

# Introduction to WxWidgets

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Perl Technical Talk  
16<sup>th</sup> April 2009



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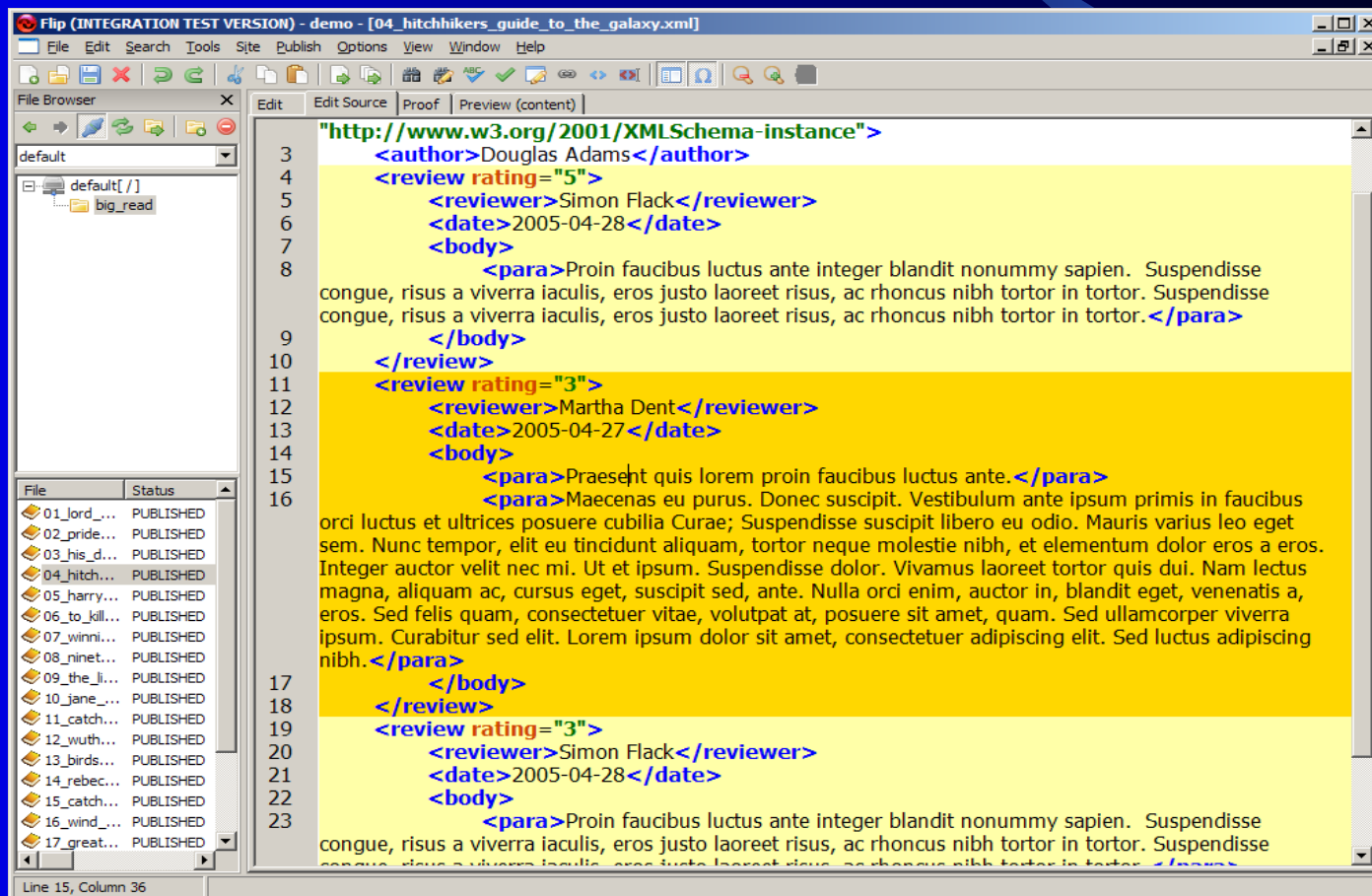
Further information

# What is WxWidgets?

- GUI library [www.wxwidgets.org](http://www.wxwidgets.org)
- Native widgets, e.g. GTK+, X11, Motif, Win32, WinCE
- Cross-platform
  - Windows
  - Linux
  - MacOS X
- Language bindings
  - Perl
  - C++
  - C# .NET
  - Python

