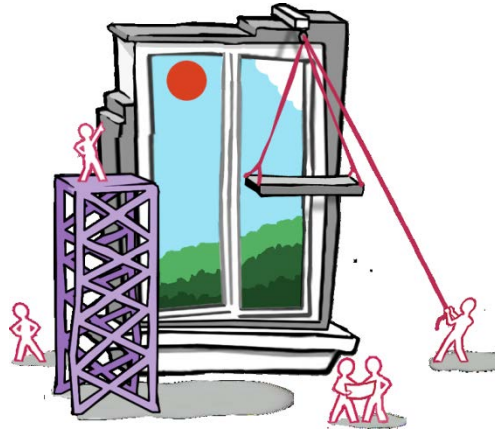




# Building Amazing UIs with WindowBuilder

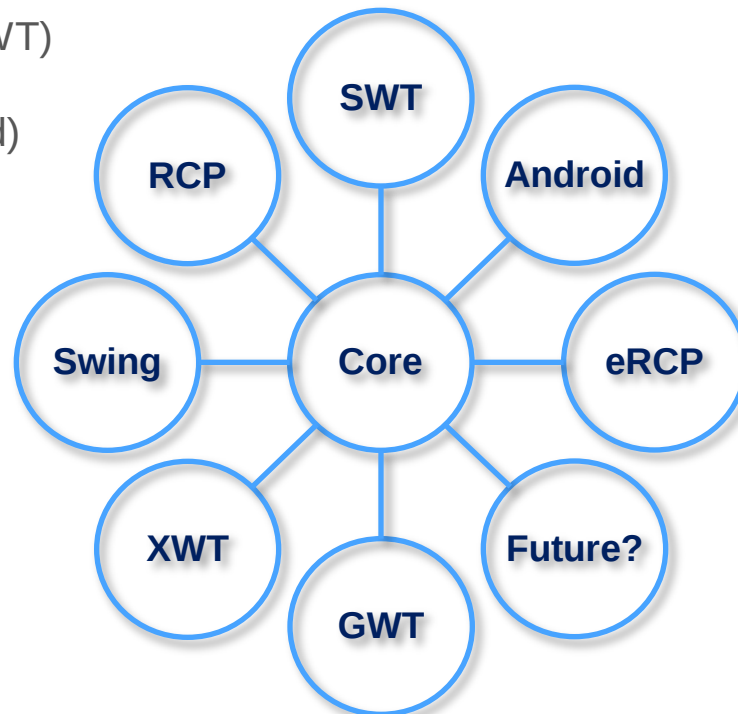
Eclipse Day at the Googleplex 2012  
December 12, 2012

**Eric Clayberg**  
Software Engineering Manager  
Google, Inc.

WindowBuilder has a very long history spanning multiple technologies and companies

- |              |         |                                                                                                                         |                                                                                      |           |  |
|--------------|---------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------|--|
| Smalltalk    | • 1991  | Original release for Smalltalk/V by Cooper & Peters                                                                     |   | Same Team |  |
|              | • 1993  | VisualSmalltalk release by ObjectShare                                                                                  |                                                                                      |           |  |
|              | • 1994  | VisualAge Smalltalk release by ObjectShare                                                                              |                                                                                      |           |  |
|              | 1996    | Briefly owned by ParcPlace-Digitalk                                                                                     |                                                                                      |           |  |
|              | • 1997  | VisualAge Smalltalk release by Instantiations                                                                           |                                                                                      |           |  |
| Eclipse/Java | • 2003  | New Eclipse/Java version for SWT/RCP (SWT Designer)                                                                     |                                                                                      |           |  |
|              | • 2004  | Swing support added (Swing Designer)                                                                                    |                                                                                      |           |  |
|              | • 2006  | Google Web Toolkit (GWT) support added (GWT Designer)                                                                   |                                                                                      |           |  |
|              | • 2009  | Eclipse community award for Best Commercial Add-on                                                                      |  |           |  |
|              | • 2010  | Acquired by Google and released free to the world                                                                       |                                                                                      |           |  |
|              | • 2011+ | Contributed to Eclipse.org as new open-source project;<br>Part of Indigo & Juno release trains (Eclipse 3.7, 3.8 & 4.2) |                                                                                      |           |  |

- Available now from <http://www.eclipse.org/windowbuilder>
- Composed of WindowBuilder Engine, SWT, eRCP, XWT & Swing Designer
- WindowBuilder Engine provides a rich API for creating UI designers
  - Very modular with dozens of extension points
  - Pluggable support for different languages and parsers
  - Java-based UI frameworks (e.g., Swing, SWT/RCP, eRCP, GWT)
  - XML-based UI frameworks (e.g., XWT, GWT UiBinder, Android)
- Exemplary tool examples:
  - SWT Designer
  - Swing Designer
  - eRCP Designer
  - XWT Designer
- 3<sup>rd</sup> Party Tools
  - JBuilder Swing Designer
  - GWT Designer
  - Android Designer

