



CMake / CTest / CPack

Open Source Tools to build, test, and install software

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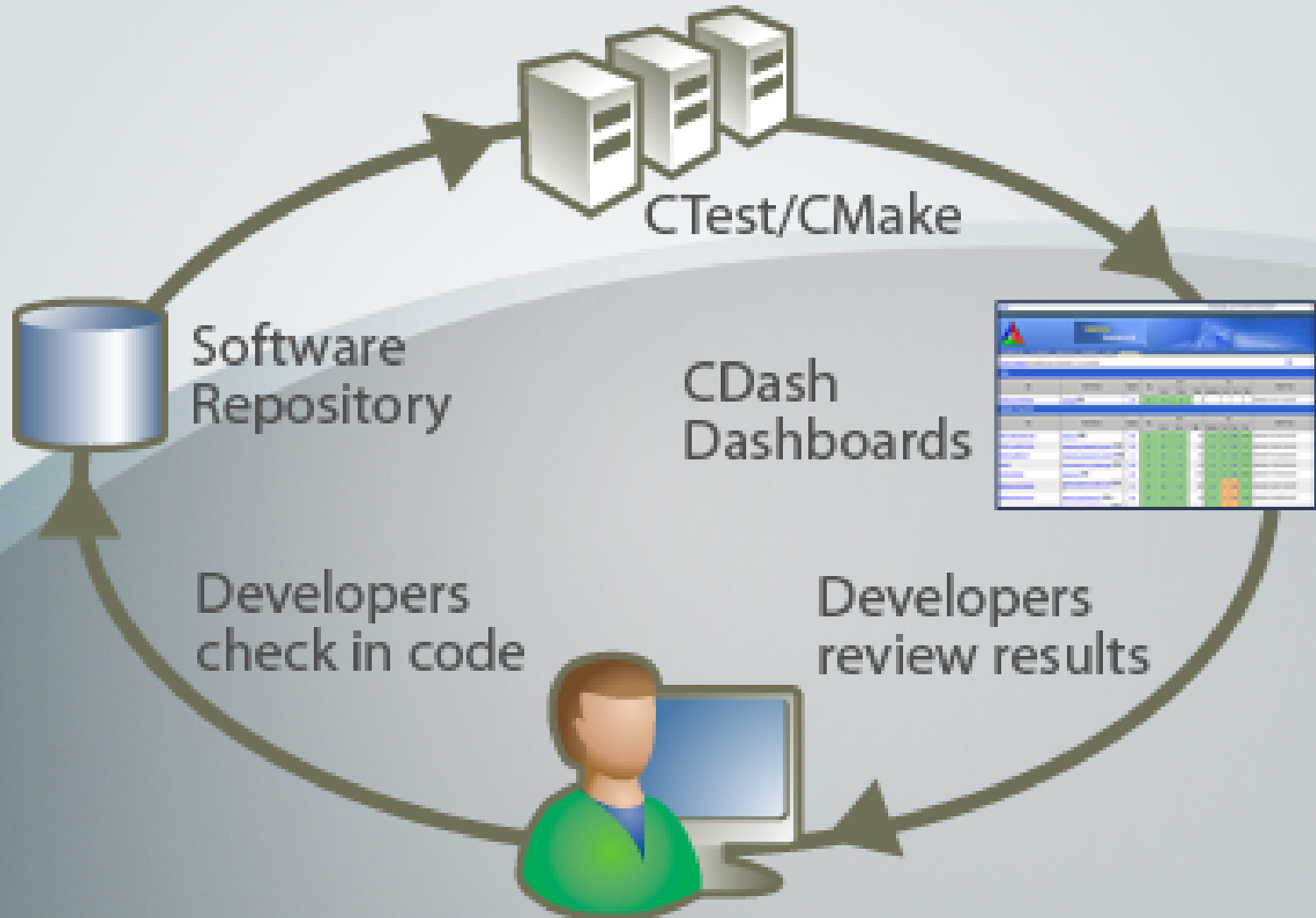
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Trilinos Effort

-
- Thanks to Tim Shead and Roscoe Bartlett !
- Short Effort
 - Major Work (Dec 08 – Feb 08)
 - CDash / CTest
 - Handle large scale project (50+ subprojects)



Kitware Quality Software Process



Overview

- Introduce myself and Kitware
- About CMake
 - Building with CMake
 - Testing with CTest/CDash
 - Packaging with CPack

