

## Ginkgo CADx compilation with unmodified libraries.

### **Tool dependencies:**

CMake >= 2.8

### **Library dependencies:**

GTK+ 2.x, OpenSSL 0.9.x, DCMTK 3.6.x, ITK 3.20.x, VTK 5.6.x, WxWidgets >=2.8.11 (OpenGL enabled)

### **Procedure:**

```
Download your distribution specific devel packages of required library dependencies.
cd Ginkgo_CADx-*/src
mkdir build
cd build
cmake ../ -DCMAKE_BUILD_TYPE=Release -DUSE_PATCHED_LIBS:BOOL=FALSE
-DUSE_CUSTOM_WX:BOOL=FALSE -DUSE_CUSTOM_VTK:BOOL=FALSE
-DUSE_CUSTOM_ITK:BOOL=FALSE -DUSE_CUSTOM_DCMTK=FALSE
-DCUSTOM_PACKAGE:BOOL=FALSE
make
```

**\*Warning\*** This build is not fully tested on any platform, so please send us feed back with any information, suggestion or patch (if possible) you could provide.

## Middleware dependencies compilation

### **Windows:**

Tools and deps:

Ms. Visual Studio 2008 C++ (Express or best)

CMake >=2.6

NOTE: Build operations may be done on Debug and release modes.

#### **wxWidgets:**

```
Download wxMSW-2.8.11
Apply wxWidgets-2.8.11.diff patches.
Open solution with Visual Studio 2008 C++ (wxWidgets\build\mws\wx.sln). It will ask you to
convert some files, have to convert them.
Build DLL UNICODE library target.
Open "setup.h" file and modify the following constant:
#define wxUSE_GLCANVAS 0, set it to 1.
Copy includes and libs to ginkgo dll tree. Copy dll files to path where Ginkgo CADx is
executed.
```

#### **DCMTK:**

```
Download DCMTK 3.6.0
Apply dcmtdk-3.6.0.diff patches.
Build VS project with Cmake
Change from the code generation, the run time library from MTd to MDd on debug compile
mode, and from MT to MD on release compile mode
Copy includes and libs to ginkgo dll tree
```

#### **VTK:**

```
Download and expand VTK.
Build from Cmake:
Mark: advanced
```

Set the variables:

```
BUILD_SHARED_LIBS = ON
VTK_USE_GUISUPPORT = ON
VTK_USE_PARALLEL = ON
```

Open solution with Visual Studio 2008 C++ (VTK\VTK.sln)

Build dynamic library target.

Copy includes and libs to ginkgo dll tree. Copy dll files to path where Ginkgo CADx is executed.

**ITK:**

Expand InsightToolkit-3.20.0.tar.gz

Apply ITK-3.20.0.diff patches.

Build VS project with Cmake

Mark: advanced

Set the variables:

```
BUILD_SHARED_LIBS = ON
ITK_USE_PATENTED = ON
VNL_CONFIG_ENABLE_SSE2 = ON
```

Open solution with Visual Studio 2008 C++ (ITK\ITK.sln)

Build Dynamic library target.

Copy includes and libs to ginkgo dll tree. Copy dll files to path where Ginkgo CADx is executed.

**Cairowin32:**

Download cairo 1.8.10 and pixman 0.17.10 from:

<http://cairographics.org/releases/>

Create a static library from scratch.

Copy includes and libs to ginkgo dll tree.

**OpenSSL:**

Download OpenSSL 1.0.0d Windows binary distribution from:

<http://www.slproweb.com/products/Win32OpenSSL.html>

Copy includes and MD static libraries to ginkgo dll tree.

## **Mac OS X:**

Tools and deps:

CMake >=2.6

XCode

GCC 4.2

**wxWidgets:**

Expand and apply wxWidgets-2.8.11.diff patches.

Debug:

```
./configure --enable-monolithic --enable-dynlib --disable-shared --enable-unicode
--enable-debug --enable-dataobj --enable-dataviewctrl --prefix=/opt/local/wxdebug
```

Release:

```
./configure --enable-monolithic --enable-dynlib --disable-shared --enable-unicode
--disable-debug --enable-optimise --enable-dataobj --enable-dataviewctrl
--prefix=/opt/local/wxrelease
```

make

sudo make install

Copy includes and libs to ginkgo dll tree.

