

# *The Gwx Story*

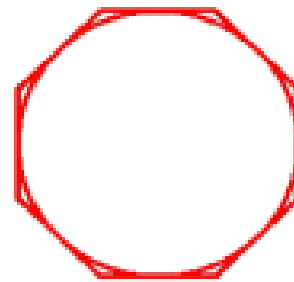
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Inforum World Conference XXV

Riga Latvia

# *The GwX Story*

The Biography of a Regression and Model-building Program  
Built in C++ with Free, Open-Source,  
Cross-Platform Tools



Clopper Almon

*A Partial and Preliminary Version as of  
May 2017*

# Why Gwx?

- *Future*: Borland Builder 6 is old, new versions are expensive.
- *Freedom*: Gwx uses GNU GCC compiler, Codeblocks IDE, and wxWidgets framework of GUI design tools
- *Portability*: We are building under Ubuntu Linux, but it will work under Mac and Windows as well.

# Building Blocks

- *GNU Tools*: Open source, industry-standard GCC and GDB debugger, can be installed under Cygwin or MinGW.
- *CodeBlocks*: Open source graphical IDE with add-ons for wxSmith and other tools
- *wxWidgets*: Full set of GUI elements, with wxSmith this is much like the Borland Builder IDE.

# Ubuntu Linux

- *One of the most popular and unique Linux distributions.*
- *Can easily be installed to dual-boot with Windows 7 or 10. Can also be run as a virtual machine, in VirtualBox.*
- *<http://releases.ubuntu.com/16.04/>*
- *<https://www.virtualbox.org/wiki/Downloads>*

# CodeBlocks



- *Current version is 16.01. We have been using it since version 10*
- <http://www.codeblocks.org/downloads/26>
- Under Ubuntu:
  - `sudo apt-get install codeblocks`
- Under Windows:
  - `codeblocks-16.01mingw-setup.exe`

# wxWidgets



- *Current most stable version is 2.8.*
  - <http://www.wxwidgets.org/downloads/>
- Under Ubuntu:
  - Install several wxWidgets headers and libraries.
- Under Windows:
  - wxWidgets library needs to be compiled, but this situation should improve soon.

# Tutorials

- Clopper has taken over the development and maintenance of the wxSmith tutorial.
  - [http://wiki.codeblocks.org/index.php/WxSmith\\_tutorials/](http://wiki.codeblocks.org/index.php/WxSmith_tutorials/)
- There are currently 10 tutorials, that take the new programmer step by step through understanding and developing with CodeBlocks and wxWidgets.
- *The Gwx Story* is also set up as a series of tutorials, and is described as 'A Biography of a Program'.
- Much of the material there is also helpful for understanding the underlying structure of *G7*.



# Screen Shot of Codeblocks and Gwx

The screenshot displays the Code::Blocks IDE interface. The main editor window shows the source code for `*GwxMain.cpp`. The code includes a function `addcmd()` that reads commands from a file and executes them. The left sidebar shows a project tree with a hierarchy of wxWidgets components. A Properties window is open for `wxTextCtrl`, showing various settings. The bottom status bar shows the file path and various tool icons.

```
553     ..... }
554     ..... }
555     return OK;
556     ..... }
557     // Execute the commands in a specified file
558     short addcmd(){
559     char filename[FILENAME_MAX], chopreturn;
560     short i;
561     char s[MAXLINE];
562     FILE *iinsave;
563     .....
564     // Find the name of the file with the commands.
565     chop(filename);
566     iinsave = iin;
567     iin = fopen(filename, "r");
568     if(iin == 0){
569     printf("The file %s does not exist.\n", filename);
570     iin = iinsave;
571     return ERR;
572     }
573     // Look for text substitution arguments; load them into substitutes.
574     i = 0;
575     while(i < 10){
576     chopreturn = chop(s);
577     if(chopreturn == 'a' || chopreturn == 'n' || chopreturn == ''){
578     strcpy(substitutes[i], s);
579     i++;
580     }
581     else if(chopreturn == 'e') break;
582     }
583     // Read and execute the commands in the add file
584     // i = 0;
585     // while (i < MAXLINE)
```

Text	
Max Length	0
Var name	Results
Is member	<input checked="" type="checkbox"/>
Identifier	ID_TEXTCTRL1
Class name	wxTextCtrl
Default pos	<input checked="" type="checkbox"/>
X	-1
Y	-1
Pos in dialog units	<input type="checkbox"/>
Default size	<input type="checkbox"/>
Width	300
Height	200
Size in dialog units	<input type="checkbox"/>
Validator	
Enabled	<input checked="" type="checkbox"/>
Focused	<input type="checkbox"/>
Hidden	<input type="checkbox"/>

Build: Debug in Gwx (compiler: GNU GCC Compiler)-----  
Target is up to date.  
Nothing to be done (all items are up-to-date).