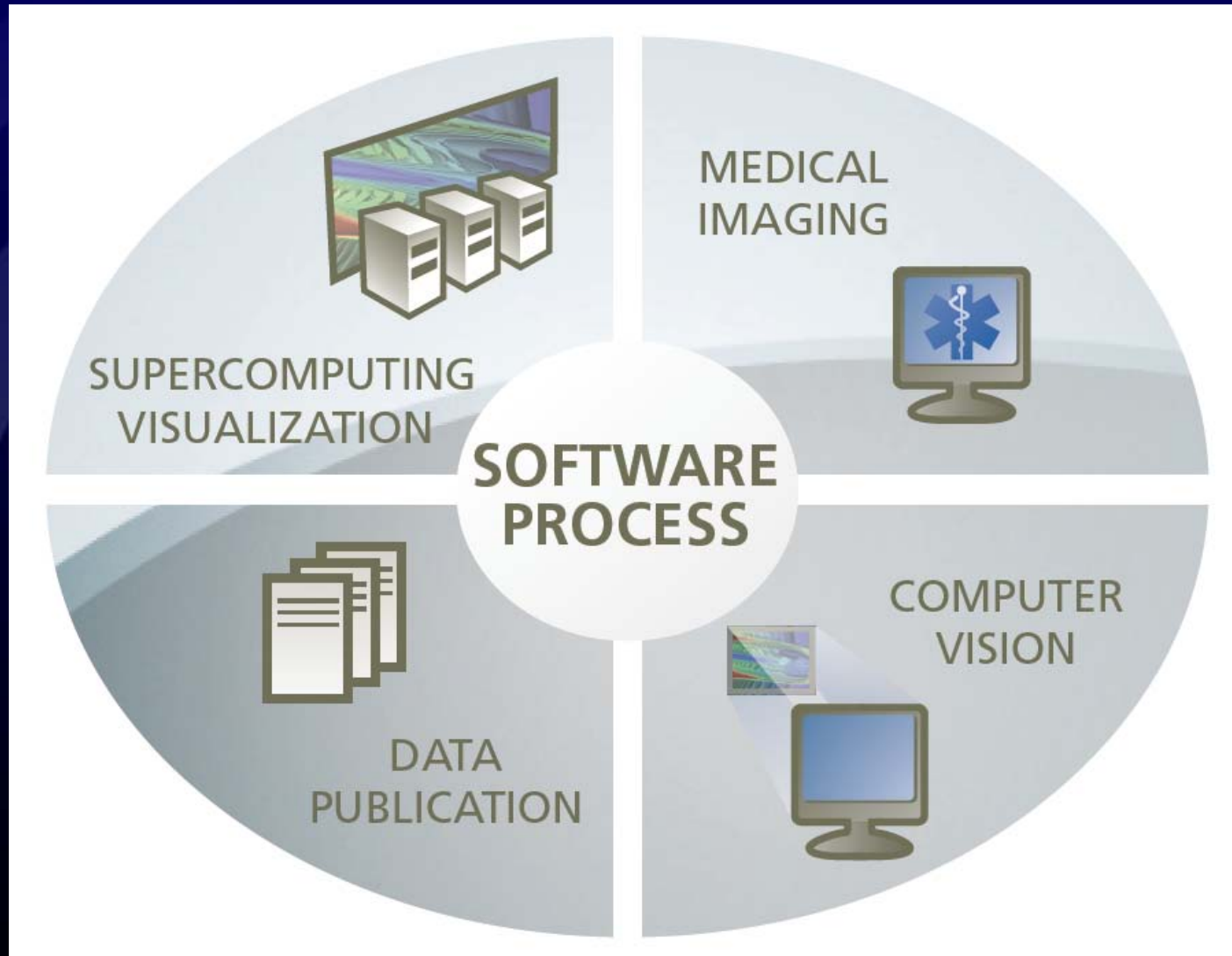


Introductions

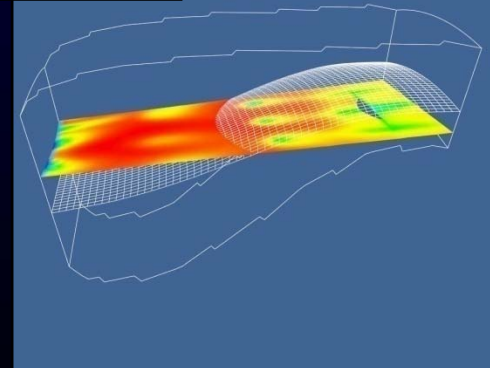
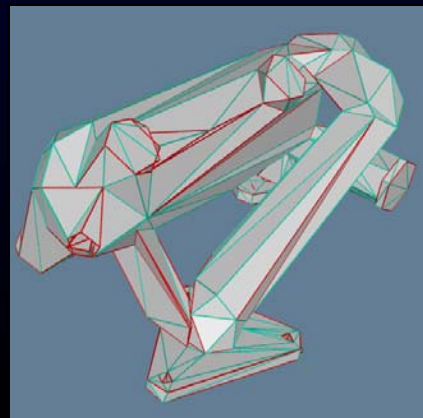
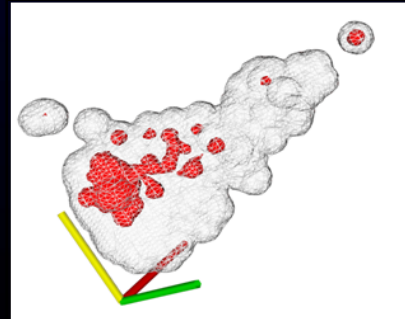
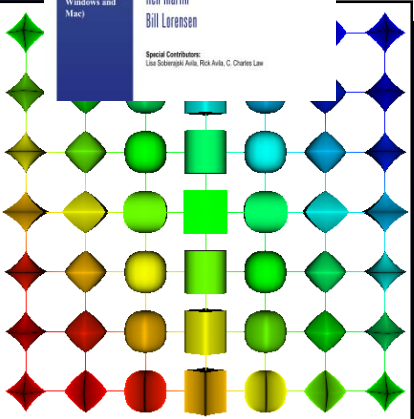
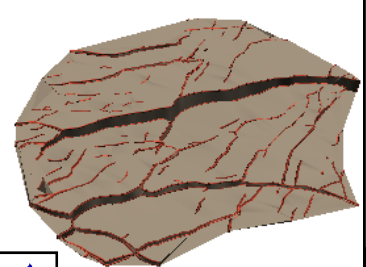
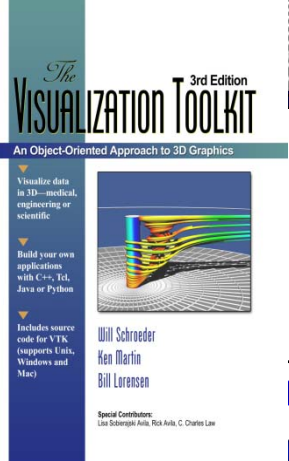
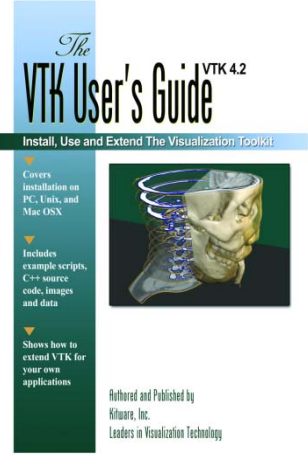
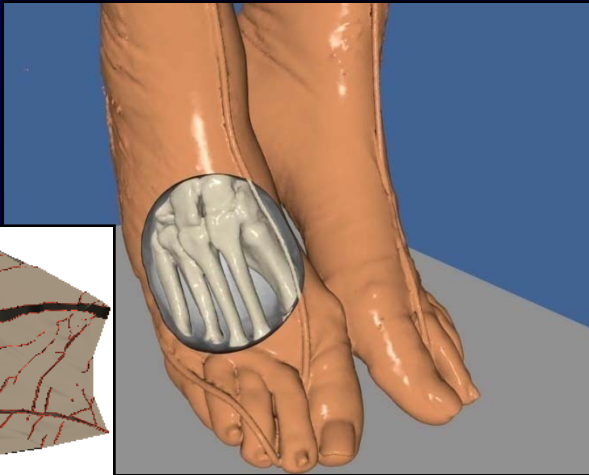
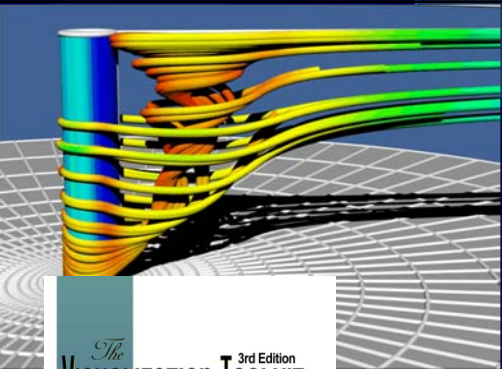
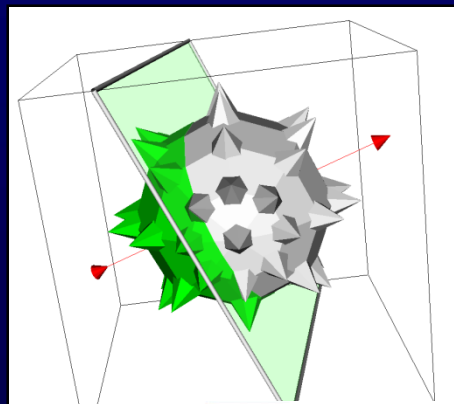
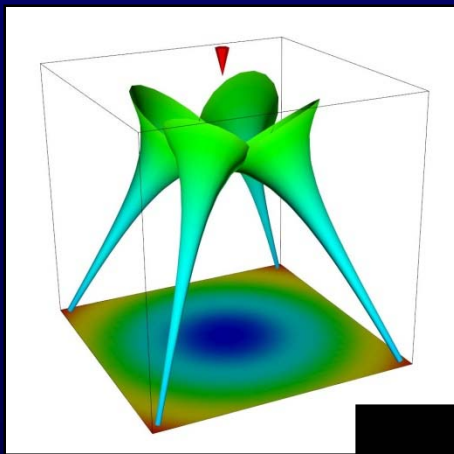
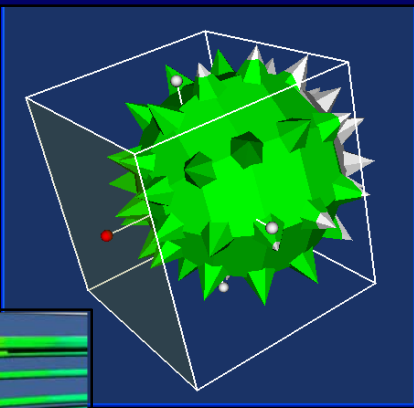
- Bill Hoffman
 - 1990 – 1999 GE Global Research Center Computer Vision Group
 - Large C++ research environments
 - 1999 – Present Vice President Kitware Inc
- Kitware Inc
 - Founded in 1998
 - Privately held
 - 55 employees and 2 locations (and hiring)
 - Clifton Park NY, USA
 - Chapel Hill, NC, USA
 - Supporting many open source projects
 - Medical Imaging, Super computing, Computer Vision



