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The Radiance Dashboard

A Cross-platform, automated build and test framework for Radiance source code

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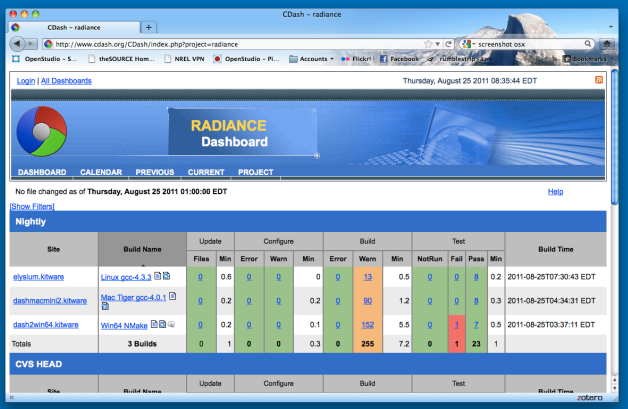
2011 Radiance Workshop
Berkeley, CA USA
Aug 25, 2011



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Overview

- Why?
- How/What?
  - About Cmake
  - Building with Cmake
  - Testing with CTest/Cdash
  - Radiance dashboard
  - Packaging with Cpack
- What(‘s in it for me?)
  - Nightly Radiance builds/installers
  - New Qt-based rvu (runs on Windows!)

Why?

Grew out of a need for a large cross platform software project (OpenStudio)

Cross platform tools don't help much if underlying simulation engines are unavailable/out of date

The Radiance Cmake/Dashboard project attempts to keep Windows binaries semi-automatically up to date

Cmake offers developers some nifty functionality as well, but main goal is to offer Windows users easier entry to using Radiance. That's it.

How?

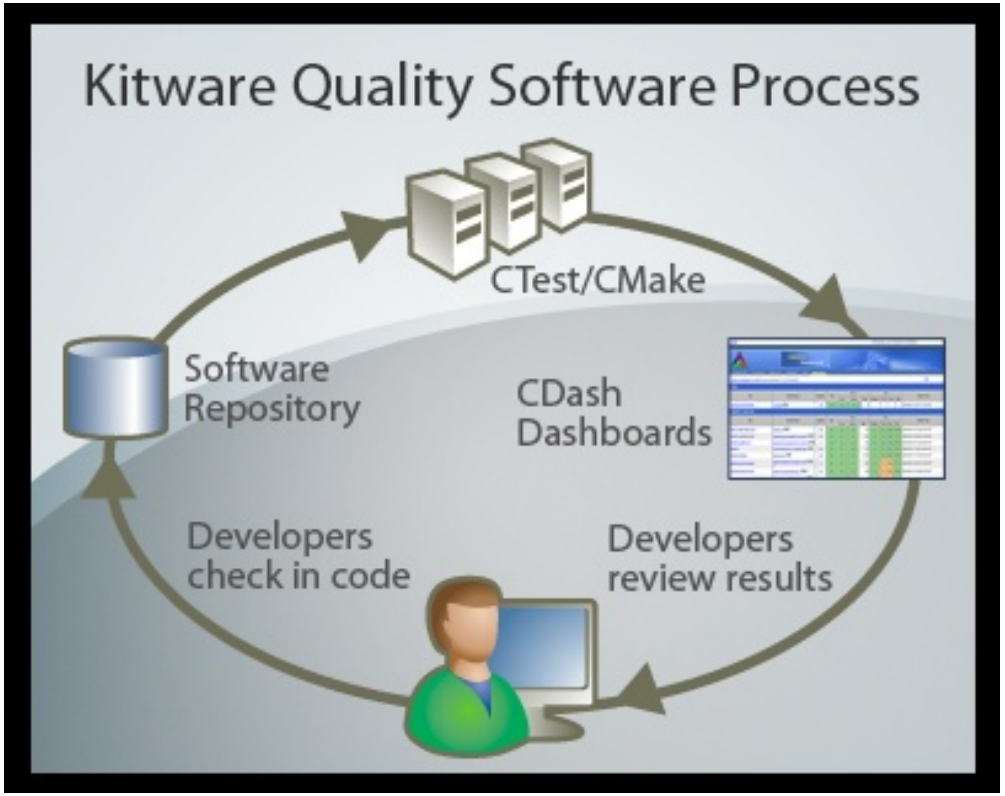
Cmake

Family of Software Development Tools

- Build – CMake
- Test – CTest/CDash
- Package – CPack

Open-Source

Cross platform



CMake – Cross Platform Build System

Where to get help

- Mastering CMake Book
- Web Page: www.cmake.org
  - http://www.cmake.org/Wiki/CMake
  - mailing list: cmake@cmake.org