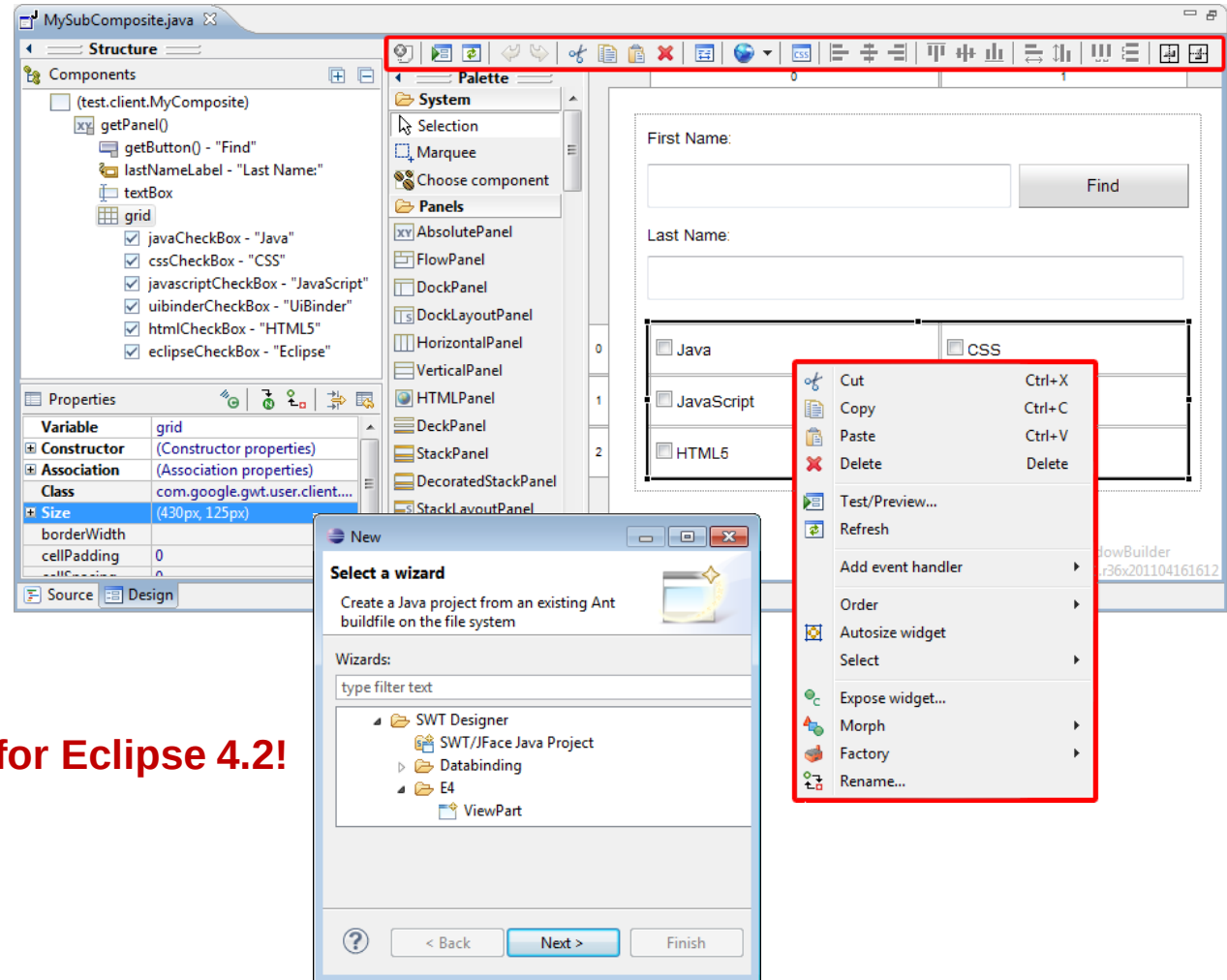


# User Interface



WindowBuilder is composed of the following major components

- Source View
- Design View
- Component Tree
- Property Pane
- Palette
- Wizards
- Toolbars & Context Menus



**New e4 ViewPart wizard for Eclipse 4.2!**

WindowBuilder supports many state-of-the-art features

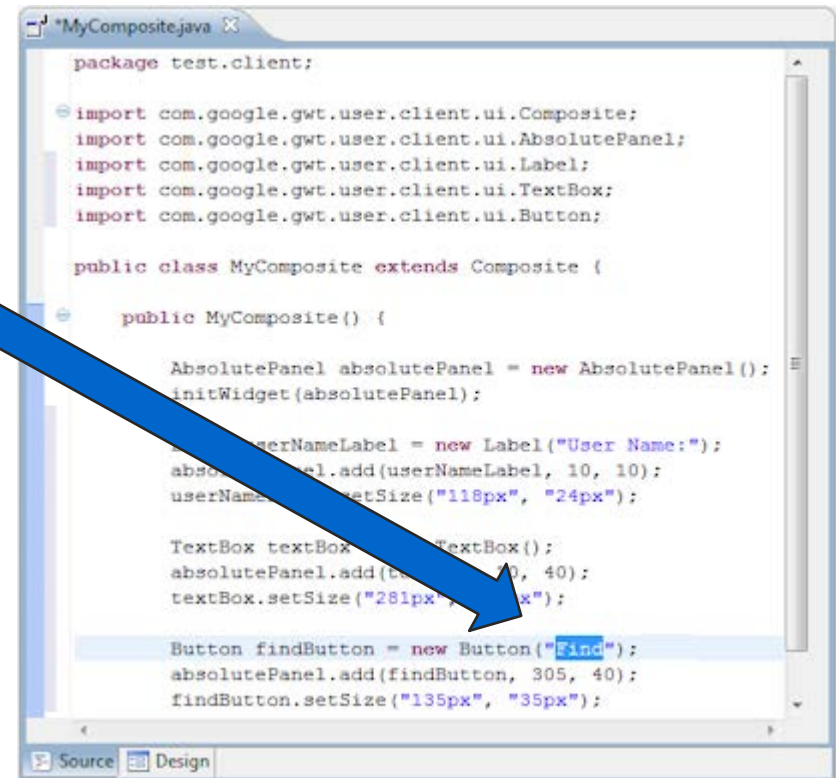
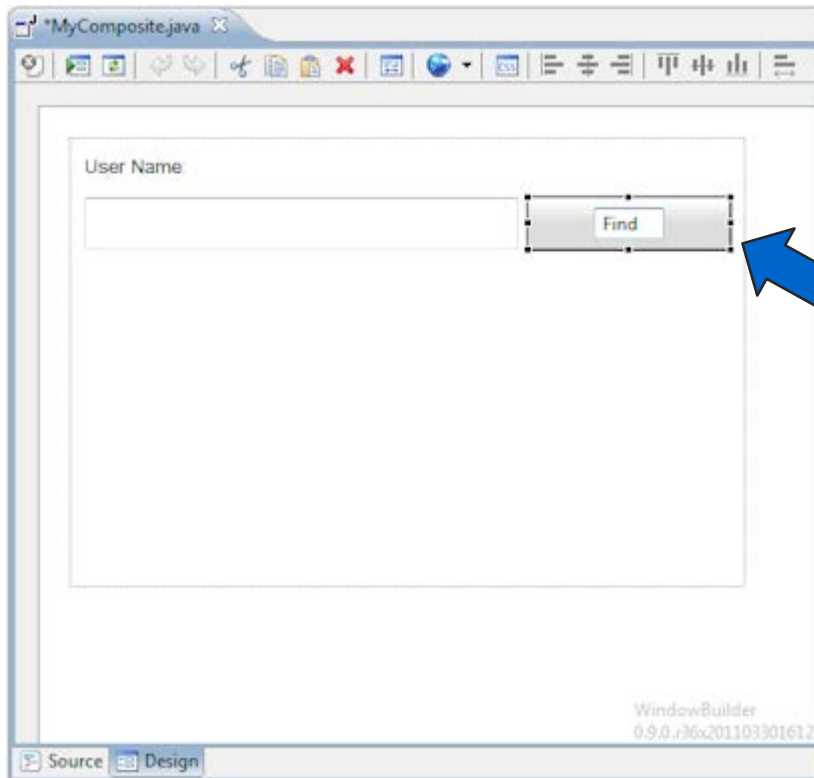
- WYSIWYG & Bi-directional Code Generation
- Powerful & Flexible Code Parser
- Read & Write Any Format or Style
- Internationalization
- Visual Inheritance
- UI Factories
- Morphing
- Widgets & Layout Managers
- Graphical Menu Editing
- Data Binding



# WYSIWYG & Bi-directional Code Generation



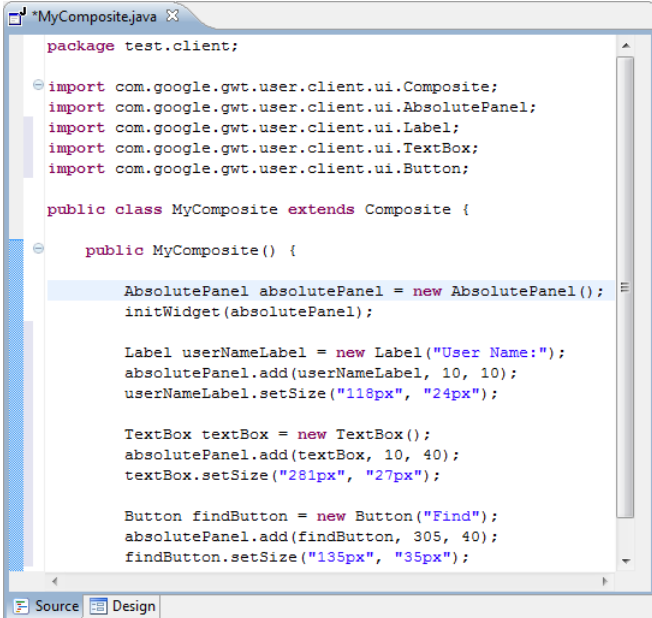
- WYSIWYG editing in design view
- Bi-directional Code Generation
- Micro edits result in smallest possible code change