Kitware: Core Technologies

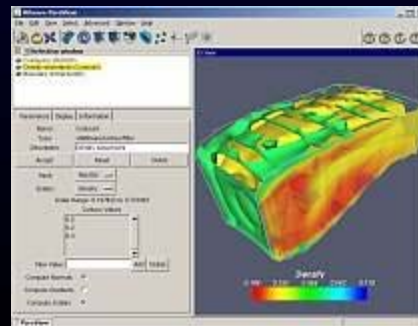
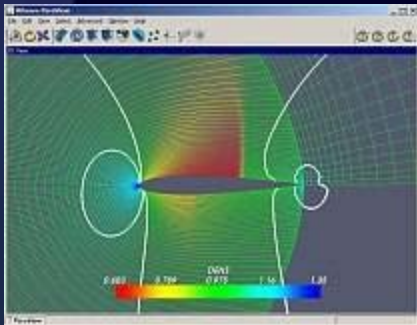
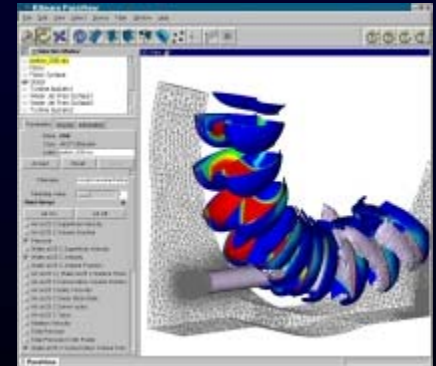
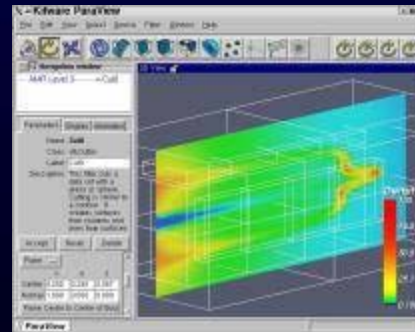
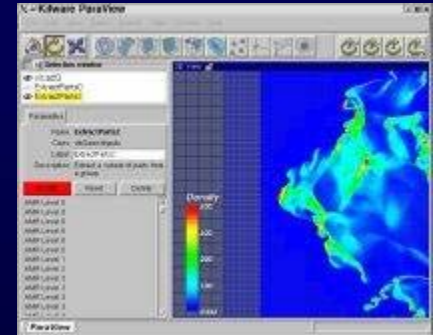


VTK



ParaView

- Parallel Visualization application
- Turn-key wrapper around VTK
- Supports parallel data processing and rendering
- Supports tiled displays, Caves, etc.
- 3D widgets, LOD (level-of-detail) display
- Extended by XML modules
- Extensive animation support



CMake



Why CMake

- A build system that just works
- A build system that is easy to use cross platform
- Typical Project without CMake (curl)

```
$ ls
CHANGES          RELEASE-NOTES  curl-config.in  missing
CMake             acinclude.m4  curl-style.el   mkinstalldirs
CMakeLists.txt   aclocal.m4    depcomp        notes
build            docs          notes~
COPYING          buildconf     include         packages
CVS              buildconf.bat install-sh      reconf
ChangeLog        compile       lib             sample.emacs
Makefile         config.guess  libcurl.pc.in  src
Makefile.am      config.sub    ltmain.sh      tests
Makefile.in      configure     m4             vc6curl.dsw
README          configure.ac  maketgz
$ ls src/
CMakeLists.txt  Makefile.riscos  curlsrc.dsp  hugehelp.h  version.h
CVS             Makefile.vc6    curlsrc.dsw  macos       writeenv.c
Makefile.Watcom Makefile.vc8    curlutil.c  main.c      writeenv.h
Makefile.am     config-amigaos.h curlutil.h  makefile.amiga writeout.c
Makefile.b32    config-mac.h    getpass.c   makefile.dj  writeout.h
Makefile.in     config-riscos.h getpass.h   mkhelp.pl
Makefile.inc    config-win32.h  homedir.c   setup.h
Makefile.m32    config.h.in     homedir.h   urlglob.c
Makefile.netware curl.rc         hugehelp.c  urlglob.h
```



Why CMake – Very Fast

<http://blog.qgis.org/?q=node/16> :

“I was quite surprised with the speed of building Quantum GIS codebase in comparison to Autotools. “

Task	CMake	Autotools
Configure	0:08	Automake 00:41 Configure 00:20
Make	12:15	21:16
Install	0:20	0:36
Total	12:43	22:43



CMake (Everyone is using it) KDE 2006 – Tipping Point!



- 800+ downloads per day from www.cmake.org
- Major Linux distributions and Cygwin provide CMake packages.
- KDE, Second Life, Boost (Experimentally), many others



What is CMake?

- Family of Software Development Tools
 - Build – CMake
 - Test – CTest/CDash
 - Package – CPack
- Open-Source License
- History
 - Insight Segmentation & Registration Toolkit (~2000)
 - Changed the way we build



How CMake Changes the way we build C++

- Boost aims to give C++ a set of useful libraries like Java, Python, and C#
- CMake aims to give C++ compile portability like the compile once and run everywhere of Java, Python, and C#
 - Same build tool and files for all platforms
 - Easy to mix both large and small libraries



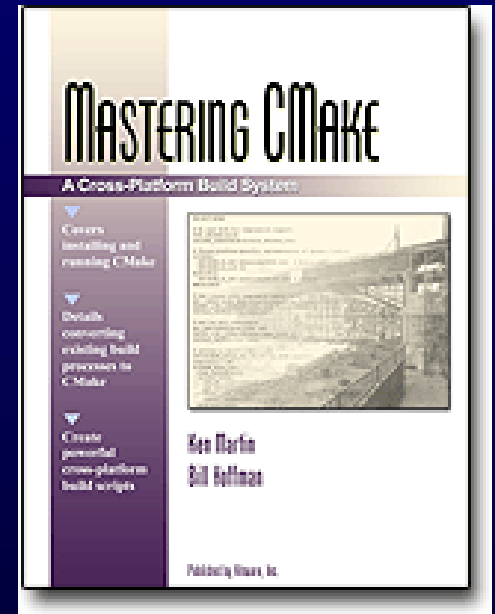
Who is involved?

- Users
 - KDE
 - Second Life
 - ITK
 - VTK
 - ParaView
 - Scribus
 - many more
- Supporters
 - Kitware
 - National Library of Medicine
 - Sandia National Labs
 - Los Alamos National Labs
 - NAMIC
 - ARL



CMake Documentation

- Mastering CMake Book
- Web Page: www.cmake.org
- <http://www.cmake.org/Wiki/CMake>
- mailing list: cmake@cmake.org
- Full reference documentation
 - <http://www.cmake.org/cmake/help/documentation.html>
 - Ships HTML, man, and command line help
- Tutorial included and tested in source tree (Tests/Tutorial/)
 - configured files
 - optional build components
 - install rules, test properties
 - system introspection
 - CPack
 - CTest with CDash



CMake Features

- One simple language for all platforms
 - Windows, Mac, Linux, UNIX variants
 - Embedded platforms via cross-compilation
- Generates native build systems
 - Makefiles (GNU, NMake, Borland, etc.)
 - KDevelop, Eclipse
 - Visual Studio 6,7,8,9 IDE
 - Xcode
- Out-of-source build trees leave source clean
- Interactive configuration via GUI
- Multiple configurations (Debug, Release, etc.)