CMake Documentation

Mastering CMake Book
Web Page: www.cmake.org
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mailing list: cmake@cmake.org

- Full reference documentation
- http://www.cmake.org/cmake/help/documentation.htr

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
- HPC/Embedded platforms via cross-compilation (ParaView/ python)

Generates native build systems

- Makefiles (GNU, NMake, Borland, etc.)
- Open IDEs (e.g. KDevelop, Eclipse)
- MS Visual Studio 6,7,8,9 IDE
- Apple Xcode

Out-of-source build trees leave source clean

Interactive configuration via GUI

Multiple configurations (Debug, Release, etc.)

Installing CMake

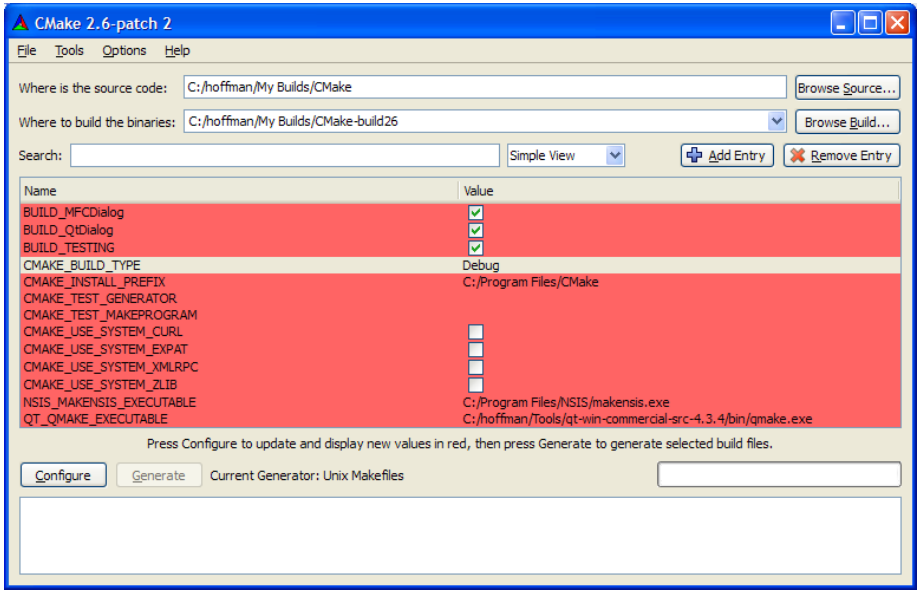
Easy to Get CMake

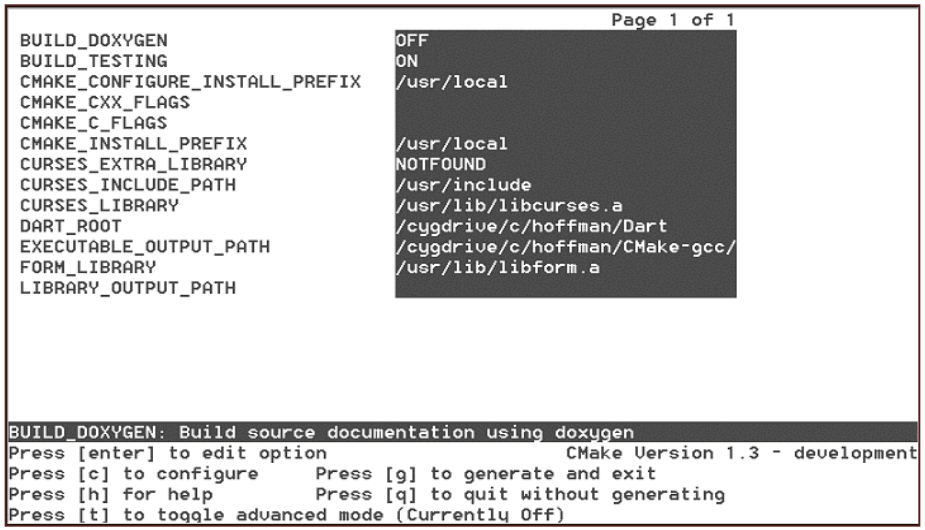
- http://www.cmake.org/cmake/resources/software.html
- Many Linux distributions and Cygwin include CMake packages
  - apt-get install cmake