# Projects using WxWidgets

BBC “Flip” content management system  
+ Scintilla editor component plugin

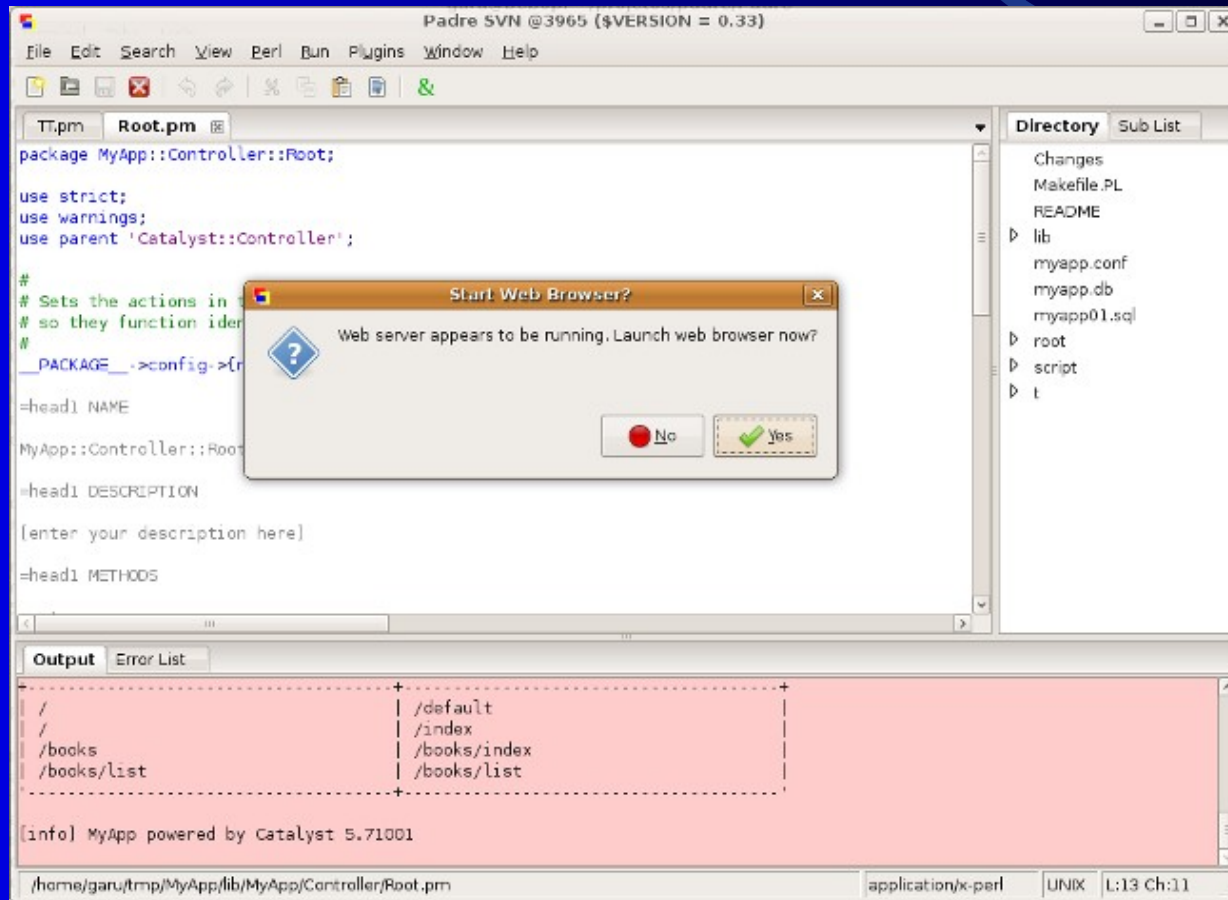


The screenshot shows a window titled "Flip (INTEGRATION TEST VERSION) - demo - [04\_hitchhikers\_guide\_to\_the\_galaxy.xml]". The window contains a menu bar (File, Edit, Search, Tools, Site, Publish, Options, View, Window, Help) and a toolbar. Below the toolbar is a "File Browser" pane on the left showing a tree view with "default" and "big\_read" folders. The main area is an XML editor with a Scintilla component plugin, displaying XML code for a review. The code is as follows:

```
3 <http://www.w3.org/2001/XMLSchema-instance">
4 <author>Douglas Adams</author>
5 <review rating="5">
6 <reviewer>Simon Flack</reviewer>
7 <date>2005-04-28</date>
8 <body>
9 <para>Proin faucibus luctus ante integer blandit nonummy sapien. Suspendisse
10 congue, risus a viverra iaculis, eros justo laoreet risus, ac rhoncus nibh tortor in tortor. Suspendisse
11 congue, risus a viverra iaculis, eros justo laoreet risus, ac rhoncus nibh tortor in tortor.</para>
12 </body>
13 </review>
14 <review rating="3">
15 <reviewer>Martha Dent</reviewer>
16 <date>2005-04-27</date>
17 <body>