CMake Features (cont.)

- Built-in rules for common targets
 - Executables
 - Shared Libraries / DLLs
 - Static Libraries (archives)
 - OS X Frameworks and App Bundles
- Custom rules for other targets
 - Generated Documentation
 - Generated sources and headers
- Configuration rules
 - System introspection
 - Persistent variables (options, cached results)
 - Configured header files



CMake Features (cont.)

- Automatic analysis
 - Implicit dependencies (C, C++, Fortran)
 - Transitive link dependencies
 - Ordering of linker search path and RPATH
- Advanced Makefile generation
 - Modular, Fast, Parallel
 - Color and progress display
 - Help targets – `make help`
 - Preprocessor targets – `make foo.i`
 - Assembly targets – `make foo.s`



Input to CMake

- Simple scripting language in CMakeLists.txt file(s)
- Built-in commands for common rules
 - `add_library(MyLib MyLib.cxx)`
 - `add_executable(MyExe MyMain.cxx)`
- Example project using Boost:

```
cmake_minimum_required(VERSION 2.6)
project(MyProject)
find_package(Boost REQUIRED thread signals)
include_directories(${Boost_INCLUDE_DIRS})
add_executable(MyExe MyProjectMain.cxx)
target_link_libraries(MyExe ${Boost_LIBRARIES})
```



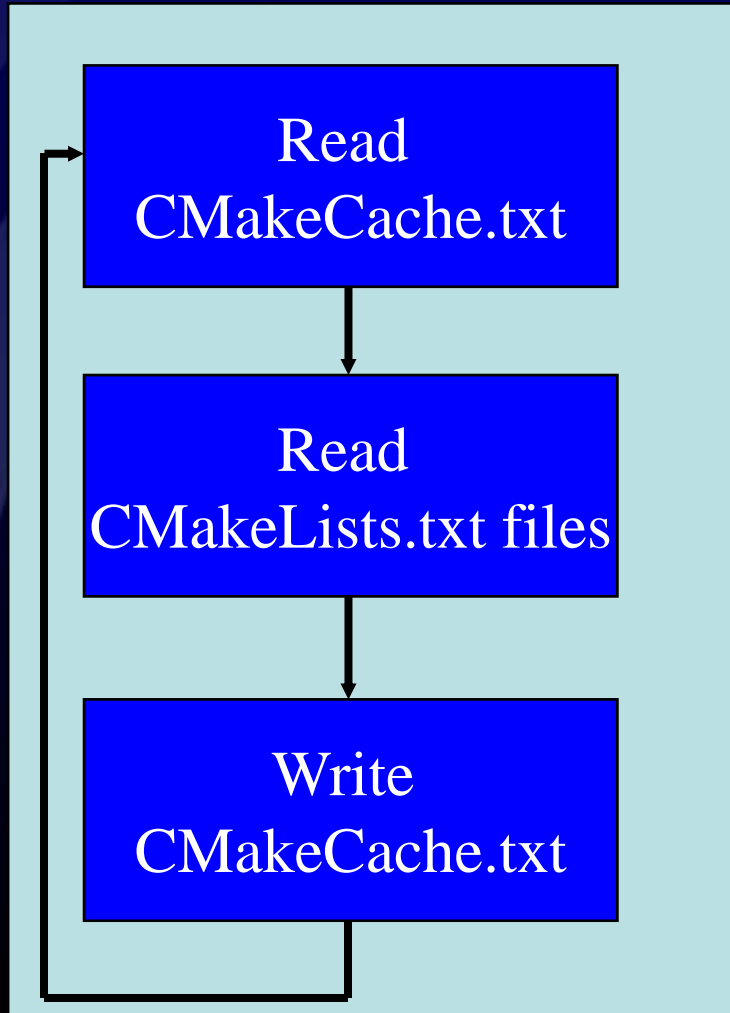
Installing CMake

- Easy to Get CMake
 - <http://www.cmake.org/cmake/resources/software.html>
 - Many Linux distributions and Cygwin include CMake packages
 - apt-get install cmake
- Installing CMake from www.cmake.org
 - Windows Binary installers
 - Linux Binaries – can be installed anywhere, (don't need root)
 - Mac
 - Other UNIX on download page
 - Source can bootstrap on any Unix platform