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

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





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

CMAKE Dashboard

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						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
RogueResearch3	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
RogueResearch3	Mac10.5-CMake-Xcode-dbg-ppc	1	0	0	0	13	0	0	90	0	23.9	2008-02-21 04:28:00 EST

Radiance Dashboard

http://www.cdash.org/CDash/index.php?project=radiance

CDash – radiance

http://www.cdash.org/CDash/index.php?project=radiance

Login | All Dashboards

Thursday, August 25 2011 08:35:44 EDT

RADIANCE Dashboard

DASHBOARD CALENDAR PREVIOUS CURRENT PROJECT

No file changed as of **Thursday, August 25 2011 01:00:00 EDT**

Help

[Show Filters]

Nightly

Site	Build Name	Update		Configure			Build			Test				Build Time
		Files	Min	Error	Warn	Min	Error	Warn	Min	NotRun	Fail	Pass	Min	
elysium.kitware	Linux gcc-4.3.3	0	0.6	0	0	0	0	13	0.5	0	0	8	0.2	2011-08-25T07:30:43 EDT
dashmacmini2.kitware	Mac Tiger gcc-4.0.1	0	0.2	0	0	0.2	0	90	1.2	0	0	8	0.3	2011-08-25T04:34:31 EDT
dash2win64.kitware	Win64 NMake	0	0.2	0	0	0.1	0	152	5.5	0	1	7	0.5	2011-08-25T03:37:11 EDT
Totals	**3 Builds**	0	1	**0**	**0**	0.3	**0**	**255**	7.2	**0**	**1**	**23**	1	

CVS HEAD

Site	Build Name	Update	Configure	Build	Test	Build Time

zotero

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

CDash Testing

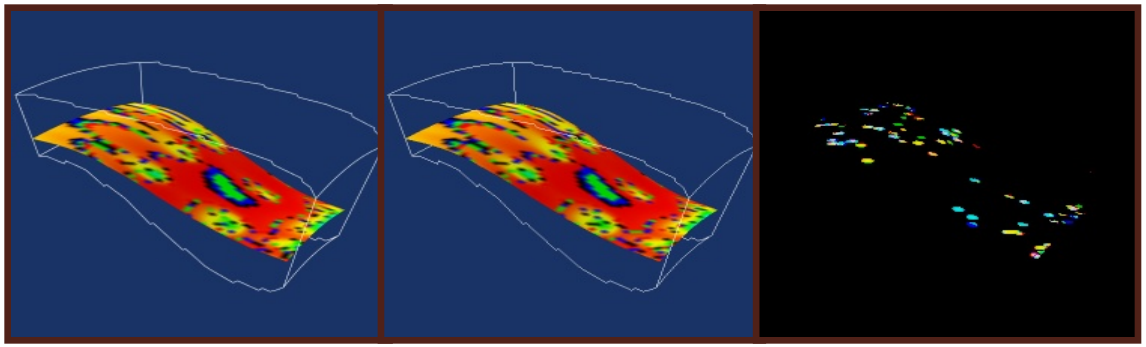
Purify / valgrind

Coverage (gcov, bullseye)