18 <para>Praeseht quis lorem proin faucibus luctus ante.</para>
19 <para>Maecenas eu purus. Donec suscipit. Vestibulum ante ipsum primis in faucibus
20 orci luctus et ultrices posuere cubilia Curae; Suspendisse suscipit libero eu odio. Mauris varius leo eget
21 sem. Nunc tempor, elit eu tincidunt aliquam, tortor neque molestie nibh, et elementum dolor eros a eros.
22 Integer auctor velit nec mi. Ut et ipsum. Suspendisse dolor. Vivamus laoreet tortor quis dui. Nam lectus
23 magna, aliquam ac, cursus eget, suscipit sed, ante. Nulla orci enim, auctor in, blandit eget, venenatis a,
24 eros. Sed felis quam, consectetuer vitae, volutpat at, posuere sit amet, quam. Sed ullamcorper viverra
25 ipsum. Curabitur sed elit. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Sed luctus adipiscing
26 nibh.</para>
27 </body>
28 </review>
29 <review rating="3">
30 <reviewer>Simon Flack</reviewer>
31 <date>2005-04-28</date>
32 <body>
33 <para>Proin faucibus luctus ante integer blandit nonummy sapien. Suspendisse
34 congue, risus a viverra iaculis, eros justo laoreet risus, ac rhoncus nibh tortor in tortor. Suspendisse
35 congue, risus a viverra iaculis, eros justo laoreet risus, ac rhoncus nibh tortor in tortor.</para>
```

