

- CTest is a testing tool
- Part of CMake.
- Can be used to automate updating, configuring, building, testing, performing memory checking, performing coverage
- Can submit results to a [CDash](#) or [Dart](#) dashboard system.

# How to run CTest in Windows

- Batch file for environment:
- MITK-Superbuild\MITK-build\StartVS\_release.bat
- Add CTest to system path or batch file

# How to run CTest in Windows

```
@set CL=/D_CRT_SECURE_NO_DEPRECATED /D_CRT_NONSTDC_NO_DEPRECATED  
@set LINK=/LARGEADDRESSAWARE
```

## PATH=

```
D:/prg/MITK-01-bin/VTK-build/bin/release;D:/prg/MITK-01-bin/ITK-build/bin/relea  
se;D:/prg/MITK-01-bin/MITK-build/bin/release;V:/windows/x64/QT-4.7.0_VC9.0_Bin/  
lib/./bin;D:/prg/MITK-01-bin/CTK-build/CTK-build/bin/release;D:/prg/MITK-01-bi  
n/MITK-build/bin/plugins/release;D:/prg/MITK-01-bin/GDCM-build/bin/release;C:/P  
rogram Files (x86)/CMake 2.8/bin;%PATH%
```

cmd

1. Add Cmake binary to the path variable.

2. Replace [...] /MITK-build/MITK.sln by cmd

# First Commands

- ◉ Execute in MITK-Build Directory
- ◉ `ctest`: run all tests of the project
- ◉ `ctest --help`
- ◉ `ctest --help-full`: 3k lines crazy hot shit
- ◉ `ctest -C <build_type>`: Run with e.g. `<Debug>` configuration
- ◉ `ctest -D Nightly`
- ◉ We use: `ctest -S <script>`

# Useful Commands

- `ctest -v`: Verbose (`ctest -VV`: extra verbose)
- `ctest -j <jobs>`: Run in parallel
- Run only a subset?
- `ctest -N`: List all available tests
- `ctest -R <regex>`: Include Tests with `<regex>`
- `ctest -E <regex>`: Exclude Tests with `<regex>`

# Examples

- `ctest`: runs 318 MITK Tests
- `ctest -R Image`: Runs 73 tests containing the word „Image“
- `ctest -E Image`: Runs all tests except the 73 “Image” tests:  $(318-73 = 245)$
- `ctest -R Segmentation`: Runs 9 Tests
- `ctest -N -R Segmentation`: Lists these 9 Tests

# Examples

- ④ `ctest -L <label>`: Runs all tests of a given subproject
- ④ `ctest -L MITK-IGT`: Runs 34 tests



# Example Output

```
kilgus@mbi097:~/thomas/mbi-superbuild-release/MITK-  
superbuild/MITK-build$ ctest -R SurfaceVtkMapper  
Test project /home/kilgus/thomas/mbi-superbuild-  
release/MITK-superbuild/MITK-build
```

```
Start 125:
```

```
mitkSurfaceVtkMapper3DTest_TextureProperty
```

```
1/1 Test #125:
```

```
mitkSurfaceVtkMapper3DTest_TextureProperty ...
```

```
Passed      0.82 sec
```

```
100% tests passed, 0 tests failed out of 1
```

```
Label Time Summary:
```

```
MITK          =    0.82 sec
```

```
MITK-Core     =    0.82 sec
```

```
Total Test time (real) =    0.84 sec
```

# CMake & CTest

- Add test classes in ...\\Testing\\files.cmake

```
set(MODULE_TESTS
    mitkAccessByItkTest.cpp
...
)
set(MODULE_CUSTOM_TESTS
    mitkDataStorageTest.cpp
    mitkDataNodeTest.cpp
)
```

# CMake & CTest

- ◉ Add (custom) tests in CMakeLists.txt
- ◉ CMake has „add\_test“ but we have a macro

```
mitkAddCustomModuleTest(  
  mitkImageTest_2D+tImageData  
  #Name (on Dashboard)  
  mitkImageTest  
  #Name of test class  
  ${MITK_DATA_DIR}/Pic2DplusT.nrrd  
  #Additional parameters  
)
```

# CMake & CTest

```
set(MODULE_TESTIMAGES
    Pic3D.nrrd
    binary.stl
    ...
)
set(MODULE_IMAGE_TESTS
    mitkPlanePositionManagerTest.cpp
    mitkSurfaceVtkWriterTest.cpp
    ...
)
```