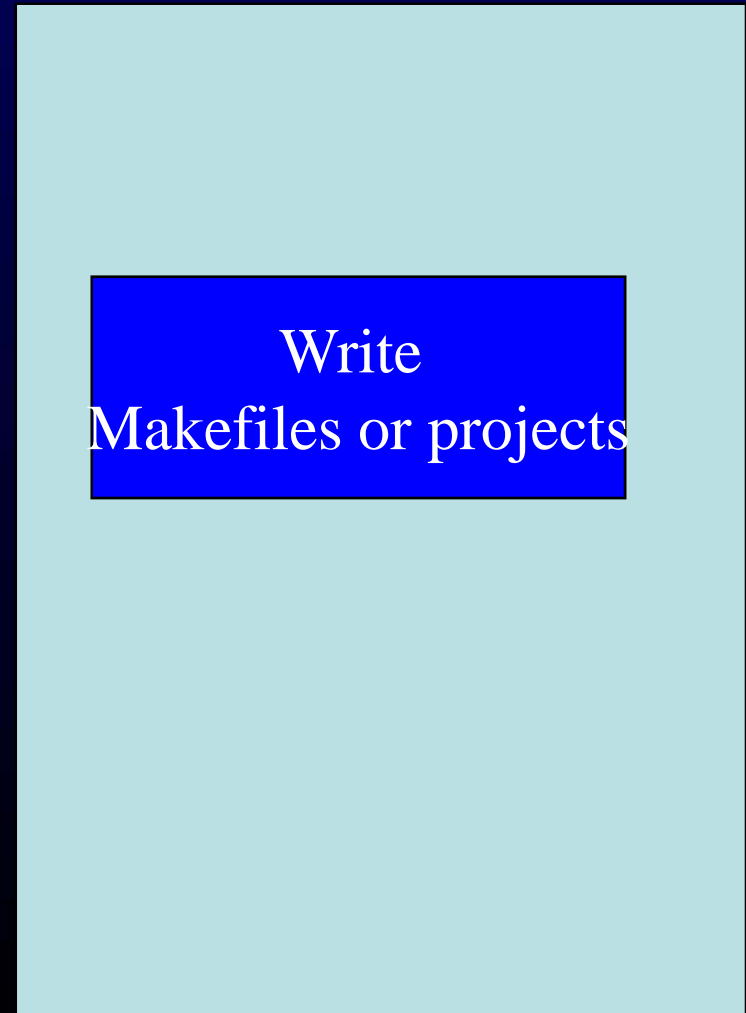


CMake process

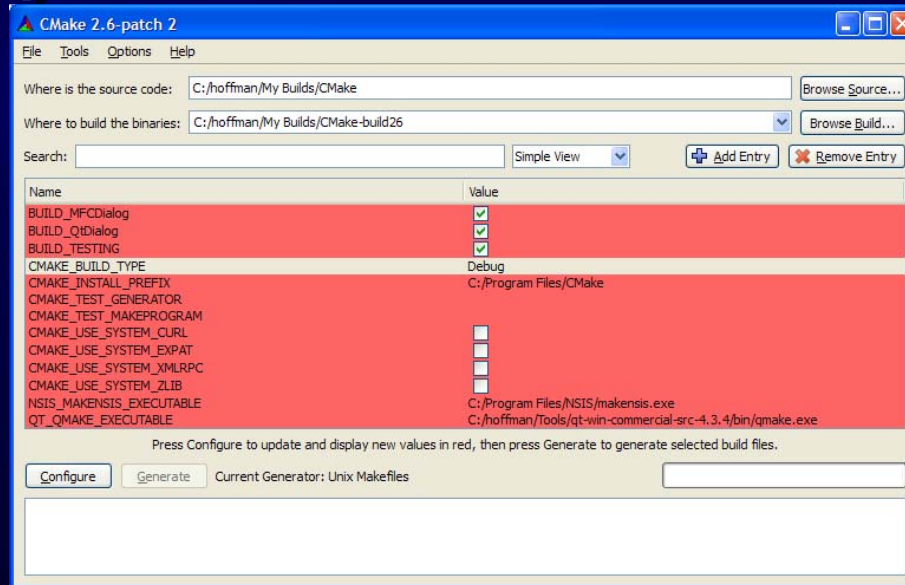
Configure Step



Generate Step



Cache editors: cmake-gui (qt), ccmake (curses)



```
Page 1 of 1
BUILD_DOXYGEN OFF
BUILD_TESTING ON
CMAKE_CONFIGURE_INSTALL_PREFIX /usr/local
CMAKE_CXX_FLAGS
CMAKE_C_FLAGS
CMAKE_INSTALL_PREFIX /usr/local
CURSES_EXTRA_LIBRARY NOTFOUND
CURSES_INCLUDE_PATH /usr/include
CURSES_LIBRARY /usr/lib/libcurses.a
DART_ROOT /cygdrive/c/hoffman/Dart
EXECUTABLE_OUTPUT_PATH /cygdrive/c/hoffman/CMake-gcc/
FORM_LIBRARY /usr/lib/libform.a
LIBRARY_OUTPUT_PATH

BUILD_DOXYGEN: Build source documentation using doxygen
Press [enter] to edit option CMake Version 1.3 - development
Press [c] to configure Press [g] to generate and exit
Press [h] for help Press [q] to quit without generating
Press [t] to toggle advanced mode (Currently Off)
```



Running CMake from the command line

- Useful for scripted builds or for projects with no options or with options correctly set by default on the first configure

```
#CC=gcc; CXX=g++  
#CFLAGS, CXXFLAGS  
cd MyProjectSourceDir  
mkdir ../MyProjectSourceDir-build  
cd ../MyProjectSourceDir-build  
cmake ../MyProjectSourceDir
```

(cmake -Dvar=value)



cmake scripts

- `cmake -E` command
 - Cross platform command line utility
 - Ex. Copy file, Remove file, Compare and conditionally copy, time etc
- `cmake -P script.cmake`
 - Cross platform scripting utility
 - Does not generate `cmake_cache`
 - Ignores commands specific to generating build environment



CTest/CDash



Testing with CMake, CTest and CDash

- Testing command in CMake
 - `add_test (testname exename arg1 arg2 arg3 ...)`
 - Executable is expected to return 0 for passed
 - Can set other test passing conditions based on output matching.
- `ctest` – an executable that is distributed with cmake that can run tests in a project.
 - Used for continuous integration testing
 - Client for CDash
 - Can be use for both CMake based projects and other build systems



CDash Dashboard www.cdash.org


CDash - CMake - Mozilla Firefox

http://public.kitware.com/CDash/index.php?project=CMake

Kitware WIKI Dell CDash Dash1old CDash Public Road Runner Web Mail Kitware Calendar Kitware Inc. public.kitware.com: D... CNN.com - Breaking ... CMake Cross Platfor...

Google ugly duckling Search Bookmarks Check AutoLink AutoFill Send to ugly duckling Settings

Start Ora... DBI TravelSer... CDash... can anyon... Communic... PackageM... Re: postfil... LOCAPHO... http:...dges Qt 4.3: Q... Hotel Nov... Google Maps



DASHBOARD CALENDAR PREVIOUS CURRENT NEXT PROJECT

Nightly Changes as of 2008-02-20 21:00:00 EST

Style [Nightly Expected] [Nightly 2.4 Release] [Nightly] [Continuous] [Experimental] [Coverage] [Dynamic Analysis]

Site	Build Name	Update	Cfg	Build			Test					Build Date
				Error	Warn	Min	NotRun	Fail	Pass	NA	Min	
insight.journal.kitware	KWStyle	7	0	0	0	0	0	0	0	0	0	2008-02-21 02:28:33 EST

Nightly Expected [Style] [Nightly 2.4 Release] [Nightly] [Continuous] [Experimental] [Coverage] [Dynamic Analysis]

Site	Build Name	Update	Cfg	Build			Test					Build Date
				Error	Warn	Min	NotRun	Fail	Pass	NA	Min	
Titanium.IMTS.us	Linux64-Rocks-ICC-Rel	107	0	0	0	10.7	0	0	93	0	8.1	2008-02-21 10:23:00 EST
krondor.kitware	Darwin-c++	0	0	0	0	59.1	0	1	95	0	55.2	2008-02-21 09:56:00 EST
dash8.kitware	Linux64-g++332	0	0	0	0	6.3	0	0	95	0	18.3	2008-02-21 08:02:00 EST
RoqueResearch3	Mac10.5-CMake-Xcode-dbg-ppc64	1	0	0	0	13.1	0	0	90	0	23.4	2008-02-21 05:15:00 EST
RoqueResearch3	Mac10.5-CMake-Xcode-dbg-ppc	1	0	0	0	13	0	0	90	0	23.9	2008-02-21 04:28:00 EST

Find: qfilein Next Previous Highlight all Match case

Done



Trilinos (Multi-Package Dashboard)

<http://trilinos-dev.sandia.gov/cdash/index.php>

Main Project

Project	Configure			Build			Test			Last submission
	Error	Warning	Pass	Error	Warning	Pass	Not Run	Fail	Pass	
Trilinos	0	0	208	1	117	91	0	8	5227	2009-04-30 12:54:32

Sub Projects

Project	Configure			Build			Test			Last submission
	Error	Warning	Pass	Error	Warning	Pass	Not Run	Fail	Pass	
Teuchos	0	0	6	0	0	6	0	0	386	2009-04-30 16:59:38
RTOP	0	0	5	0	0	5	0	0	95	2009-04-30 17:00:49
Kokkos	0	0	5	0	0	5	0	0	10	2009-04-30 17:01:00
Epetra	0	0	5	0	3	2	0	0	128	2009-04-30 17:01:14
Zoltan	0	0	5	0	6	0	0	0	9	2009-04-30 18:08:12
Shards	0	0	5	0	5	0	0	0	20	2009-04-30 17:02:09
Intrepid	0	0	5	0	2	3	0	0	8	2009-04-30 17:10:38



Query Filters : customize views

CDash - Trilinos - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://trilinos-dev.sandia.gov/cdash/index.php?project=Trilinos&display=project&filtercount=4&showfite

Most Visited Getting Started Latest Headlines Kitware Inc. CDash CDash - CMB Free Online Broken Lin... CMake Only Errors CMake Bugs

Google Search

CDash - Trilinos

Trilinos Dashboard

DASHBOARD CALENDAR PREVIOUS CURRENT PROJECT

No file changed as of 2009-04-30T00:00:00 MDT [Help](#)

[\[Hide Filters\]](#)

Match of the following rules:

Build Name	is	Linux-GCC-4.1.2-MPI_DEBUG	-	+
Site	is	godel.sandia.gov	-	+
Build Time	is after	2009-04-30T10:58:53 MDT	-	+
Build Time	is before	2009-04-30T12:02:16 MDT	-	+

Apply Clear Create Hyperlink

Nightly

Site	Build Name	Update		Configure		Build			Test				Build Time	Labels	
		Files	Min	Error	Warn	Min	Error	Warn	Min	NotRun	Fail	Pass			Min
godel.sandia.gov	Linux-GCC-4.1.2-MPI_DEBUG	0	0	0	0	0.1	0	0	1.2	0	0	40 +39	0.7	2009-04-30T11:40:16 MDT	Rythmos
godel.sandia.gov	Linux-GCC-4.1.2-	0	0	0	0	0	0	0	0.1	0	0	7	0.1	2009-04-30T11:09:49	AztecOO

Done



CTest Command wrappers output

Build Time:2009-05-04T01:53:37 MDT

Found 1 Warnings

[Errors](#) are here.