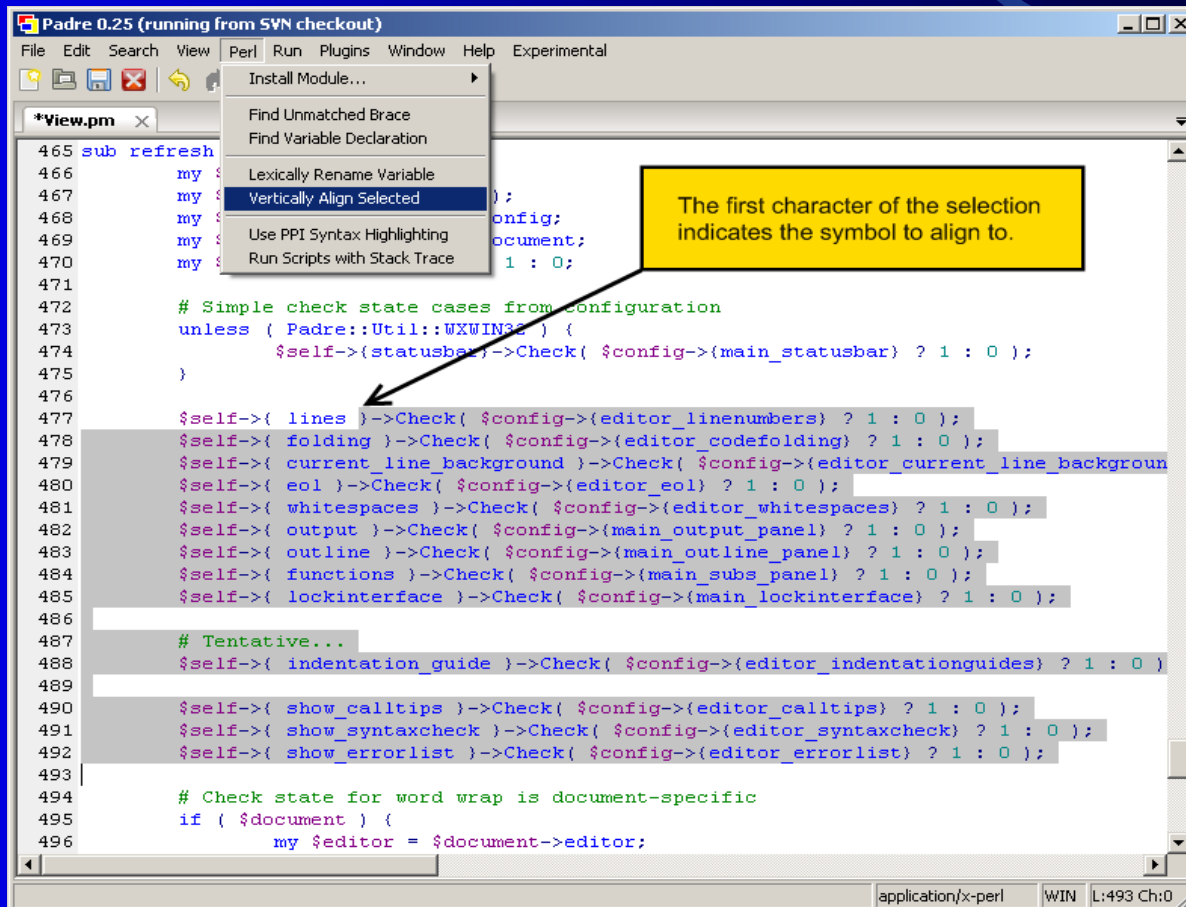
# Projects using WxWidgets

## Padre Perl Editor – Ubuntu widgets



# Projects using WxWidgets

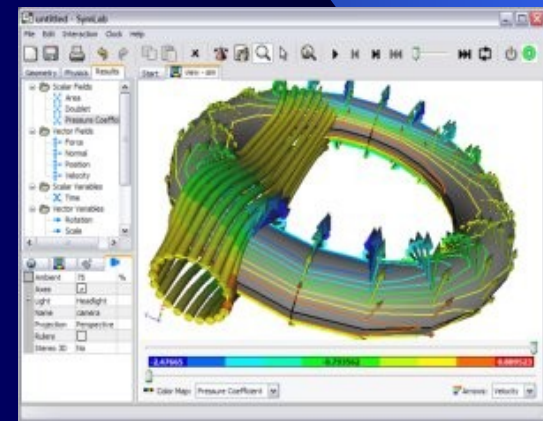
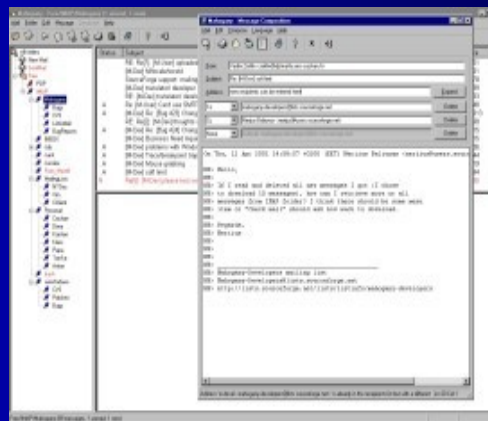
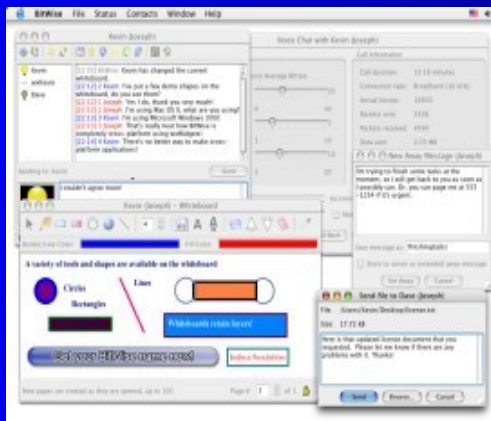
## Padre Perl Editor – WinXP widgets



# Projects using WxWidgets

From [www.wxwidgets.org/about/users.htm](http://www.wxwidgets.org/about/users.htm)

AMD circuit designer, AOL Communicator, Bitwise IM, wxCVS, CMU Audacity audio editor, TortoiseCVS, AVG Anti-virus, Red Hat eCos, W3C Amaya, Mahogany Email, Symlab



Looks promising...