Configuration coverage

- Make sure different OS's, Libraries and options are covered

Image difference testing

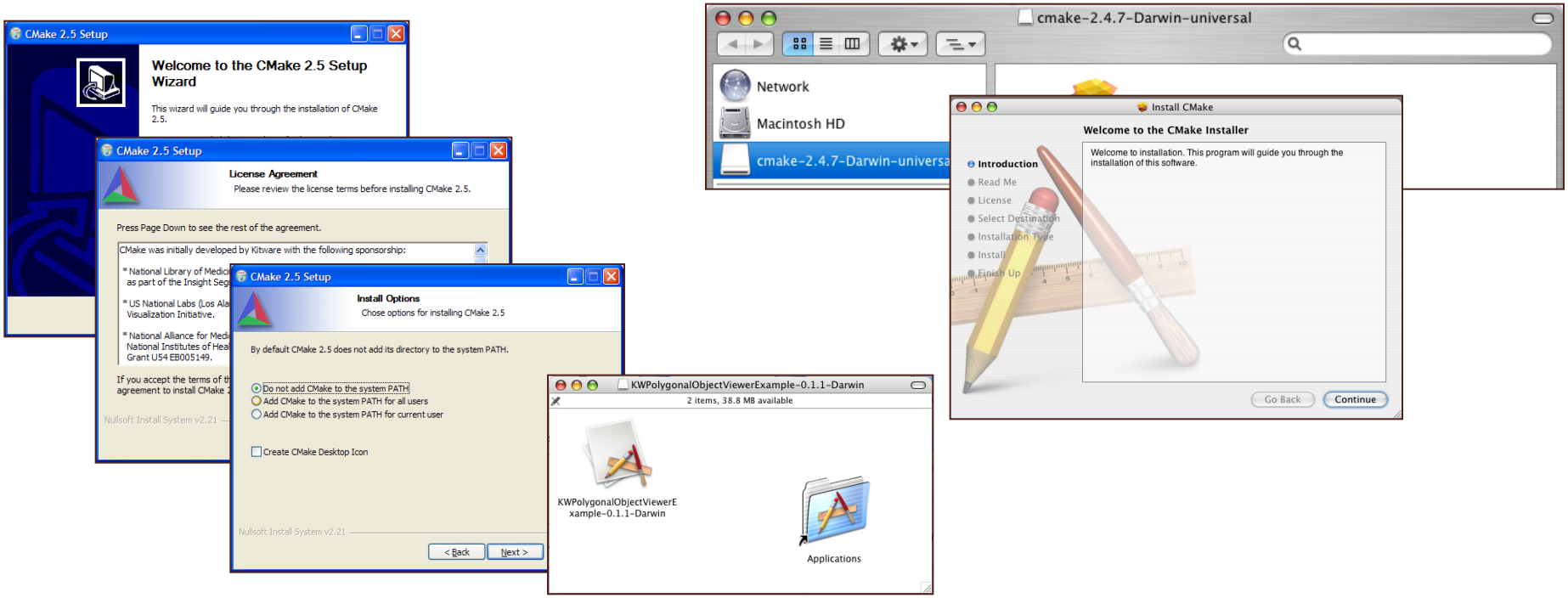


CPack

CPack is bundled with CMake

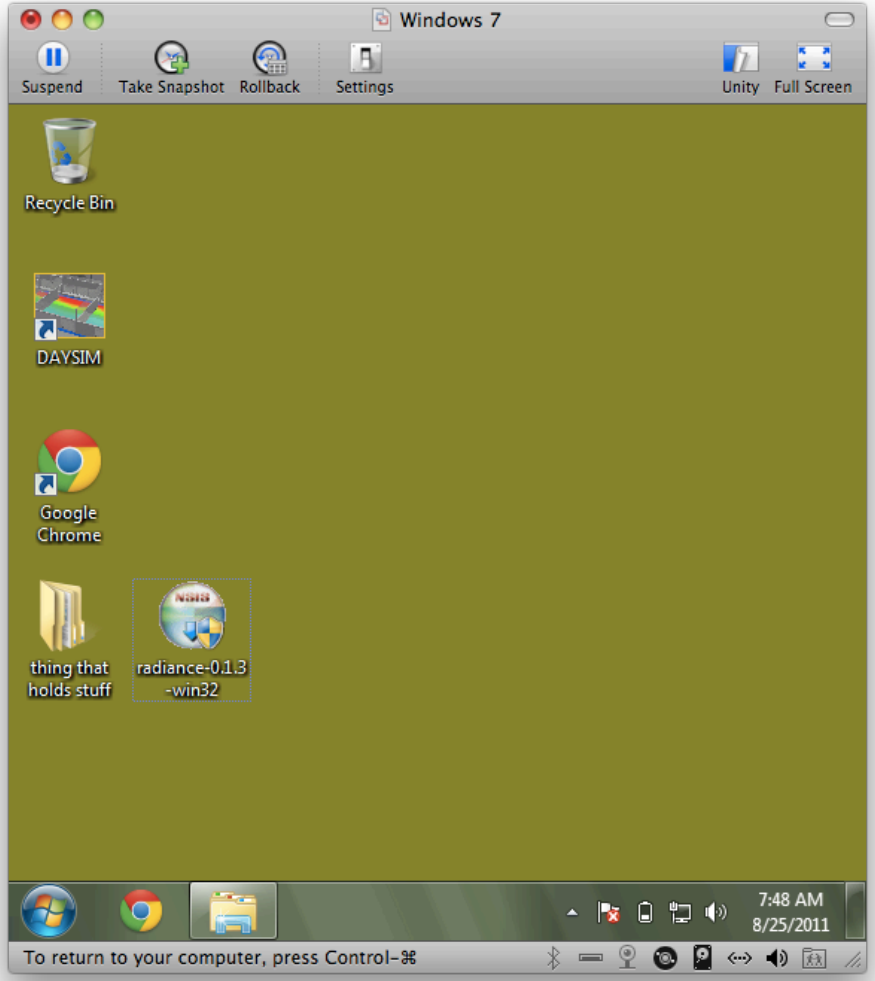
Creates professional platform specific installers