Warning while building C++ object file "CMakeFiles/Kokkos_BaseSparseSolve.dir/cxx_main.cpp.o" in target Kokkos_BaseSparseSolve.	
Source File	packages/kokkos/test/BaseSparseSolve/cxx_main.cpp
Label	Kokkos
Command	<pre>"/Users/bmpersc/bin/gcc-4.3.3/bin/g++" "-mmacosx-version-min=10.5" "-ansi" "-pedantic" "-Wall" "-Wno-long-long" "-Wwrite-strings" "-g" "-O0" "-D_GLIBCXX_DEBUG" "-I/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/BUILD/packages/kokkos/src" "-I/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src" "-I/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/test/BaseSparseSolve/./BaseSparseMultiply" "-o" "CMakeFiles/Kokkos_BaseSparseSolve.dir/cxx_main.cpp.o" "-c" "/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/test/BaseSparseSolve/cxx_main.cpp"</pre>
Directory	/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/BUILD/packages/kokkos/test/BaseSparseSolve
Exit Condition	0
Standard Output	
Standard Error	<pre>/Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp: In member functio /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/test/BaseSparseSolve/cxx_main.cpp:262: instanti /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp:646: warning: sugg /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp:693: warning: sugg /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp: In member functio /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/test/BaseSparseSolve/cxx_main.cpp:287: instanti /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp:541: warning: sugg /Users/bmpersc/nightly/Trilinos.base/SERIAL_DEBUG/Trilinos/packages/kokkos/src/Kokkos_BaseSparseSolve.hpp:583: warning: sugg</pre>

Coverage Display GCov/Bullseye

./Source/Ctest/cmCTestUpdateHandler.cxx	68.21%	45	1
./Source/cmMakefileLibraryTargetGenerator.cxx	68.48%	60	2
./Source/cmTargetLinkLibrariesCommand.cxx	69.17%	17	1
./Source/cmGetPropertyCommand.cxx	69.31%	36	2
./Source/cmExportInstallFileGenerator.cxx	69.32%	16	2
./Source/kwsys/ProcessUNIX.c	69.33%	371	11
./Source/cmVariableWatch.cxx	69.44%	8	1
./Source/cmSystemTools.h	69.64%	1	5
./Source/cmComputeLinkDepends.cxx	69.89%	78	5
./Source/Ctest/cmCTestStartCommand.cxx	70.00%	12	0
./Source/cmMakefileExecutableTargetGenerator.cxx	70.83%	16	1
./Source/cmLinkLibrariesCommand.cxx	70.83%	7	0
./Source/cmMakeDepend.cxx	71.01%	44	1
./Source/Ctest/cmCTestBuildCommand.cxx	71.74%	26	0
./Source/cmsys/auto_ptr.hxx	71.88%	1	1
./Source/kwsys/testCommandLineArguments.cxx	71.88%	7	1
./Source/Ctest/cmCTestSVN.cxx	72.07%	57	2
./Source/cmScriptGenerator.cxx	72.34%	20	1

```

Date:      2002-10-05 14:51:31 3.0000000
Version:   $Revision: 1.4 $

Copyright (c) 2002 Kitware, Inc., Insight Consortium. All rights reserved.
See Copyright.txt or http://www.cmake.org/HTML/Copyright.html for details.

This software is distributed WITHOUT ANY WARRANTY; without even
the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR
PURPOSE. See the above copyright notices for more information.

-----/
#include "cmDefinePropertyCommand.h"
#include "cmake.h"

// cmDefinePropertiesCommand
bool cmDefinePropertyCommand
::InitialPass(std::vector<std::string> const& args, cmExecutionStatus &)
00000013 {
00000013     if (args.size() < 1)
00000000     {
00000000         this->SetError("called with incorrect number of arguments");
00000000         return false;
00000000     }

// Get the scope in which to define the property.
cmProperty::ScopeType scope;
00000013 if (args[0] == "GLOBAL")
00000010     {
00000010         scope = cmProperty::GLOBAL;
00000003     }
00000003 else if (args[0] == "DIRECTORY")
00000000     {
00000000         scope = cmProperty::DIRECTORY;
00000003     }
00000003 else if (args[0] == "TARGET")
00000003     {
00000003         scope = cmProperty::TARGET;
00000000     }
00000000 else if (args[0] == "SOURCE")

```

```

Coverage produced by bullseye covbr tool:
www.bullseye.com/help/ref_covbr.html
* An arrow --> indicates incomplete coverage.
* An X indicates a function that was invoked, a switch label that
  was exercised, a try-block that finished, or an exception handler
  that was invoked.
* A T or F indicates a boolean decision that evaluated true or false,
  respectively.
* A t or f indicates a boolean condition within a decision if the
  condition evaluated true or false, respectively.
* A k indicates a constant decision or condition.
* The slash / means this probe is excluded from summary results.
...
20 #include "cmLocalGenerator.h"
21 #include "cmGlobalGenerator.h"
22
X 23 bool cmCTestStartCommand
24 ::InitialPass(std::vector<std::string> const& args, cmExecutionSta
25 {
-->F 26     if (args.size() < 1)
27     {
... 28         this->SetError("called with incorrect number of arguments");
29         return false;
30     }
31     cnt++;
32     this->CTest->SetSpecificTrack(0);
-->F 40     if ( cnt < args.size() - 1 )
41     {
--> 42         if ( args[cnt] == "TRACK" )
43         {
44             cnt ++;
... 45             this->CTest->SetSpecificTrack(args[cnt].c_str());
46         }
47     }

```



Valgrind / Purify

Dynamic analysis started on 2009-05-03 03:36:06

Site Name: dash17.kitware
Build Name: Linux-g++4.0

Name	Status	Memory Leak	Uninitialized Memory Read	Potential Memory Leak	Uninitialized Memory Conditional	Mismatched Deallocate	Freeing Invalid Memory	Invalid Pointer Read	Invalid Pointer Write	Labels
QtChart-TestBarSeriesColors	Passed		1	25						
QtChart-TestChartWidget	Passed		1	26						
Mace	Passed			2						
TestHyperOctreeContourFilter	Passed			2	1					
TestUncertaintyTubeFilter	Passed			2						
TestMultiBlock	Passed			2						
TemporalStatistics	Passed			3						
TestGenericCutter	Passed			2						
TestActorLightingFlag	Passed			2						
TestLabelPlacer	Passed			2						
TestOpacity	Passed			2						
TestTextActor3DAlphaBlending	Passed			2						
TestAreaSelections	Passed			2						
TestTranslucentImageActorDepthPeeling	Passed		2	2						
TestGenericVertexAttributesGLSLDepthPeelingPass	Passed			2						