# Installing pre-requisites

- For Win32 ASPerl use a PPM for Alien::wxWidgets  
<http://www.wxperl.co.uk/ppm.html>
- For Debian/Ubuntu the python bundle is handy  
<http://wiki.wxpython.org/InstallingOnUbuntuOrDebian>
- For Linux get repos wx-common etc. or perl-Wx-\*.rpm
- Or build it following instructions at
  - <http://search.cpan.org/perldoc?Install>
  - Windows prereqs:  
ActivePerl, MinGW, dmake, ExtUtils::FakeConfig,  
wxPerl (sources), wxWidgets (sources),  
Alien::wxWidgets (sources), Wx::ActiveX
  - Linux:  
wxWidgets, Alien::wxWidgets and wxPerl sources



# Hello world

- A simple example
- Similar approach to Visual C++ / MFC

```
Load wxPerl main module
```

```
use Wx;
```

- Main application will loop forever while a top level window exists, dispatching events

```
Create an application – global state and events
```

```
package MyApp;
```

```
use base 'Wx::App';
```

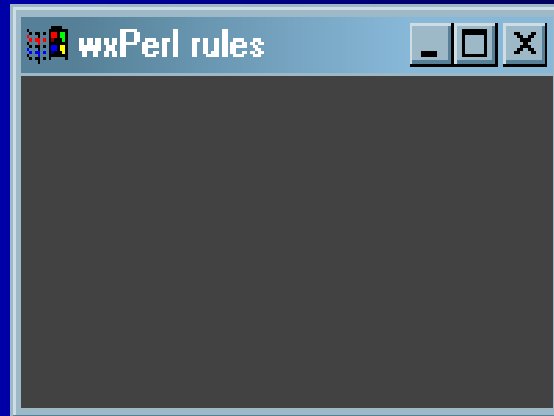
# Hello world

- The application object creation triggers an OnInit event which has as default a similarly named callback
- We use it to build the screen objects starting with a top-level “frame” window

```
sub OnInit {
    my $frame = Wx::Frame->new(
        undef,          # parent window
        -1,             # ID -1 means any
        'wxPerl rules', # title
        [-1, -1],      # default position
        [250, 150],    # size
    );
    # make it be shown
    $frame->Show( 1 );
}
```

# Hello world

- `$ perl helloworld.pl`  
(Win32 toolkit)



# Hello world – button and panel

- We add functionality to Wx::Frame by sub-classing it

```
package MyFrame;

use base 'Wx::Frame';

sub new {
    my $ref = shift;
    my $self = $ref->SUPER::new(
        undef,           # parent window
        -1,              # ID -1 means any
        'wxPerl rules', # title
        [-1, -1],       # default position
        [150, 100],     # size
    );
}
```

# Hello world – button and panel

- Panels hold controls and handle navigation

```
# controls go on a panel in a frame
my $panel = Wx::Panel->new(
    $self,          # parent window
    -1,            # ID
);

# create a button
my $button = Wx::Button->new(
    $panel,        # parent window
    -1,           # ID
    'Click me!',  # label
    [30, 20],    # position
    [-1, -1],    # default size
);
```

# Hello world – button and panel

- Similar app to before but using our Frame sub-class

```
package MyApp;

use base 'Wx::App';

sub OnInit {
    my $frame = MyFrame->new;

    $frame->Show( 1 );
}

package main;

my $app = MyApp->new;
$app->MainLoop;
```

# Hello world – button and panel

- Similar app to before but using our Frame sub-class (GTK2 toolkit)