### DCMTK:

Download latest version with git:  
git clone <http://git.dcmtdk.org/dcmtdk.git> <dir>  
Apply dcmtdk.git.diff patches.

```
export CFLAGS=-m32
export CPPFLAGS=-m32
export CXXFLAGS=-m32
./configure --with-openssl --with-zlib --with-libpng --with-libxml --enable-static --disable-
shared --without-png
make
sudo make install
```

Copy includes and libs to ginkgo dll tree.

### VTK:

Expand and export following variables in terminal:

```
export CFLAGS=-m32
export CPPFLAGS=-m32
export CXXFLAGS=-m32
```

Debug:

```
cmake ../VTK-* -DBUILD_TESTING:BOOL=OFF
-DVTK_DEBUG_LEAKS:BOOL=ON -DVTK_USE_COCOA:BOOL=OFF
-DVTK_USE_CARBON:BOOL=ON -DCMAKE_BUILD_TYPE=Debug
-DCMAKE_INSTALL_PREFIX=/opt/local/vtkdebug
```

Release:

```
cmake ../VTK-* -DBUILD_TESTING:BOOL=OFF
-DVTK_DEBUG_LEAKS:BOOL=OFF -DVTK_USE_COCOA:BOOL=OFF
-DVTK_USE_CARBON:BOOL=ON -DCMAKE_BUILD_TYPE=Release
-DCMAKE_INSTALL_PREFIX=/opt/local/vtkrelease
make
sudo make install
```

Copy includes and libs to ginkgo dll tree.

### ITK:

Expand and apply apply ITK-3.20.0.diff patches.

Debug:

```
cmake ../ITK-* -DBUILD_EXAMPLES:BOOL=OFF -DBUILD_TESTING:BOOL=OFF
-DITK_USE_PATENTED:BOOL=ON -DVNL_CONFIG_ENABLE_SSE2:BOOL=ON
-DCMAKE_OSX_ARCHITECTURES=i386 -DCMAKE_BUILD_TARGET=Debug
-DCMAKE_INSTALL_PREFIX=/opt/local/itkdebug
```

Release:

```
cmake ../ITK-* -DBUILD_EXAMPLES:BOOL=OFF -DBUILD_TESTING:BOOL=OFF
-DITK_USE_PATENTED:BOOL=ON -DVNL_CONFIG_ENABLE_SSE2:BOOL=ON
-DCMAKE_OSX_ARCHITECTURES=i386 -DCMAKE_INSTALL_PREFIX=/opt/local/itkrelease
make
sudo make install
```

Copy includes and libs to ginkgo dll tree.

### Linux:

Tools and deps:

```
CMake >=2.6 : sudo apt-get install cmake
```

GTK-2.0-dev :     sudo apt-get install libgtk2.0-dev  
libx11-dev :     sudo apt-get install libx11-dev  
libxt-dev :       sudo apt-get install libxt-dev  
libxml2-dev :     sudo apt-get install libxml2-dev  
libssl-dev :     sudo apt-get install libssl-dev  
libwrap0-dev :    sudo apt-get install libwrap0-dev  
GCC 4.2 :         sudo apt-get install gcc

if it show an error like this:

```
metaemotion@ubuntu:~$ sudo apt-get install gcc-4.2
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias
Leyendo la información de estado... Hecho
El paquete gcc-4.2 no está disponible, pero algún otro paquete hace referencia
a él. Esto puede significar que el paquete falta, está obsoleto o sólo se
encuentra disponible desde alguna otra fuente
E: El paquete gcc-4.2 no tiene candidato para su instalación
metaemotion@ubuntu:~$ gcc -v
Using built-in specs.
Target: x86_64-linux-gnu
Configured with: ../src/configure -v --with-pkgversion='Ubuntu 4.4.3-4ubuntu5' -
--with-bugurl=file:///usr/share/doc/gcc-4.4/README.Bugs --enable-languages=c,c++,
fortran,objc,obj-c++ --prefix=/usr --enable-shared --enable-multiarch --enable-l
inker-build-id --with-system-zlib --libexecdir=/usr/lib --without-included-gette
xt --enable-threads=posix --with-gxx-include-dir=/usr/include/c++/4.4 --program-
suffix=-4.4 --enable-nls --enable-clocale=gnu --enable-libstdcxx-debug --enable-
plugin --enable-objc-gc --disable-werror --with-arch-32=i486 --with-tune=generic
--enable-checking=release --build=x86_64-linux-gnu --host=x86_64-linux-gnu --ta
rget=x86_64-linux-gnu
Thread model: posix
gcc version 4.4.3 (Ubuntu 4.4.3-4ubuntu5)
metaemotion@ubuntu:~$
```

Maybe you have gcc already installed,  
so type "gcc -v" to see the actual version.