# Powerful & Flexible Code Parser



- Can parse its own code and code written by hand
- No protected code blocks
- Understands data flow
- Ignores & preserves non-UI code
- Refactoring friendly and resilient to hand-made changes
- One-to-one relationship between UI and Java/XML code
- No intermediate metadata file to get lost or out of sync



```
package test.client;

import com.google.gwt.user.client.ui.Composite;
import com.google.gwt.user.client.ui.AbsolutePanel;
import com.google.gwt.user.client.ui.Label;
import com.google.gwt.user.client.ui.TextBox;
import com.google.gwt.user.client.ui.Button;

public class MyComposite extends Composite {

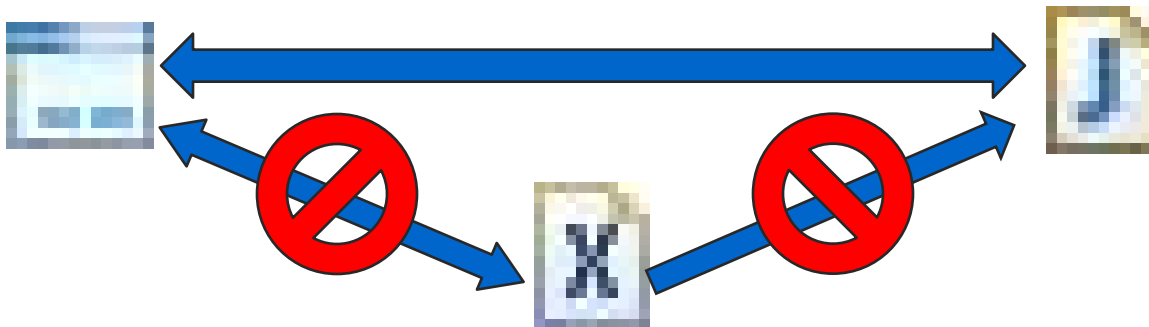
    public MyComposite() {

        AbsolutePanel absolutePanel = new AbsolutePanel();
        initWidget(absolutepanel);

        Label userNameLabel = new Label("User Name:");
        absolutePanel.add(userNameLabel, 10, 10);
        userNameLabel.setSize("118px", "24px");

        TextBox textBox = new TextBox();
        absolutePanel.add(textBox, 10, 40);
        textBox.setSize("281px", "27px");

        Button findButton = new Button("Find");
        absolutePanel.add(findButton, 305, 40);
        findButton.setSize("135px", "35px");
    }
}
```



# Read & Write Any Format or Style



Window > Preferences > WindowBuilder > GWT | Swing | SWT > Code Generation

- Local variables vs. Fields
- Flat vs. Block
- Initialized fields
- Lazy declaration

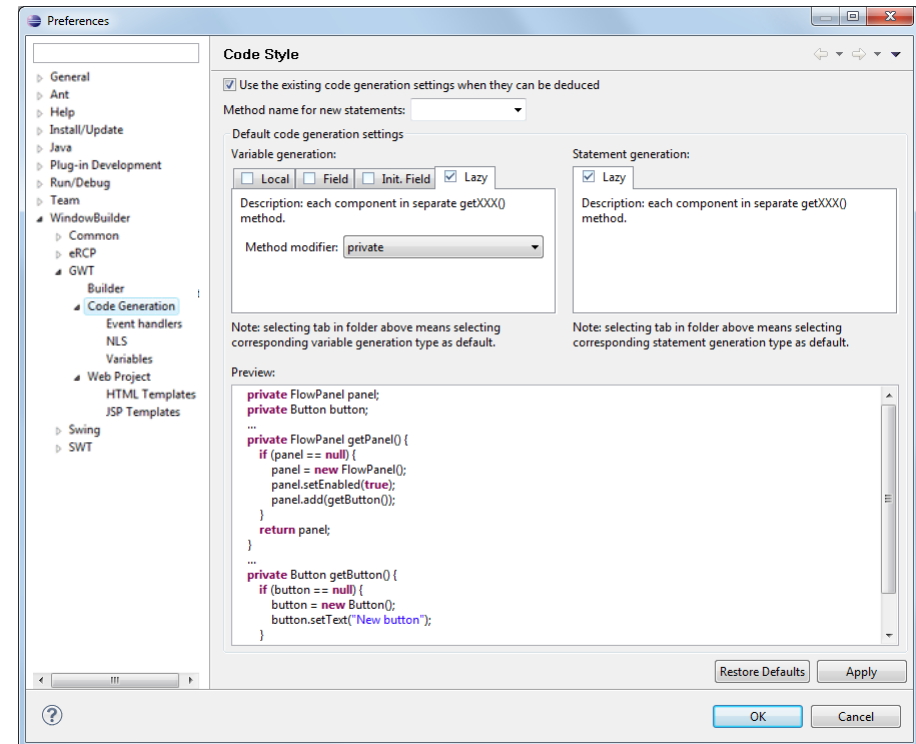
```
...  
FlowPanel panel = new FlowPanel();  
panel.setEnabled(true);  
  
Button button = new Button();  
button.setText("Add customer...");  
panel.add(button);  
...
```

```
{  
    FlowPanel panel = new FlowPanel();  
    panel.setEnabled(true);  
    {  
        Button button = new Button();  
        button.setText("Add customer...");  
        panel.add(button);  
    }  
    ...  
}
```

```
private FlowPanel panel;  
private Button button;  
...  
private FlowPanel getPanel() {  
    if (panel == null) {  
        panel = new FlowPanel();  
        panel.setEnabled(true);  
        panel.add(getButton());  
    }  
    return panel;  
}  
...  
private Button getButton() {  
    if (button == null) {  
        button = new Button();  
        button.setText("New button");  
    }  
    return button;  
}
```

```
private final FlowPanel panel = new FlowPanel();  
private final Button button = new Button();  
...  
panel.setEnabled(true);  
  
panel.add(button);  
button.setText("Add customer...");  
...
```