- TGZ and Self extract TGZ (STGZ), NullSoft Scriptable Install System (NSIS), OSX PackageMaker, RPM, Deb



After all that…

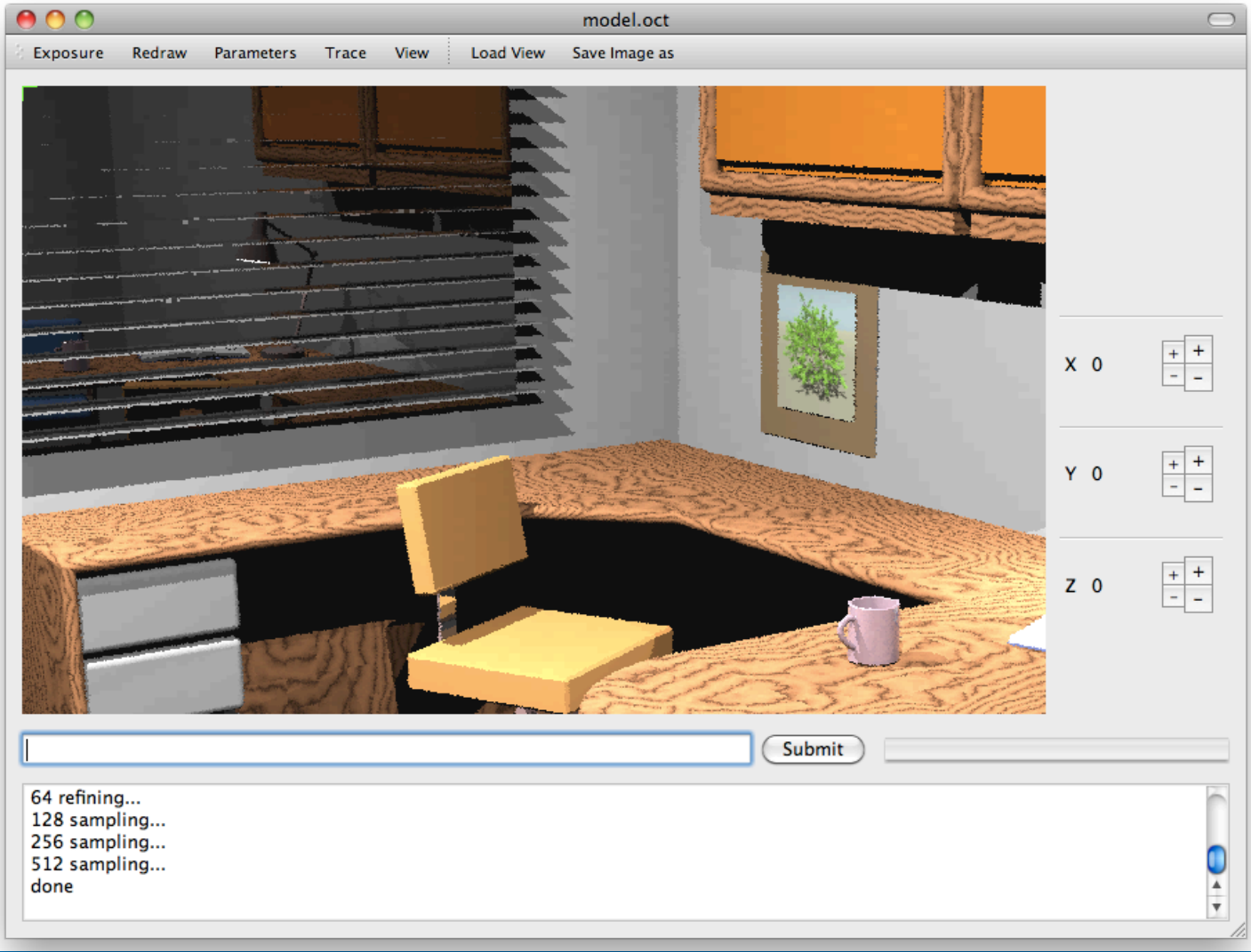
Nightly Builds & Installers!