OpenGL :           sudo apt-get install build-essential  
                    sudo apt-get install libgl1-mesa-dev  
                    sudo apt-get install libglu1-mesa-dev  
                    sudo apt-get install freeglut3-dev  
chrpath :           sudo apt-get install chrpath

#### [WxWidgets:](#)

Download wxWidgets-2.8.11.

Apply wxWidgets-2.8.11.diff patches. Terminal should show something like this:

```
patching file include/wx/au/auibar.h
patching file include/wx/au/auibook.h
patching file include/wx/intl.h
patching file include/wx/prntbase.h
patching file src/au/auibar.cpp
patching file src/au/auibook.cpp
patching file src/common/intl.cpp
patching file src/common/prntbase.cpp
patching file src/generic/dirctrlg.cpp
patching file src/generic/grid.cpp
patching file src/gtk/dataview.cpp
patching file src/gtk/frame.cpp
patching file src/tiff/tif_dirread.c
patching file src/tiff/tif_warning.c
```

#### *Debug:*

```
./configure --enable-monolithic --enable-dynlib --enable-shared --enable-unicode
--enable-debug --with-opengl --enable-dataobj --enable-dataviewctrl --disable-compat26 --
prefix=/opt/local/wxdebug
```

```
make
sudo make install
make clean
```

#### *Release:*

```
./configure --enable-monolithic --enable-dynlib --enable-shared --enable-unicode
--enable-optimise --disable-debug --with-opengl --enable-dataobj --enable-dataviewctrl --disable-
compat26 --prefix=/opt/local/wxrelease
```

```
make
sudo make install
```

Copy includes and libs to ginkgo dll tree from files created with make install located in  
"/opt/local/".

#### **VTK:**

Expand VTK source archive.

```
make
sudo make install
make clean
```

#### *Debug:*

```
cmake ../VTK* -DBUILD_TESTING:BOOL=OFF
-DBUILD_SHARED_LIBS:BOOL=ON -DVTK_DEBUG_LEAKS:BOOL=ON
-DCMAKE_BUILD_TARGET=Debug -DCMAKE_INSTALL_PREFIX=/opt/local/vtkdebug
```

```
make
sudo make install
make clean
```

Release:

```
cmake ../VTK* -DBUILD_TESTING:BOOL=OFF  
-DBUILD_SHARED_LIBS:BOOL=ON -DVTK_DEBUG_LEAKS:BOOL=OFF  
-DCMAKE_BUILD_TARGET=Release -DCMAKE_INSTALL_PREFIX=/opt/local/vtkrelease
```

make

sudo make install

Copy includes and libs to ginkgo dll tree.

*ITK:*

Expand and apply apply ITK-3.20.0.diff patches. Terminal should show something like this:

```
patching file Utilities/gdcm/src/CMakeLists.txt  
patching file Utilities/gdcm/src/gdcmFile.cxx  
patching file Utilities/gdcm/src/gdcmJPEGFragment.cxx  
patching file Utilities/gdcm/src/gdcmJPEGFragment.h  
patching file Utilities/gdcm/src/gdcmJPEGFragmentsInfo.cxx  
patching file Utilities/gdcm/src/gdcmJpeg.cxx  
patching file Utilities/gdcm/src/gdcmJpeg12.cxx  
patching file Utilities/gdcm/src/gdcmJpeg16.cxx  
patching file Utilities/gdcm/src/gdcmJpeg8.cxx  
patching file Utilities/gdcm/src/gdcmJpegLS.cxx  
patching file Utilities/gdcm/src/gdcmJpegLScolortransform.h  
patching file Utilities/gdcm/src/gdcmJpegLSconfig.h  
patching file Utilities/gdcm/src/gdcmJpegLScontext.h  
patching file Utilities/gdcm/src/gdcmJpegLScontextrunmode.h  
patching file Utilities/gdcm/src/gdcmJpegLSdecoderstrategy.h  
patching file Utilities/gdcm/src/gdcmJpegLSdefaulttraits.h  
patching file Utilities/gdcm/src/gdcmJpegLSencoderstrategy.h  
patching file Utilities/gdcm/src/gdcmJpegLSheader.cpp  
patching file Utilities/gdcm/src/gdcmJpegLSheader.h  
patching file Utilities/gdcm/src/gdcmJpegLSinterface.cpp  
patching file Utilities/gdcm/src/gdcmJpegLSinterface.h  
patching file Utilities/gdcm/src/gdcmJpegLSjpegls.cpp  
patching file Utilities/gdcm/src/gdcmJpegLSlookuptable.h  
patching file Utilities/gdcm/src/gdcmJpegLSlosslesstraits.h  
patching file Utilities/gdcm/src/gdcmJpegLSprocessline.h  
patching file Utilities/gdcm/src/gdcmJpegLSpublictypes.h  
patching file Utilities/gdcm/src/gdcmJpegLSscan.h  
patching file Utilities/gdcm/src/gdcmJpegLSstdafx.cpp  
patching file Utilities/gdcm/src/gdcmJpegLSstdafx.h  
patching file Utilities/gdcm/src/gdcmJpegLSstreams.h  
patching file Utilities/gdcm/src/gdcmJpegLSutil.h  
patching file Utilities/gdcm/src/gdcmPixelReadConvert.cxx  
patching file Utilities/itkjpeg/jdmarker.c.orig
```