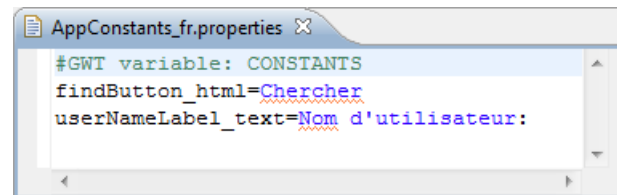
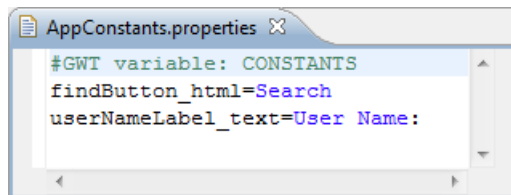
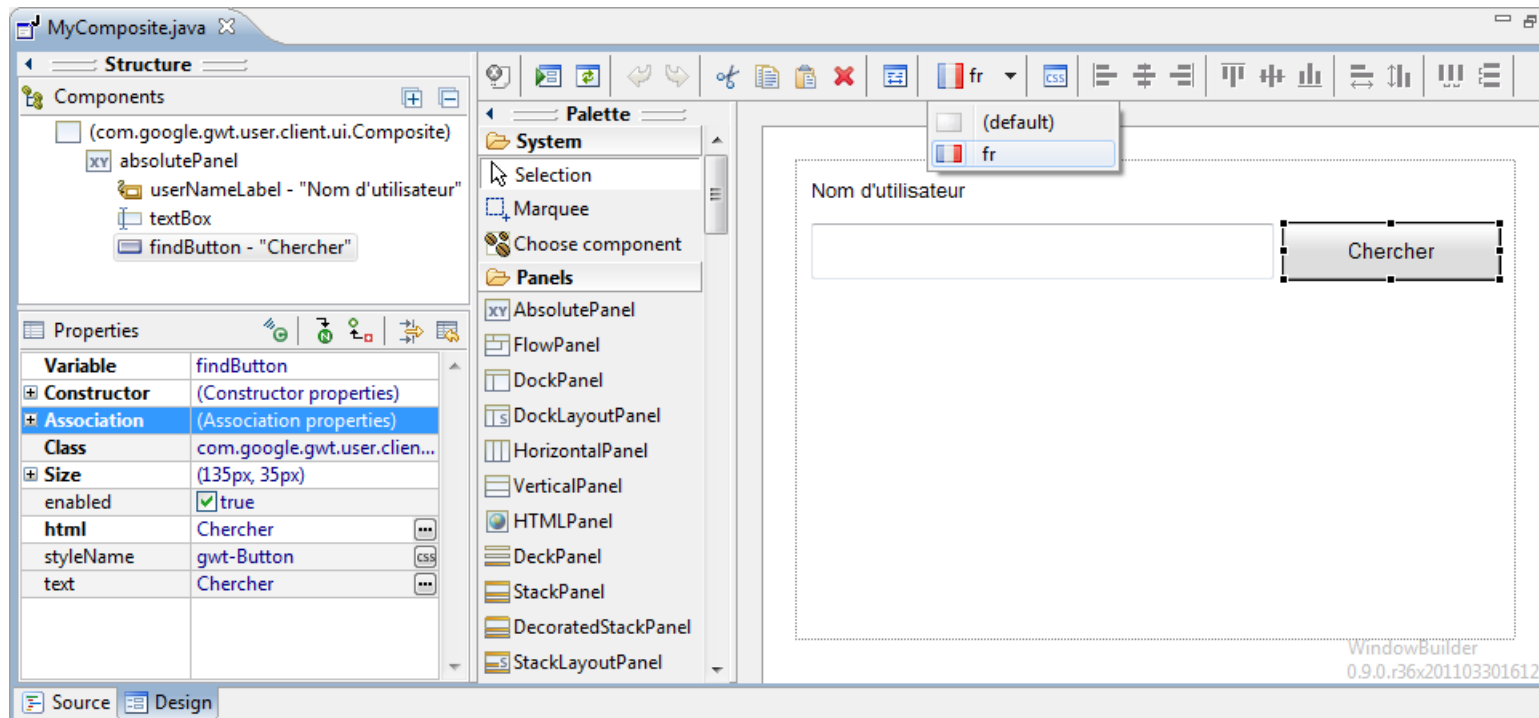
```
private FlowPanel panel;  
private Button button;  
...  
panel = new FlowPanel();  
panel.setEnabled(true);  
  
button = new Button();  
button.setText("Add customer...");  
panel.add(button);  
...
```



# Internationalization



Offers easy-to-use Internationalization and Localization tools

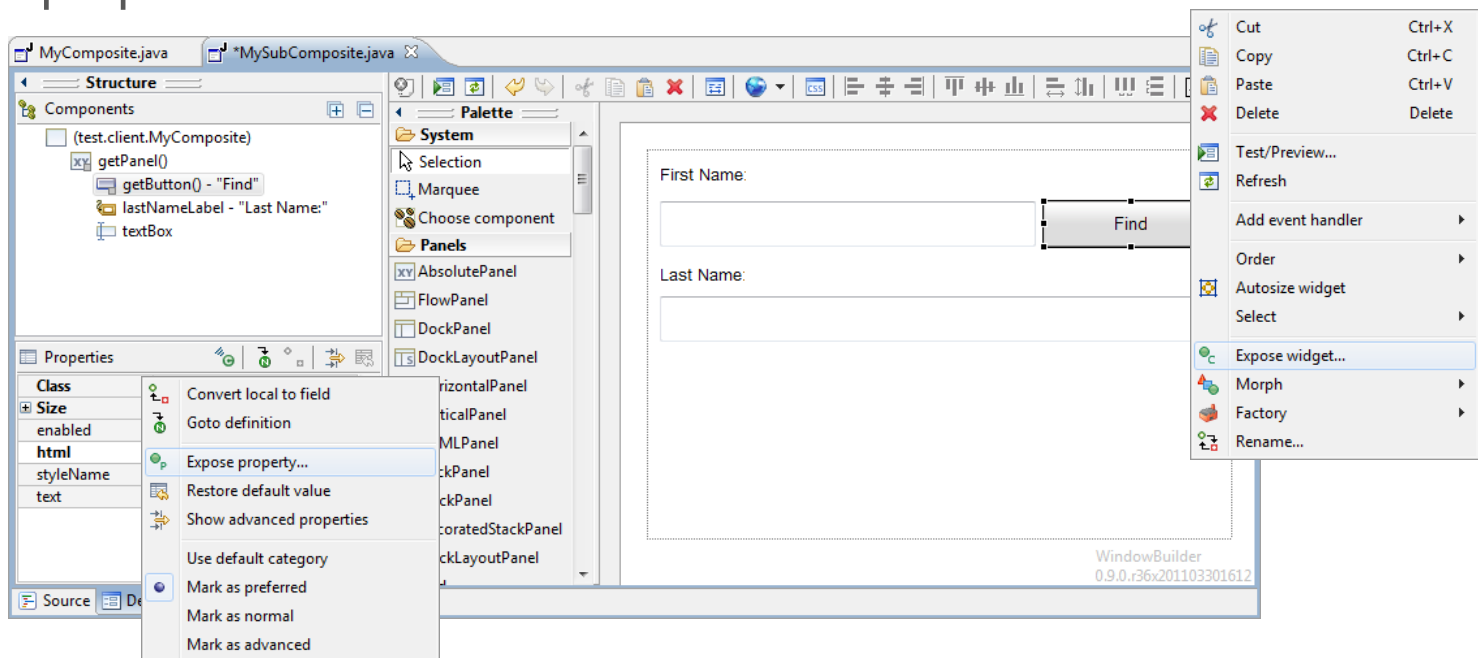


# Visual Inheritance



Provides visual inheritance so that code features can be easily inherited from a parent – child hierarchy