And…

Cross platform rvu!

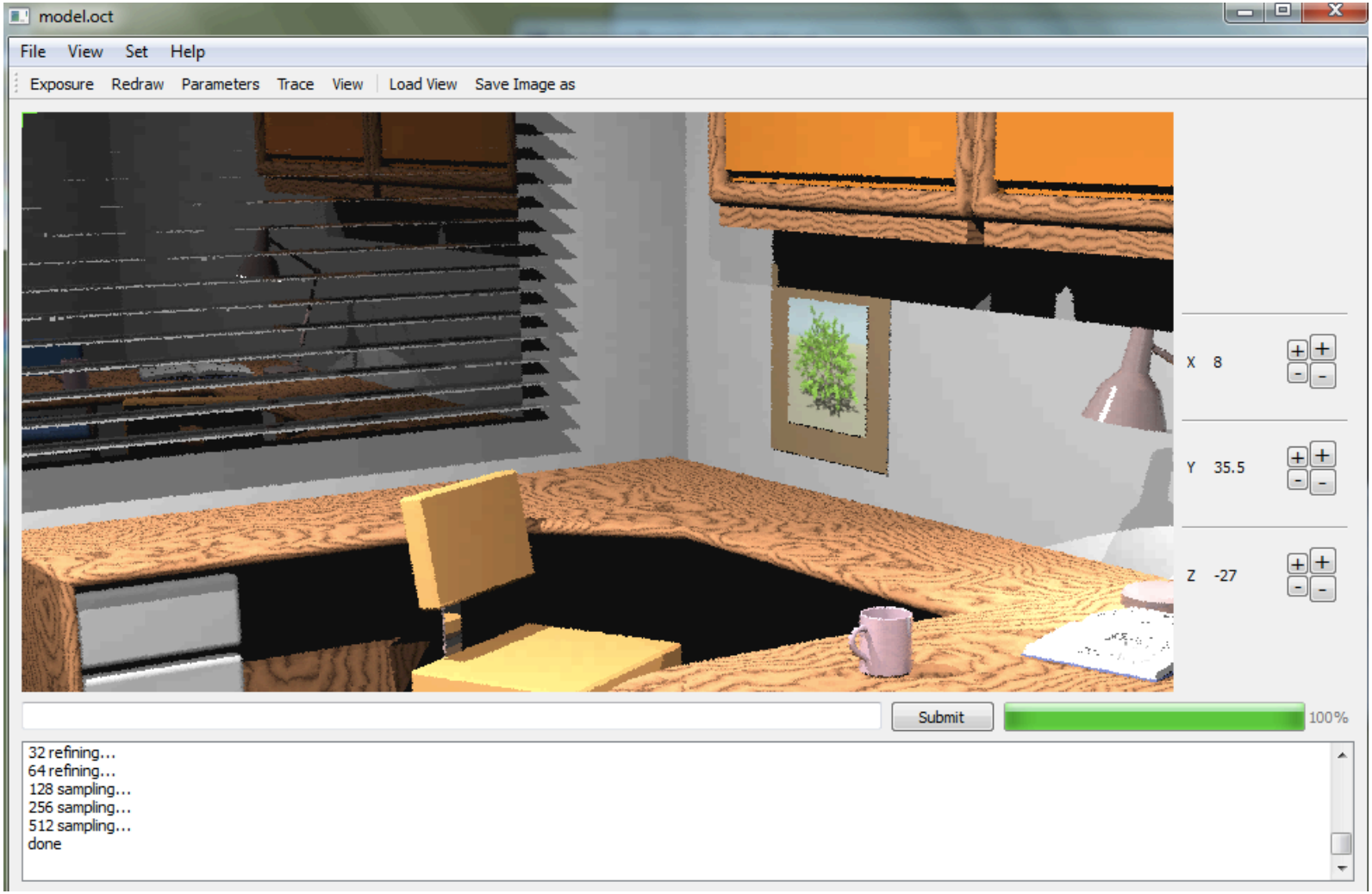
Uses Qt, new -o option (still defaults to x11 on Mac & Linux, but option avail.