Find: asio Next Previous Highlight all Match case

```

Dynamic analysis started on 2009-05-04 03:37:17

Site Name: dash17.kitware
Build Name: Linux-g++4.0
TestMultiBlockPassed

==3002== Memcheck, a memory error detector.
==3002== Copyright (C) 2002-2007, and GNU GPL'd, by Julian Seward et al.
==3002== Using LibVEX rev 1732, a library for dynamic binary translation.
==3002== Copyright (C) 2004-2007, and GNU GPL'd, by OpenWorks LLP.
==3002== Using valgrind-3.2.3, a dynamic binary instrumentation framework.
==3002== Copyright (C) 2000-2007, and GNU GPL'd, by Julian Seward et al.
==3002== For more details, rerun with: -v
==3002==
==3002==
==3002== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 119 from 2)
==3002== malloc/free: in use at exit: 30,294 bytes in 327 blocks.
==3002== malloc/free: 37,724 allocs, 37,397 frees, 5,207,986 bytes allocated.
==3002== For counts of detected errors, rerun with: -v
==3002== searching for pointers to 327 not-freed blocks.
==3002== checked 2,298,764 bytes.
==3002==
==3002==
==3002== 64 bytes in 1 blocks are still reachable in loss record 15 of 34
==3002== at 0x401DC87: realloc (vg_replace_malloc.c:306)
==3002== by 0x62F83E5: (within /usr/lib/libX11.so.6.2.0)
==3002== by 0x62F908E: (within /usr/lib/libX11.so.6.2.0)
==3002== by 0x62F95F0: XrmGetStringDatabase (in /usr/lib/libX11.so.6.2.0)
==3002== by 0x659FB22: (within /usr/lib/libXt.so.6.0.0)
==3002== by 0x65A0ED4: XtDisplayInitialize (in /usr/lib/libXt.so.6.0.0)
==3002== by 0x6596DC7: XtOpenDisplay (in /usr/lib/libXt.so.6.0.0)
==3002== by 0x437DD13: vtkRenderWindowInteractor::Initialize() (vtkRenderWindowInteractor.cxx:317)
==3002== by 0x42EFD00: vtkRenderWindow::Render() (vtkRenderWindow.cxx:265)
==3002== by 0x441E401: vtkOpenGLRenderWindow::Render() (vtkOpenGLRenderWindow.cxx:1846)
==3002== by 0x8081AB6: TestMultiBlock(int, char**) (TestMultiBlock.cxx:142)
==3002== by 0x805B2E8: main (GraphicsCxxTests.cxx:306)
==3002==

```



CDash Email Notification

A submission to CDash for the project CMake has failing tests.
You have been identified as one of the authors who have checked
in changes that are part of this submission or you are listed in the default contact list.

Details on the submission can be found at <http://www.cdash.org/CDash/buildSummary.php?buildid=322849>

Project: CMake

Site: destiny.kitware

Build Name: HP-UX-aCC

Build Time: 2009-04-29T14:28:00 EDT

Type: Continuous

Tests failing: 85

Tests failing (first 5)

SystemInformationNew (<http://www.cdash.org/CDash/testDetails.php?test=21959894&build=322849>)

CommandLineTest (<http://www.cdash.org/CDash/testDetails.php?test=21959897&build=322849>)

FindPackageTest (<http://www.cdash.org/CDash/testDetails.php?test=21959898&build=322849>)

FindModulesExecuteAll (<http://www.cdash.org/CDash/testDetails.php?test=21959899&build=322849>)

StringFileTest (<http://www.cdash.org/CDash/testDetails.php?test=21959900&build=322849>)


CDash on www.cdash.org



Kitware Hosted Cdash

<http://www.cdash.org/CDashPublic/>

[Login](#) | [Register](#) | [Buy](#)

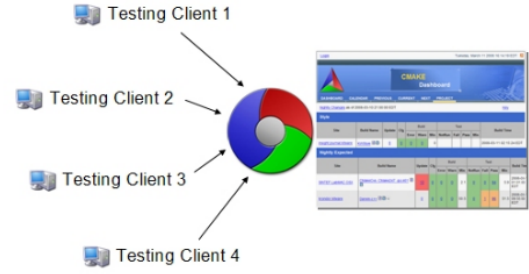


CDASH
Projects

CDash is a web-based software testing server. CDash aggregates, analyzes and displays the results of software testing processes submitted from clients located around the world. Developers depend on CDash to convey the state of a software system, and to continually improve its quality. To learn more about CDash visit the main [CDash website](#).

Starting a project is **easy** and **free**, in just a few clicks you can start monitoring the quality of your software development.

[Start My Project >](#)



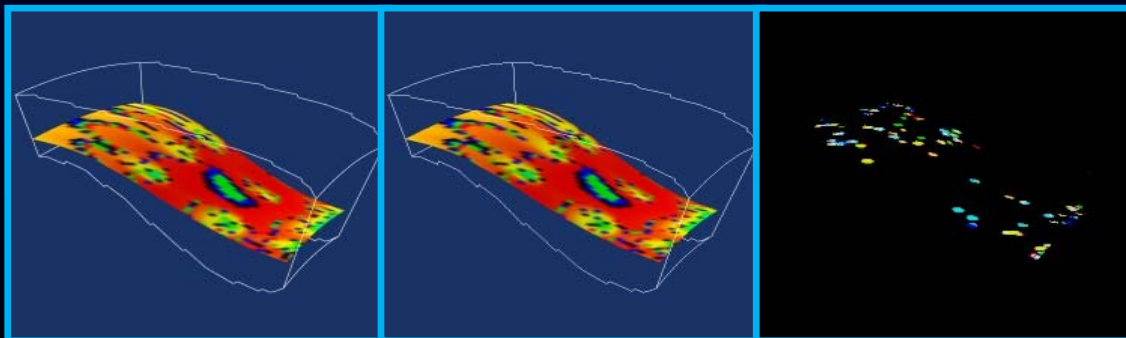
Available Dashboards

Project	Description	Submissions	First build	Last activity
automoc4	automoc4 is a tool which makes moc-processing with Qt4 easier.	26	2009-04-18T12:33:22 EDT	2009-04-29 14:36:51
Avogadro	Avogadro is an advanced molecular editor designed for cross-platform use in computational chemistry, molecular modeling, bioinformatics, materials science, and related areas. It offers flexible rendering and a powerful plugin architecture.	57	2009-01-28T14:01:47 EST	2009-05-01 08:08:03
CERTI	CERTI	262	2008-09-26T18:27:04 EDT	2009-04-29 03:23:39
CERTI HLA TestsSuite	CERTI HLA TestsSuite	234	2008-09-26T17:23:43 EDT	2009-04-29 03:26:28
CMakePorts	A collection of popular open-source libraries which can be built using CMake	266	2009-03-05T20:28:33 EST	2009-05-01 01:35:47



CDash testing

- Experimental
- Nightly
- Purify / valgrind
- Coverage (gcov, bullseye)
- Configuration coverage
 - Make sure different OS's, Libraries and options are covered
- Image difference testing



CMake Tutorial — Step7

Adding dashboard support

- Demo
 - add dashboard support to tutorial with Cdash
 - Create a new CDash project
 - Save CTestConfig.cmake to project source root
 - Re-build project
 - Submit an Experimental build



Configuration Coverage

- CMake
 - Spaces in paths
 - Network paths
 - Different drive letters and directories
- VTK
 - Mesa
 - OpenGL
 - CMake release
 - Current CMake