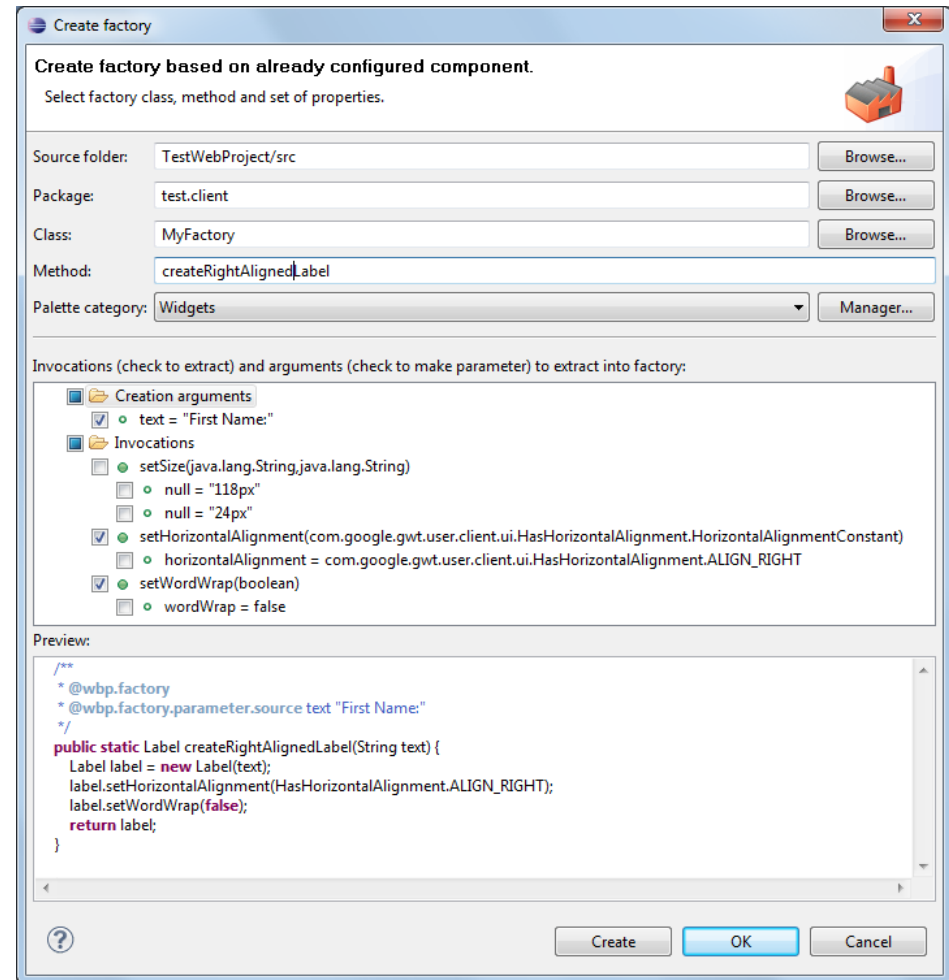
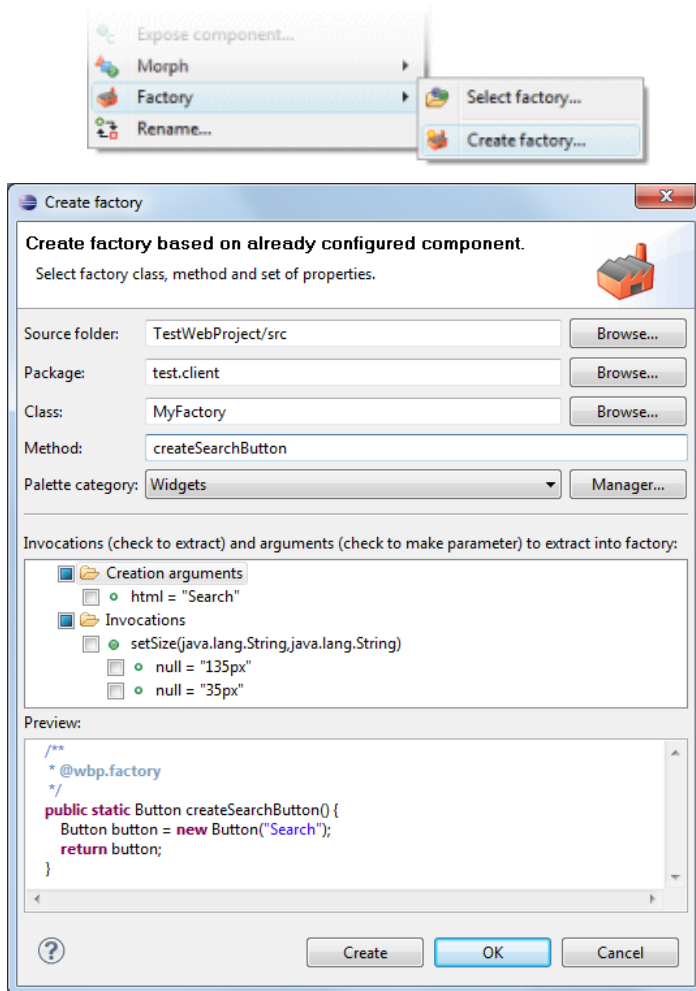
- Easily expose fields and properties
- Add components & event handlers to inherited fields
- Change public properties of inherited components
- Change properties of inherited fields