Debug:

```
cmake ../InsightToolkit-* -DBUILD_EXAMPLES:BOOL=OFF  
-DBUILD_SHARED_LIBS:BOOL=ON -DBUILD_TESTING:BOOL=OFF  
-DITK_USE_PATENTED:BOOL=ON -DVNL_CONFIG_ENABLE_SSE2:BOOL=ON  
-DCMAKE_BUILD_TARGET=Debug -DCMAKE_INSTALL_PREFIX=/opt/local/itkdebug
```

Release:

```
cmake ../InsightToolkit-* -DBUILD_EXAMPLES:BOOL=OFF
-DBUILD_SHARED_LIBS:BOOL=ON -DBUILD_TESTING:BOOL=OFF
-DITK_USE_PATENTED:BOOL=ON -DVNL_CONFIG_ENABLE_SSE2:BOOL=ON
-DCMAKE_BUILD_TARGET=Release -DCMAKE_INSTALL_PREFIX=/opt/local/itkrelease
```

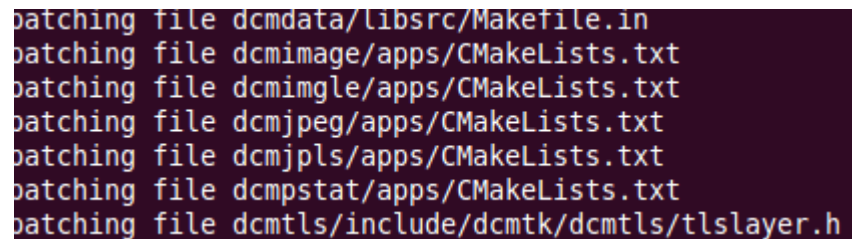
make

sudo make install

Copy includes and libs to ginkgo dll tree.

### DCMTK:

Expand and apply apply dcmtdk-3.6.0.diff patches. Terminal should show something like this:



```
patching file dcmdata/libsrc/Makefile.in
patching file dcmimage/apps/CMakeLists.txt
patching file dcmimgle/apps/CMakeLists.txt
patching file dcmjpeg/apps/CMakeLists.txt
patching file dcmjpls/apps/CMakeLists.txt
patching file dcmpstat/apps/CMakeLists.txt
patching file dcmtls/include/dcmtdk/dcmtls/tlslayer.h
```

Debug:

```
cmake ../dcmtdk-3.6.0 -DBUILD_SHARED_LIBS:BOOL=ON
-DDCMTK_WITH_ZLIB:BOOL=ON -DDCMTK_WITH_TIFF:BOOL=OFF
-DCMAKE_BUILD_TARGET=Debug -DCMAKE_INSTALL_PREFIX=/opt/local/dcmtdkdebug
```

Release:

```
mkdir dcmtdkbuildrelease
cd dcmtdkbuildrelease
cmake ../dcmtdk-3.6.0 -DBUILD_SHARED_LIBS:BOOL=ON
-DDCMTK_WITH_ZLIB:BOOL=ON -DDCMTK_WITH_TIFF:BOOL=OFF
-DCMAKE_BUILD_TARGET=Release -DCMAKE_INSTALL_PREFIX=/opt/local/dcmtdkrelease
```

make

sudo make install

Copy includes and libs to ginkgo dll tree.