Unix (LF) UTF-8 Line 1095, Column 64 Insert Modified Read/Write default

# Screen Shot of Gwx

douglas@maynard: /ami

Gwx

Pick Dir Giotto

```
rdates input 2016q3
Year 1970 Frequency 4 Period 1 Day 0.
Year 2016 Frequency 4 Period 3 Day 0.
tdateA input 1972q1 2016q3
tdateB input 2016q3
Year 1972 Frequency 4 Period 1 Day 0.
Year 2016 Frequency 4 Period 3 Day 0.
gdates 1980q1 2016q1
gdateA input 1980q1
gdateB input 2016q1
Year 1980 Frequency 4 Period 1 Day 0.
Year 2016 Frequency 4 Period 1 Day 0.

catch vfnreR.cat
Catching is now on.
save vfnreR.sav
#lim 1980q1 2016q3 2016q3
rdates 1980q1 2016q3 2016q3
rdateA input 1980q1
rdateB input 2016q3
Year 1980 Frequency 4 Period 1 Day 0.
Year 2016 Frequency 4 Period 3 Day 0.
Year 2016 Frequency 4 Period 1 Day 0.
ti Private Equipment Investment
subti Fitted vs. Actual
# Private real GDP:
f gppR = gdpR - gR
f d = gppR - gppR[1]
f ub05 = @cum(ub05,1.0,.05)
#f repleq = @cum(repleq,vfnreR[4],.05)/ub05
f repleq = @cum(stockeq,vfnreR[4],.05)
#spr stockeq
f repleq = repleq/ub05

con 10000 l=a2
Hello from ConCmd!
Count = 10000.0 Left = 1.0
r vfnreR = repleq, d[1], d[2], d[3], d[4], d[5], d[6], d[7], d[8], d[9], d[10], d[11], d[12]
:
Private Equipment Investment
SEE = 33.5 RSQ = 0.964 RHO = 0.854 DW = 0.292
Variable name RegCoef Mexval Elas NorRes Means
1 intercept 22.59198 1.3 0.03 27.90 1.00
2 repleq 0.90431 338.2 0.81 6.14 640.47
3 d[1] 0.24487 9.9 0.02 4.91 57.57
4 d[2] 0.21748 7.0 0.02 4.11 57.41
5 d[3] 0.22093 7.0 0.02 3.36 57.24
6 d[4] 0.23296 8.1 0.02 2.73 57.12
7 d[5] 0.20433 6.5 0.02 2.23 57.18
8 d[6] 0.16515 4.3 0.01 1.87 56.97
9 d[7] 0.13480 3.0 0.01 1.62 57.79
10 d[8] 0.11682 2.3 0.01 1.41 57.21
11 d[9] 0.14652 3.4 0.01 1.20 56.21
12 d[10] 0.11167 1.8 0.01 1.08 55.78
13 d[11] 0.09023 1.2 0.01 1.03 56.67
14 d[12] 0.09218 1.4 0.01 1.00 55.96
save off
gr *
```

## Private Equipment Investment

Fitted vs. Actual

997

499

0

1980 1985 1990 1995 2000 2005 2010 2015

vfnreR.reg

File Edit View Projects Bookmarks Sessions Tools Settings Help

```
vfnreR.reg
1 # vfnreR.reg - Regression to explain investment in private equipment and software
2 fdates 1970q1 2016q3
3 tdates 1972q1 2016q3
4 gdates 1980q1 2016q1 2016q1
5
6 catch vfnreR.cat
7 save vfnreR.sav
8 #lim 1980q1 2016q3 2016q3
9 rdates 1980q1 2016q3 2016q3
10 ti Private Equipment Investment
11 subti Fitted vs. Actual
12 # Private real GDP:
13 f gppR = gdpR - gR
14 f d = gppR - gppR[1]
15 f ub05 = @cum(ub05,1.0,.05)
16 #f repleq = @cum(repleq,vfnreR[4],.05)/ub05
17 f repleq = @cum(stockeq,vfnreR[4],.05)
18 #spr stockeq
19 f repleq = repleq/ub05
20
21 con 10000 l=a2
```

Line 7, Column 16

INSERT Tab Size: 3 UTF-8 WINE Config

Search and Replace

# History and Future Development

## ***HISTORY***

- *Florence* – Initial development and proof of concept.
- *Baikal* – up to 12 tutorials, including “f”, “r” commands, and graphs.
- *Osnabruck* – Many new functions, vam file commands.
- *Latvia* – More vam commands, including “show” command with grid.

## ***COMING UP NEXT!***

- Finish Vam capabilities
- Cross-Platform Interdyme (Fixer, Macfixer, IdBuild, Banker and Dyme model.) in Console model within Codeblocks.
- Windows version of Gwx.

# Want to Learn More?

Install Codeblocks/wxWidgets on your Linux and/or Windows computer.

We will make the current stable version available to compile and use.

We will continue to experiment with GCC under Linux, and with Cygwin and Mingw under Windows, and make programs available.

The latest version of *The Gwx Story* (2017) is available in PDF.