# UI Factories

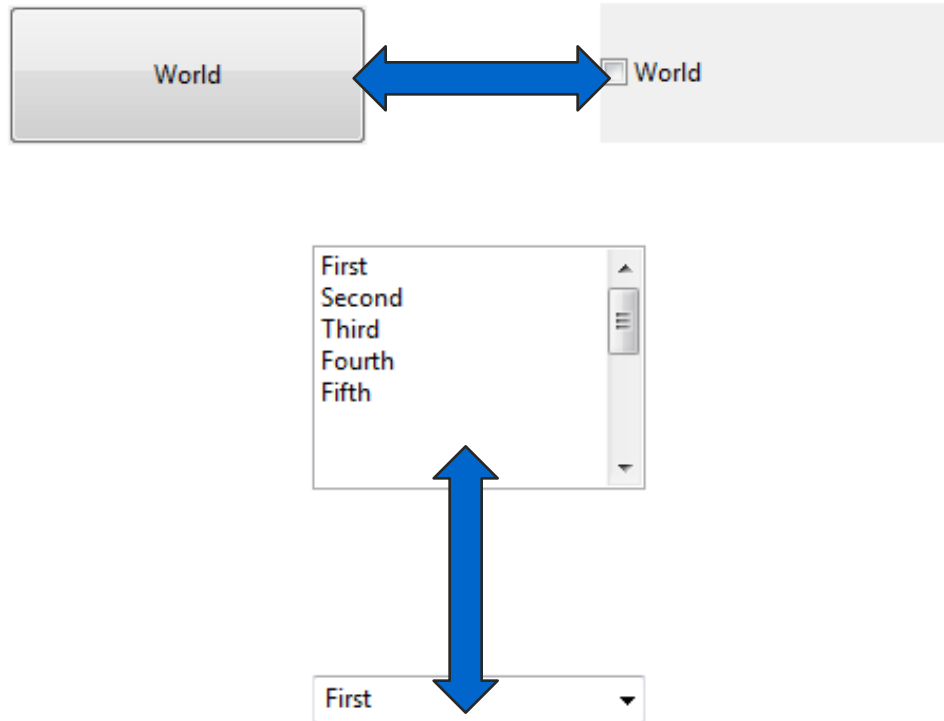


## Support for UI Factories and reusable customized GUI elements



# Morphing

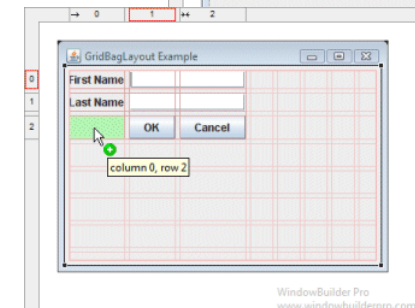
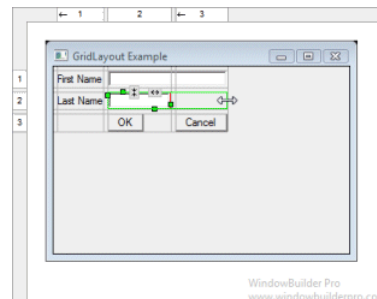
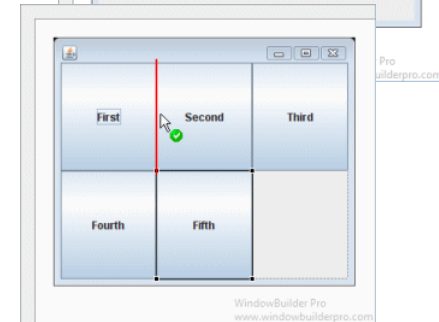
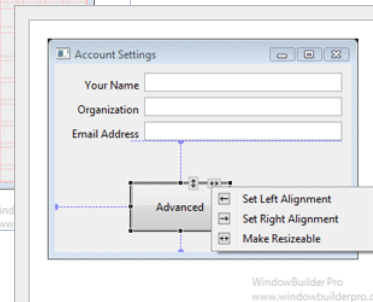
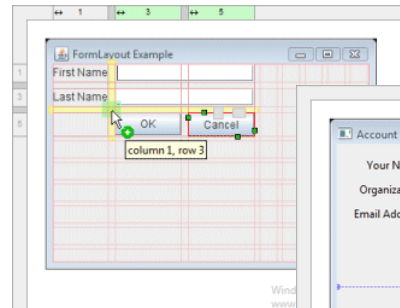
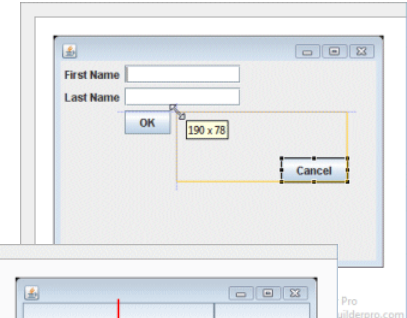
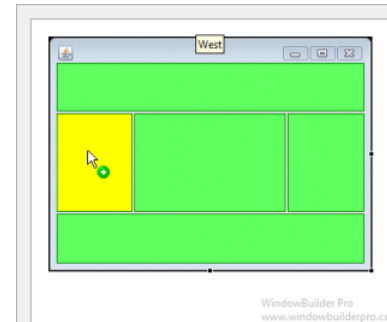
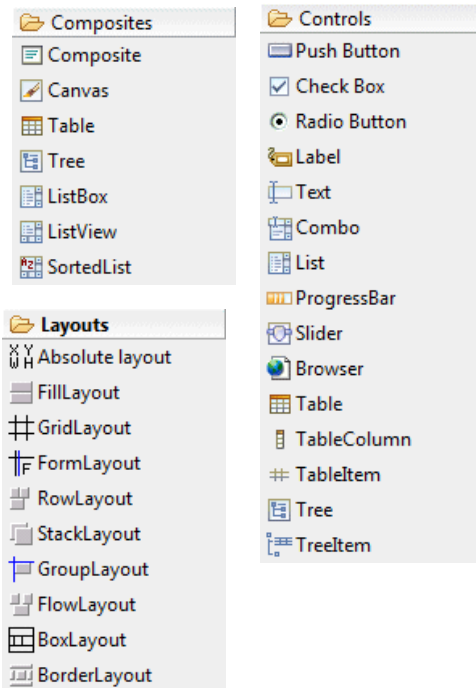
Provides a Morphing tool to easily change one widget type into another



# Widgets & Layout Managers



Fully supports all standard widgets and layout managers as well as select third-party widgets and layout managers

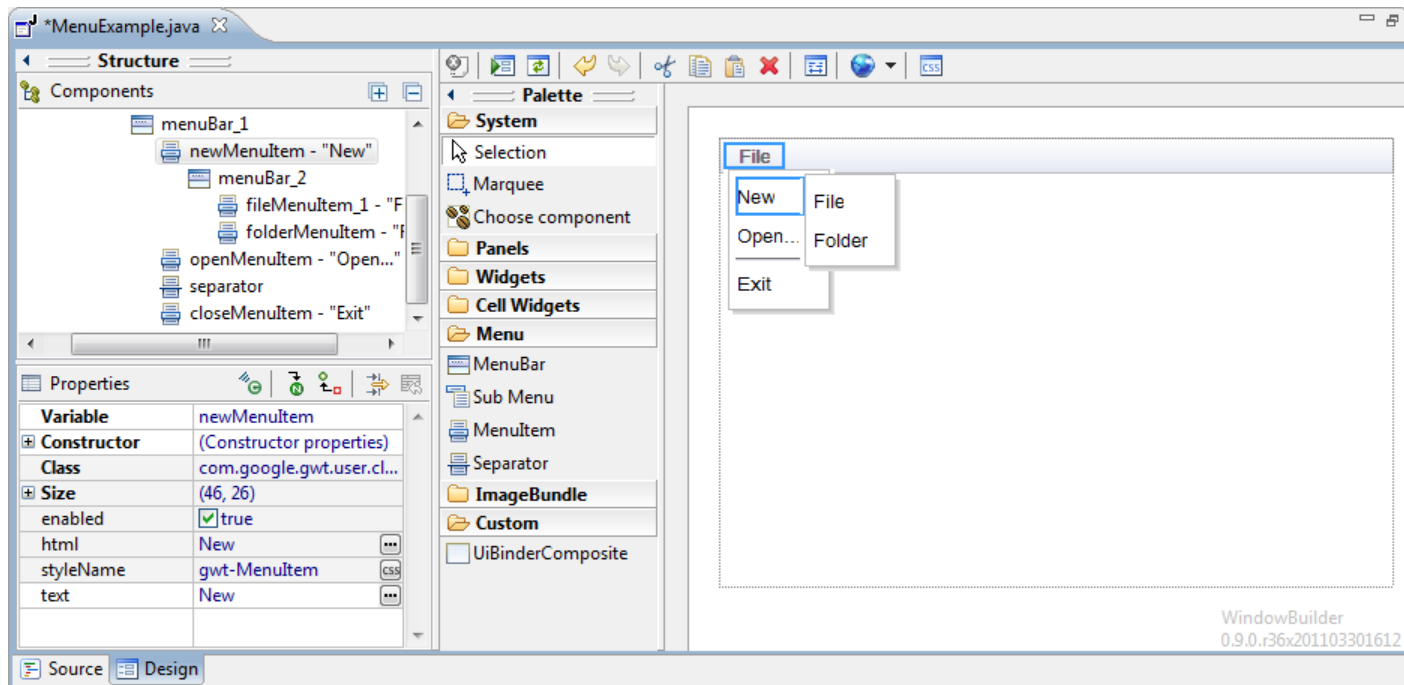
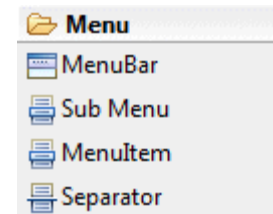


# Graphical Menu Editing



## Supports WYSIWYG Graphical Menu Editing

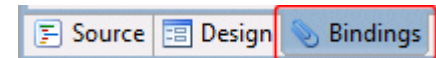
- Graphical edit menubars and menuitems
- Use drag/drop to rearrange menus
- Direct edit menu labels