## Ginkgo CADx compilation

### All:

For libraries, plugins and language translations to be provided as "bundle" (with executable), the following structure is required\*:

```
executable_dir/<ginkgo_executable>
executable_dir/GinkgoCADX.so*
executable_dir/<wxWidgets dynamic libraries>
executable_dir/<vtk dynamic libraries>
executable_dir/<itk dynamic libraries>
executable_dir/<dcmtk dynamic libraries>
executable_dir/lang/<langcode>/<mo files>
executable_dir/Plugins/<Ginkgo CADx extension dynamic libraries>
```

In MacOS X this structure is slightly different:

```
Ginkgo CADx.app/Contents/Info.plist
Ginkgo CADx.app/Contents/PkgInfo
Ginkgo CADx.app/Contents/MacOS/Ginkgo_CADx
Ginkgo_CADx.app/Contents/MacOS/<dynamic libraries>
Ginkgo_CADx.app/Contents/PlugIns/<Ginkgo CADx extension dynamic libraries>
Ginkgo_CADx.app/Contents/Resources/lang/<langcode>/<mo files>
```

### Windows:

Deps: Ms. Visual Studio 2008 C++ (Express or best)

Open src/ginkgo/ginkgo.sln with Ms. Visual Studio and select "buid".

Opening Ginkgo project we should manually include a file because its name has changed:  
"gincocadx.vcproj"

#### Compiling Debug Mode:

Will appear an error with the file "conformance.xml" caused by space characters on windows copying process. We must modify the properties from the file, setting:

*Custom Build Step -> General -> Command Line: copy "\$(InputPath)" "\$(OutDir)"*

Some warnings will be avoided adding some directives, for example:

```
#if !defined(HAVE_STATIC_CAST)
#define HAVE_STATIC_CAST 1
#endif
```

Using VTK-5.6.1 must be deleted a function declaration from the vtkSmartVolumeMapper file, because it's a more recent version of vtk.

Some open\_cv files will provoke some problems, so we must delete them from the fooextension and lightvisualizator extensions folders.

#### Compiling Release Mode:

The same error from conformance.xml file will appear, but we can solve it following exactly the same steps which appear on Debug Mode.

When compiling process has been successful, an execution error may appear. You should copy all ".dll" files to:

*gincocadx-2.5.1.0\src\gincocadx\Release*

### Linux:

You could use deploy.sh script on src/

For more information, read its contents.

Go to the ginkgo-cadx path and type:

```
mkdir build
cd build
```



```
cmake .. -DCUSTOM_PACKAGE:BOOL=TRUE -DUSE_PATCHED_LIBS:BOOL=TRUE
-DUSE_CUSTOM_WX:BOOL=TRUE -DUSE_CUSTOM_VTK:BOOL=TRUE
-DUSE_CUSTOM_ITK:BOOL=TRUE -DUSE_CUSTOM_DCMTK:BOOL=TRUE
-DUSE_SYSTEM_SQLITE:BOOL=FALSE -DCMAKE_INSTALL_PREFIX=./deploy
make BUILD_ALL
```

## Mac OS X:

You could use deploy.sh script on src/  
For more information, read its contents.

## WxLUA:

C:\Users\carlos\Desktop\Proyectos\MetaEmotion\ginkgo\trunk\dl\Windows-x86\wxLua-2.8.11\build\msvc6

Open wxLua.dsw  
Convert all to VS2008  
close

Open wxLua.sln

In all targets:  
Set in project configuration properties => Utilizar juego de caracteres Unicode

Select Release DLL Multilib

mod\_wxlua  
mod\_wxluadebug  
mod\_wxbindadv  
mod\_wxbindbase

En directorios de inclusión adicionales:

\$(WXWIN)\lib\vc\_dll\msw => ..\..\..\WX-2.8.11\mswu  
\$(WXWIN)\include => ..\..\..\WX-2.8.11\include

Delete:

\$(WXWIN)\contrib\include

directorios de bibliotecas adicionales:

\$(WXWIN)\lib\vc\_dll => ..\..\..\WX-2.8.11\lib

En entrada:

wxregex.lib => wxgegexu.lib  
wx\*28.lib => wx\*u28.lib