# Dashboard

cdash.mitk.org/index.php?project=MITK&date=2013-03-12&display=project

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**Continuous**

Site	Build Name	Update	Configure		Build		Test			Build Time	Label
		Files	Error	Warn	Error	Warn	Not Run	Fail	Pass		
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	1	0	0	0	51	0	0	313	17 hours ago	(12 labels)
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	11	0	0	2	53				17 hours ago	(10 labels)
MBI074-WIN7VM	mbi056-continuous-windows-mitk	1	0	1	0	0	0	0	313	17 hours ago	(12 labels)
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	37	0	0	0	53	0	0	313	17 hours ago	(12 labels)
mbits	mbits-continuous-linux-mitk	11	0	0	0	50	0	0	306	17 hours ago	(12 labels)
MBI074-WIN7VM	mbi056-continuous-windows-mitk	11	0	1	37	9				17 hours ago	(10 labels)
mbits	mbits-continuous-linux-mitk	37	0	0	0	50	0	0	306	18 hours ago	(12 labels)
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37	0	1	0	9	0	0	313	18 hours ago	(12 labels)
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	2	0	0	0	53	0	0	313	19 hours ago	(12 labels)
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	1	0	0	0	51	0	0	313	19 hours ago	(12 labels)
mbimac08.inet.dkfz-heidelberg.de	Darwin-11.4.2-gcc-4.2-Qt-4.8.1-Release	2	0	0	0	51	0	0	313	19 hours ago	(12 labels)
mbits	mbits-continuous-linux-mitk	4	0	0	0	50	0	0	306	19 hours ago	(12 labels)
MBI074-WIN7VM	mbi056-continuous-windows-mitk	4	0	1	0	1	0	0	313	19 hours ago	(12 labels)
mbits	mbits-continuous-linux-mitk	2	0	0	0	23	0	0	306	20 hours ago	(12 labels)
MBI074-WIN7VM	mbi056-continuous-windows-mitk	2	0	1	0	0	0	0	313	20 hours ago	(12 labels)

ctest-2.8.5

# Dashboard

cdash.mitk.org/index.php?project=MITK&date=2013-03-12&display=project&filtercount=3&showfilters=1&filtercombine=and&field1=buildname/strir

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### Filters

Match **all** of the following rules:

Build Name	is	mbi056-continuous-windows-mitk	-	+
Site	is	MBI074-WIN7VM	-	+
Build Stamp	is	20130312-1623-Continuous	-	+

Limit results to  rows (0 for unlimited)

[Apply](#) [Clear](#) [Create Hyperlink](#)

### Continuous

Site	Build Name	Update	Configure		Build		Test			Build Time	Labels
		Files	Error	Warn	Error	Warn	Not Run	Fail	Pass		
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	0	18 hours ago	Unlabeled
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	0	18 hours ago	MITK-Examples
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	9 <sup>9</sup> <sub>-1</sub>	0	0	0	18 hours ago	MITK-Plugins
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	95	18 hours ago	MITK-Modules
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	3	18 hours ago	MITK-Registration
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	6	18 hours ago	MITK-DTI
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	10	18 hours ago	MITK-ToF
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	34	18 hours ago	MITK-IGT
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	0	18 hours ago	MITK-CoreUI
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	153	18 hours ago	MITK-Core
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37			0	0	0	0	12	18 hours ago	BlueBerry
MBI074-WIN7VM	mbi056-continuous-windows-mitk	37	0	1	0	0				18 hours ago	SuperBuild

# Dashboard

cdash.mitk.org/viewTest.php?onlypassed&buildid=261598

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## MITK

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**Testing started on 2013-03-12 16:24:49**

**Site Name:** MBI074-WIN7VM  
**Build Name:** mbi056-continuous-windows-mitk  
**Total time:** 1m 55s 780ms  
**OS Name:** Windows  
**OS Platform:** x86  
**OS Release:** 7  
**OS Version:** (Build 7600)  
**Compiler Version:** unknown

**12 tests passed.**

Name	Status	Time	Labels
mitkPluginGeneratorBuildTest-Release	Passed	46s 830ms	BlueBerry, MITK
mitkPluginGeneratorCleanTest	Passed	190ms	BlueBerry, MITK
mitkPluginGeneratorCleanTest2	Passed	170ms	BlueBerry, MITK
mitkPluginGeneratorCleanTest3	Passed	30ms	BlueBerry, MITK
mitkPluginGeneratorConfigureTest-Release	Passed	4s 660ms	BlueBerry, MITK
mitkPluginGeneratorCreateTest	Passed	80ms	BlueBerry, MITK
mitkProjectTemplateBuildTest-Release	Passed	56s 730ms	BlueBerry, MITK
mitkProjectTemplateCloneTest	Passed	1s 140ms	BlueBerry, MITK
mitkProjectTemplateConfigureTest-Release	Passed	4s 730ms	BlueBerry, MITK
mitkProjectTemplateMakeBinTest	Passed	110ms	BlueBerry, MITK
mitkProjectTemplateRmBinTest	Passed	610ms	BlueBerry, MITK
mitkProjectTemplateRmSrcTest	Passed	500ms	BlueBerry, MITK

# Questions?

- FAQ:

How do I write “good” tests?

→ To be continued 😊

Should I write more tests?

→ Yes!

- Thank you!