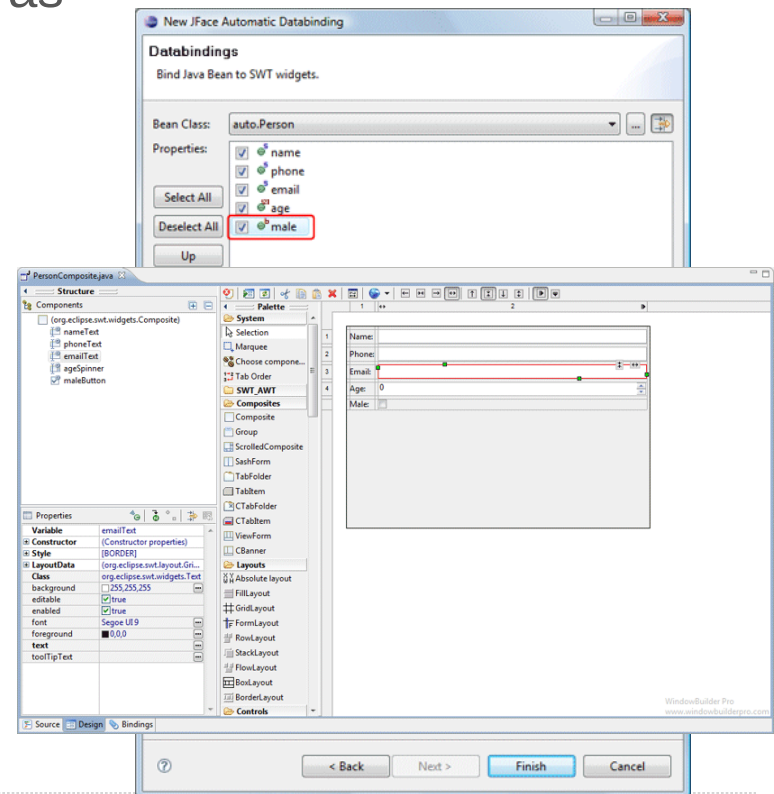
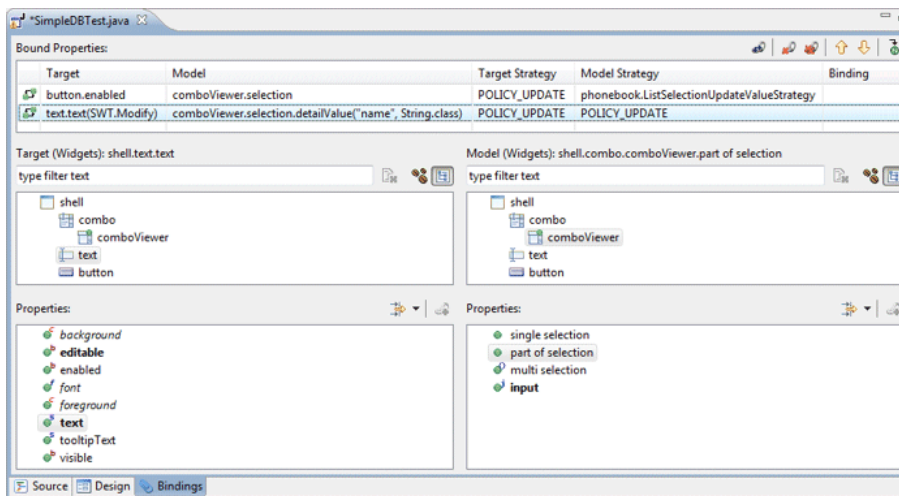
# Data Binding



Supports binding UI elements and model elements



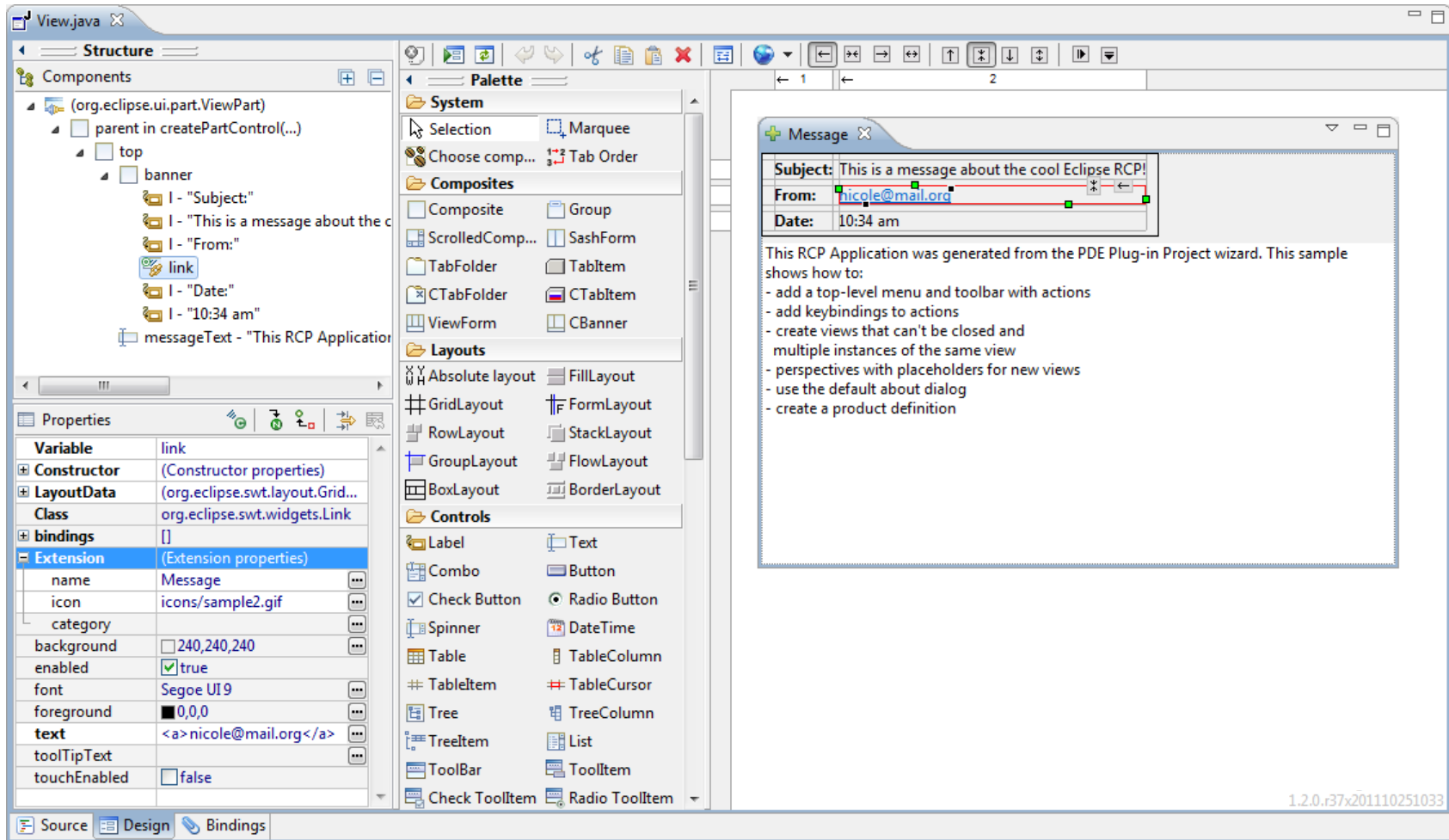
- No need to write and register listeners
- Common infrastructure for validation and conversion
- Connect data sources to widgets such as text fields, combos, tables and trees, for viewing and editing
- Manual and automatic tools provided