And…

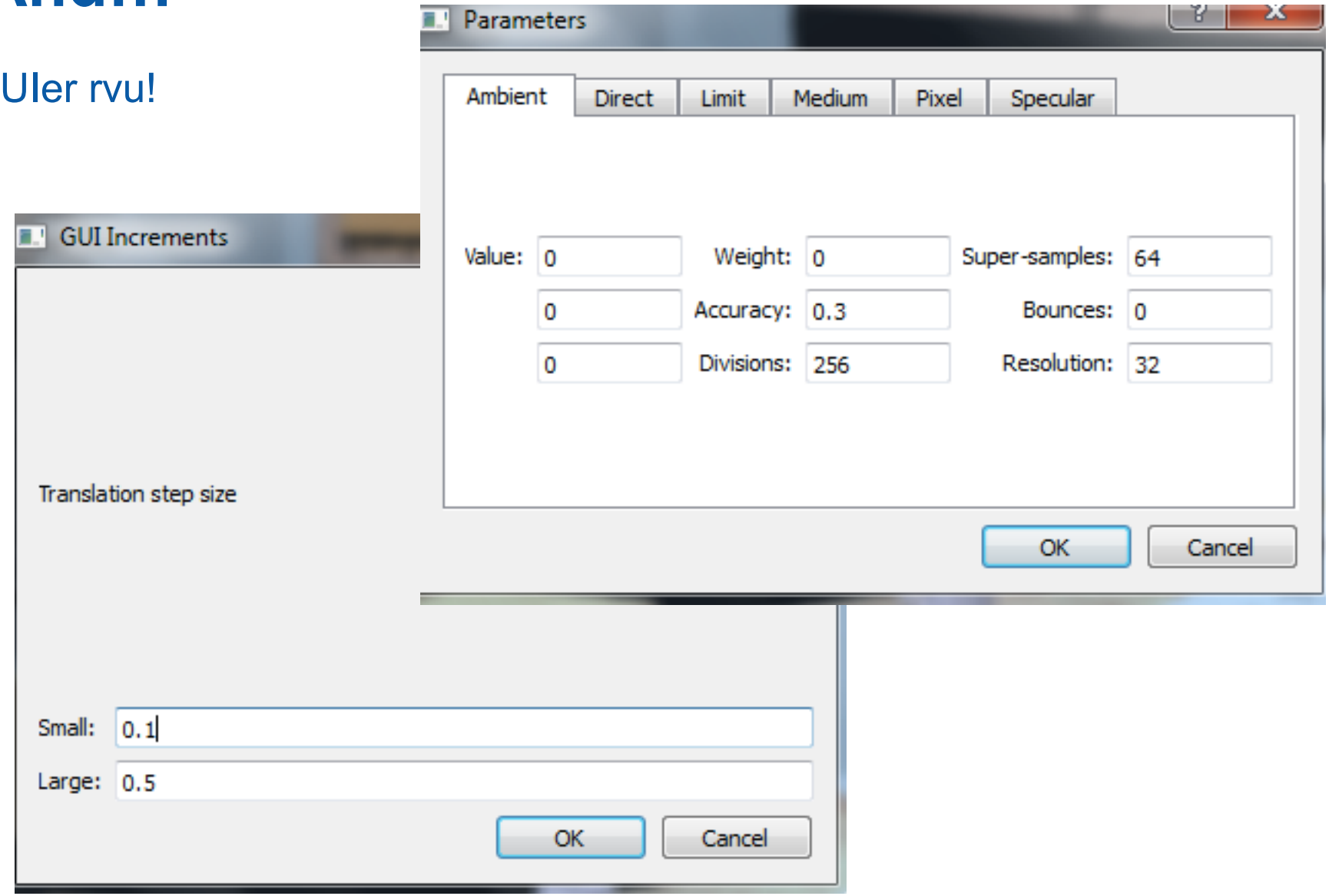
Cross platform rvu!

Defaults to Qt version on Windows (tested on Windows7 and XP)



And…

GUIer rvu!



Discuss

- Dependencies
- Who will use all of this (versus just builds)?
- How best to integrate (working lunch topic?)