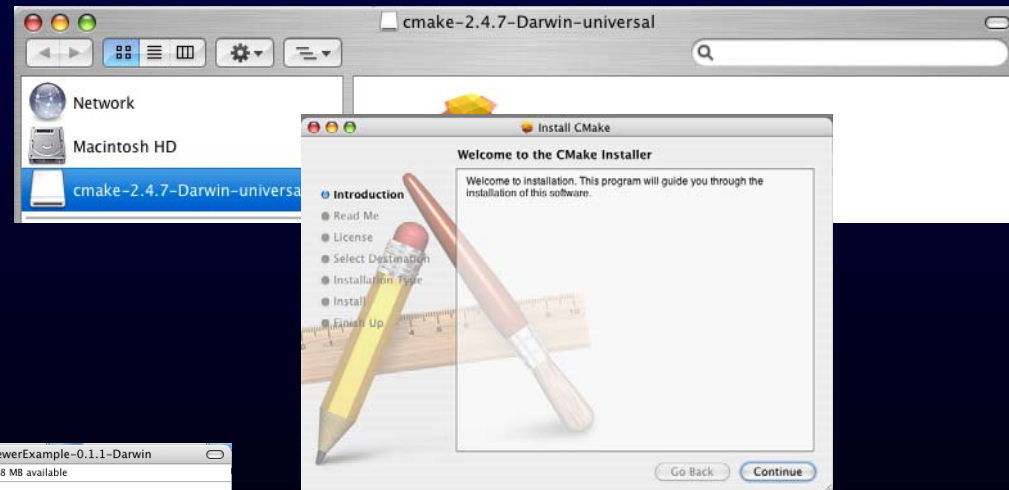
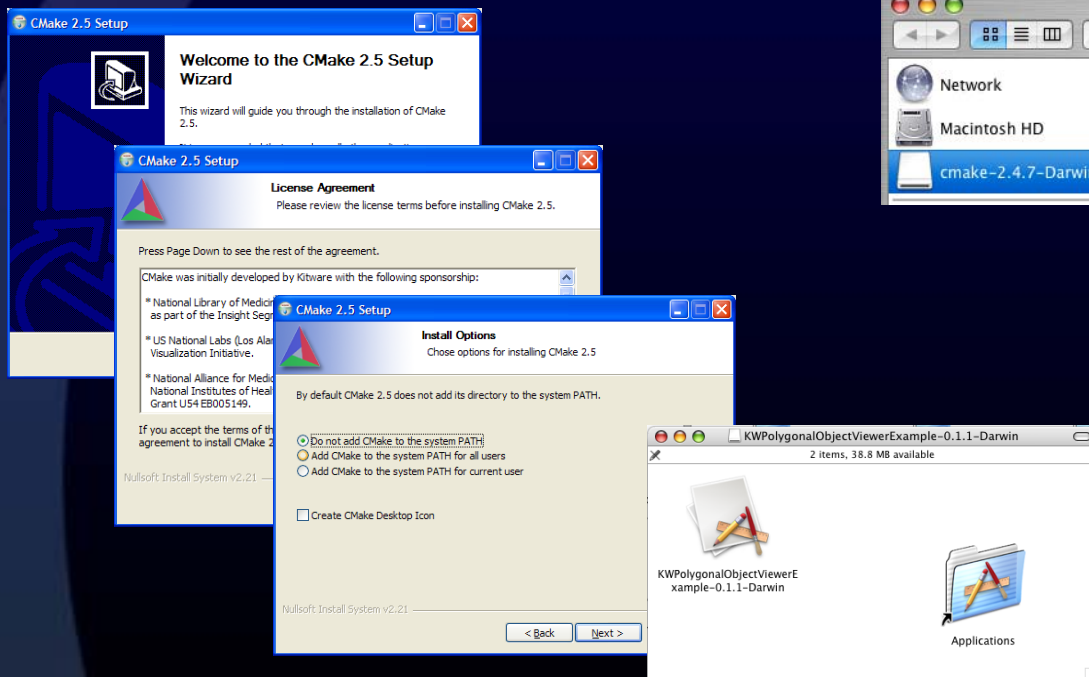


CPack



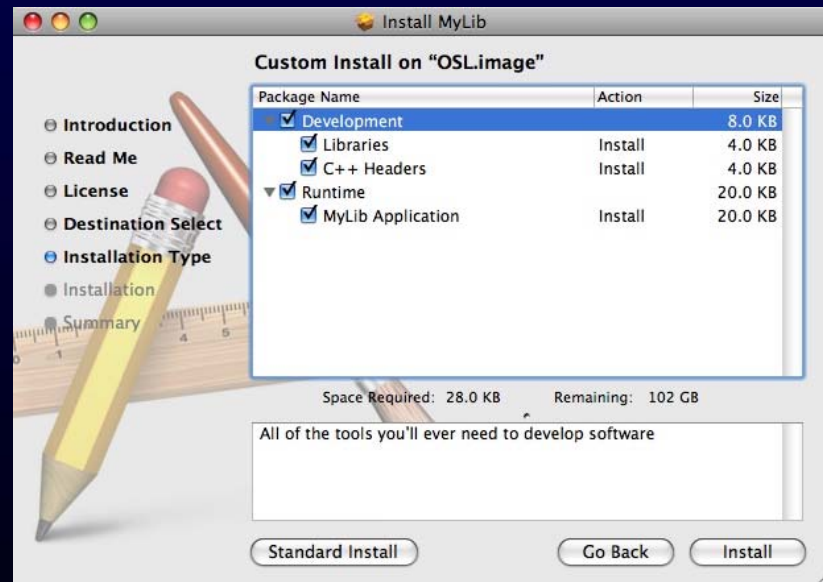
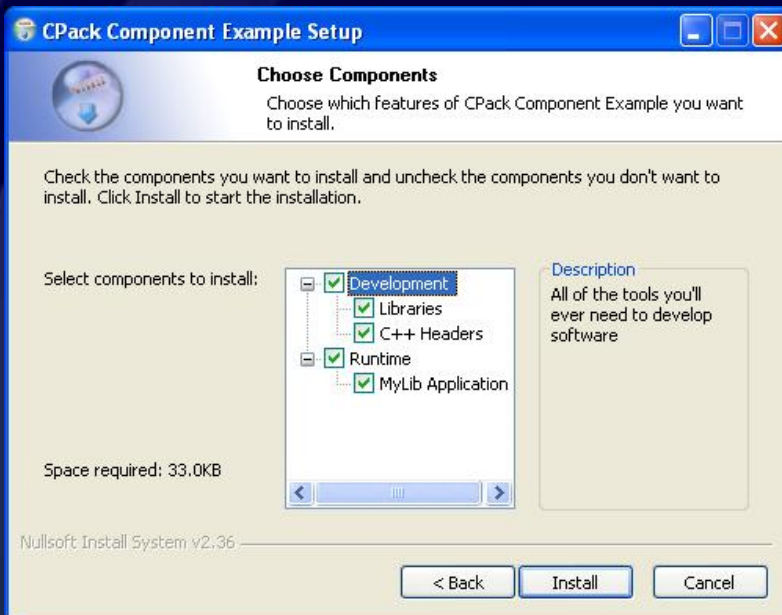
CPack

- CPack is bundled with CMake
- Creates professional platform specific installers
 - TGZ and Self extract TGZ (STGZ), NullSoft Scriptable Install System (NSIS), OSX PackageMaker, RPM, Deb



CPack Components

- http://www.cmake.org/Wiki/CMake:Component_Install_With_CPack



Using CPack

- On Windows install command line ZIP program, and NSIS
- setup your project to work with cpack
 - set cpack option variables if needed
 - include(CPack)
 - Reuses existing project install rules
- Running cpack
 - make package (create all packages)
 - make package_source (create source package)
 - cpack -C CPackConfig.cmake -G NSIS
 - cpack -C CPackConfig.cmake -G ZIP
 - cpack -C CPackSourceConfig.cmake -G ZIP



CPack more information

- Mastering CMake
- http://www.cmake.org/Wiki/CMake:Packaging_With_CPack



Summary

- Build - CMake
- Test - CTest /CDash/KWStyle
- Deploy – CPack

- Links
 - www.kitware.com
 - www.cmake.org
 - www.cdash.org
 - <https://svn.boost.org/trac/boost/wiki/CMake>
 - bill.hoffman@kitware.com



Thank you!