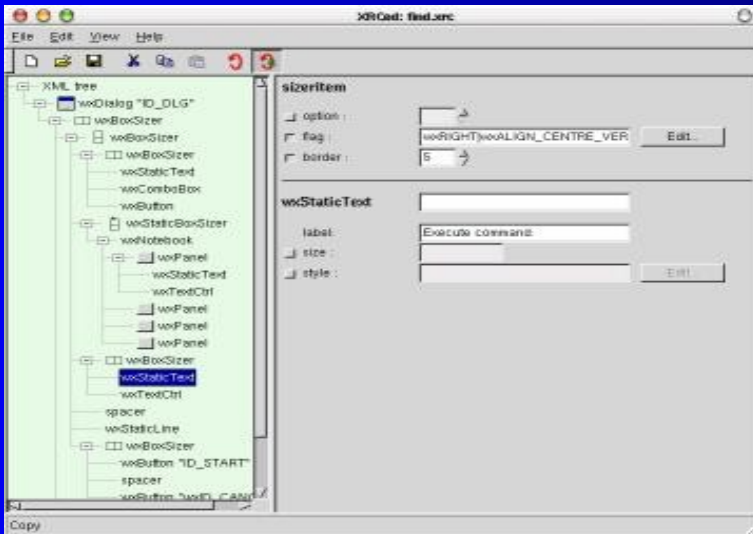


# Screen objects are classes

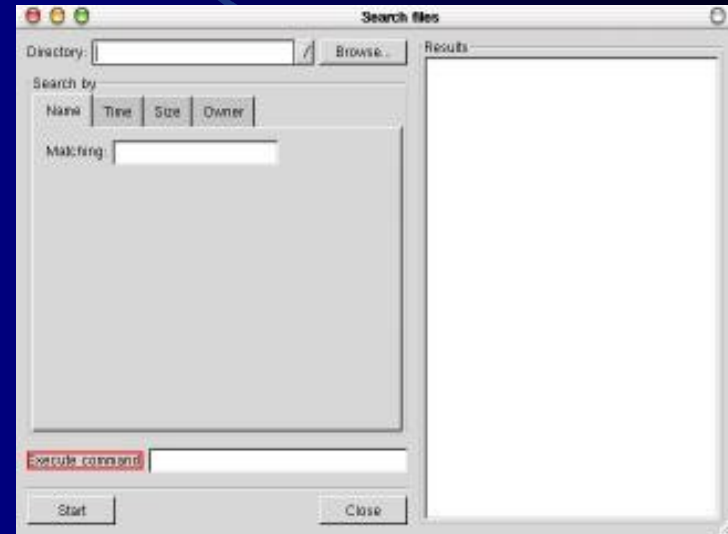
- Screen objects
  - Frame
  - Panels
  - Menus
  - Toolbars
- Are Classes
  - `Wx::Frame`
  - `Wx::Panel` etc.
- See the documentation for how to use – the C++ docs are very close to the Perl calling syntax

# Design screens with Python's XRCed

Editor



Sample Dialog



- Easier than manually creating screen object from classes
- Produces .XRC XML format dialog resource files
- Download/install XRCed from [xrced.sourceforge.net](http://xrced.sourceforge.net) (need to install python first)

# Events

- Are accessed through connectors → handlers
- Bubble up until handled or cancelled

```
Import  
package MyFrame;  
  
use base 'Wx::Frame';  
  
# import the event registration function  
use Wx::Event qw(EVT_BUTTON);
```

# Events

Connect object method to event

```
my $button = Wx::Button->new(  
    $panel,          # parent window  
    -1,             # ID  
    'Click me!',    # label  
    [30, 20],       # position  
    [-1, -1],       # default size  
);  
  
# register the OnClick method as a  
# handler for the 'button clicked'  
# event. The first argument is a  
# Wx::EvtHandler to receive the event  
EVT_BUTTON( $self, $button, \&OnClick );
```

# Events

- When the button is clicked a “button clicked” event fires in \$button and goes via the connector EVT\_BUTTON to \$method->OnClick
- Event handlers have two arguments: the event receiver (e.g. button, panel) and an event object

Handler

```
sub OnClick {  
    my( $self, $event ) = @_;  
    $self->SetTitle( 'Clicked' );  
}
```

# Events

- Result



# Using Scintilla editor component

- [www.scintilla.org](http://www.scintilla.org)
- WxWidgets bundles the source and wraps it, so if you want the latest you have to rebuild WxPerl
- Lets you build syntax highlighting editors
- XML, HTML, Perl, C++...
  - For decent documentation see the python docs  
<http://www.yellowbrain.com/stc/index.html>
  - Also  
[http://docs.wxwidgets.org/trunk/classwx\\_styled\\_text\\_ctrl.html](http://docs.wxwidgets.org/trunk/classwx_styled_text_ctrl.html)
- You saw a screenshot of it earlier...



# Further Information

## Documentation

- WxPerl <http://wxperl.sourceforge.net/>
- WxWidgets <http://docs.wxwidgets.org/trunk/>
- XRCed <http://xrccd.sourceforge.net/>
- WxCommunity applications

## Tutorials/Guides

- <http://www.wxwidgets.org/docs/tutorials.htm>
- <http://wxperl.sourceforge.net/tutorial/tutorial.html>
- <http://www.ibm.com/developerworks/library/l-wxwidgets/index.htm>
- <http://padre.perlide.org/wiki/wxWidgets>
- <http://zetcode.com/tutorials/wxwidgetstutorial/> (C++)

Slides at <http://perl.dragonstaff.co.uk>

Thank you. Any questions?