# Gallery – SWT Designer



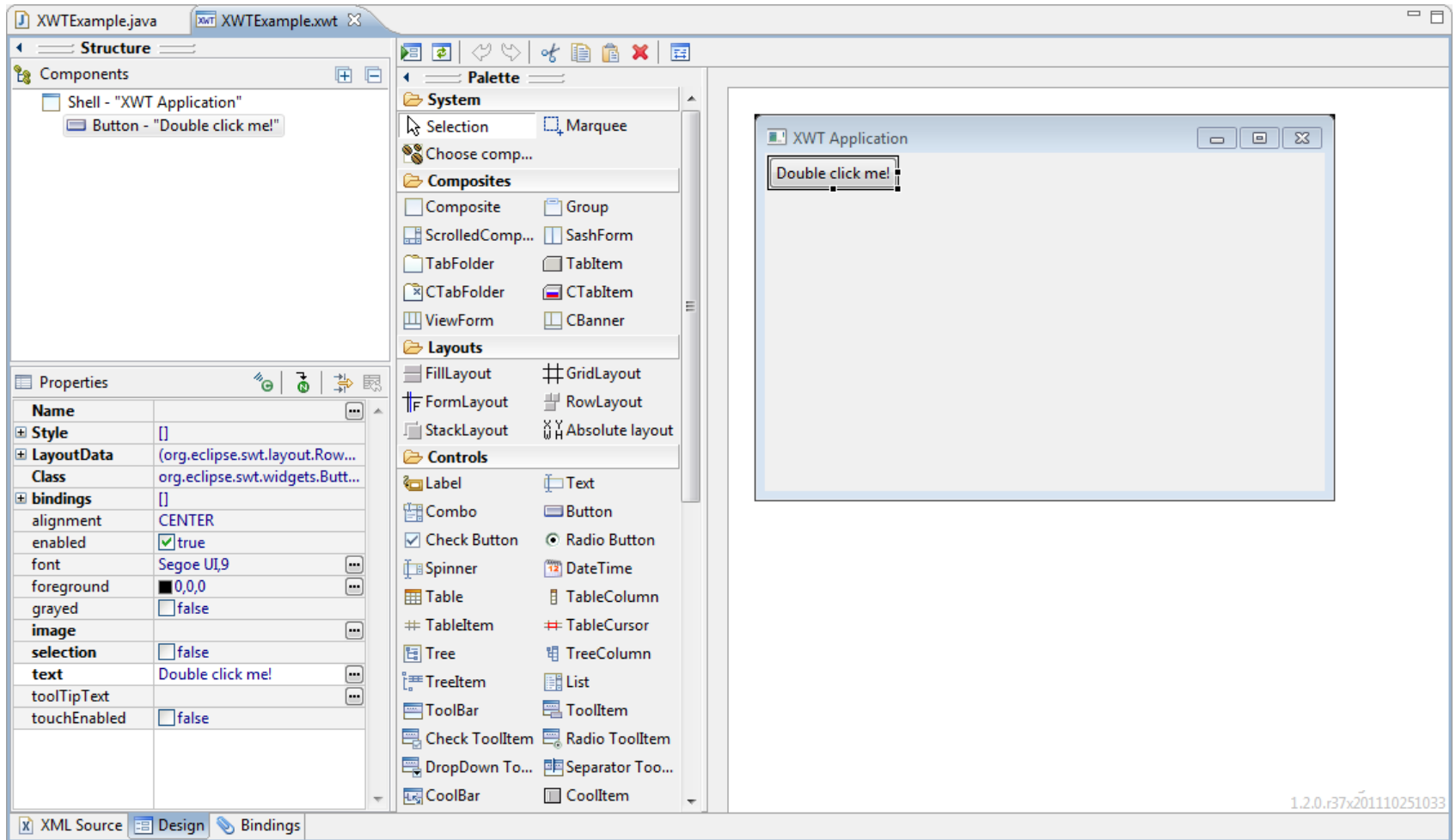
<http://eclipse.org/windowbuilder/>



# Gallery – XWT Designer

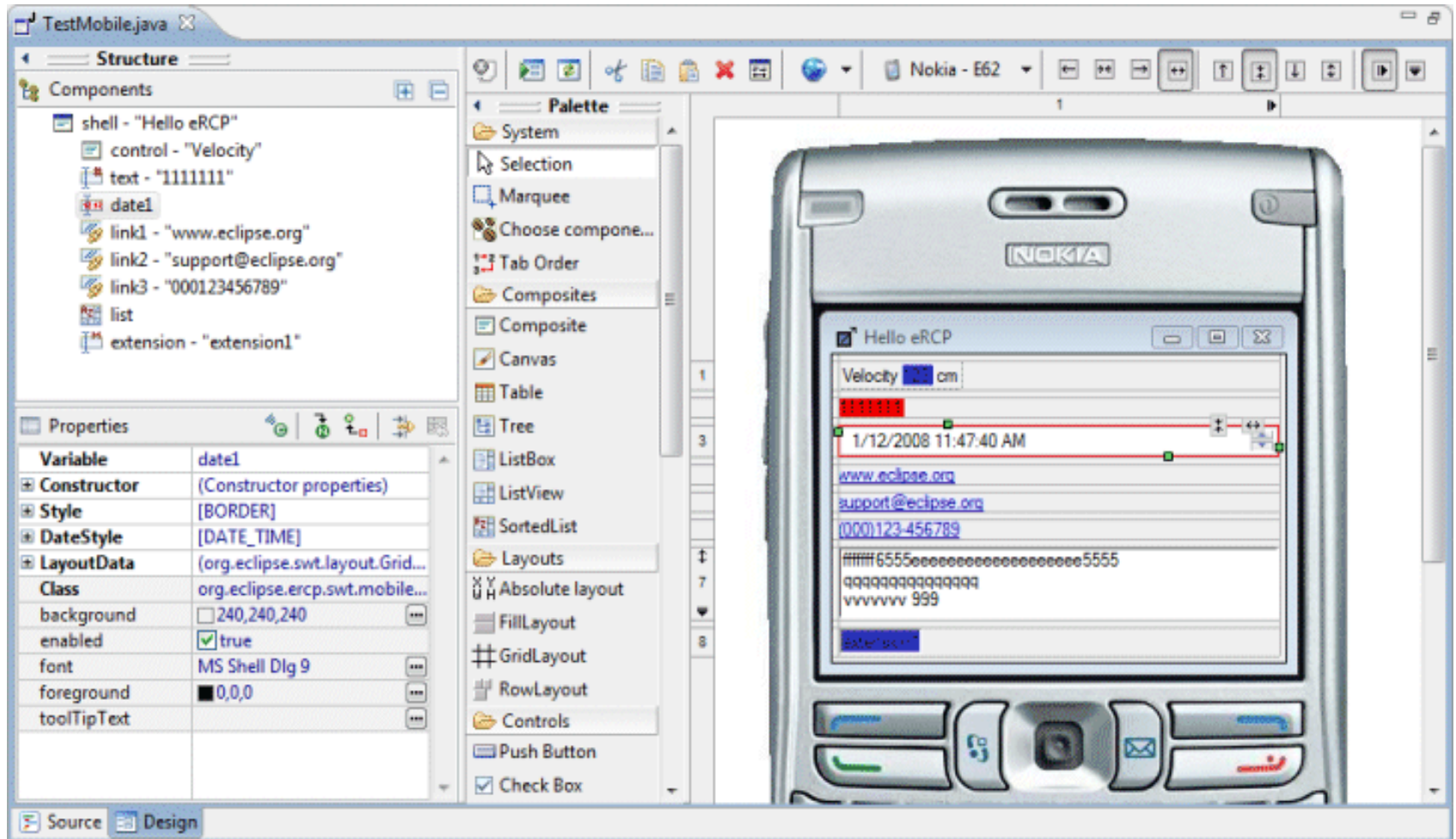


<http://eclipse.org/windowbuilder/>



# Gallery – eRCP Designer

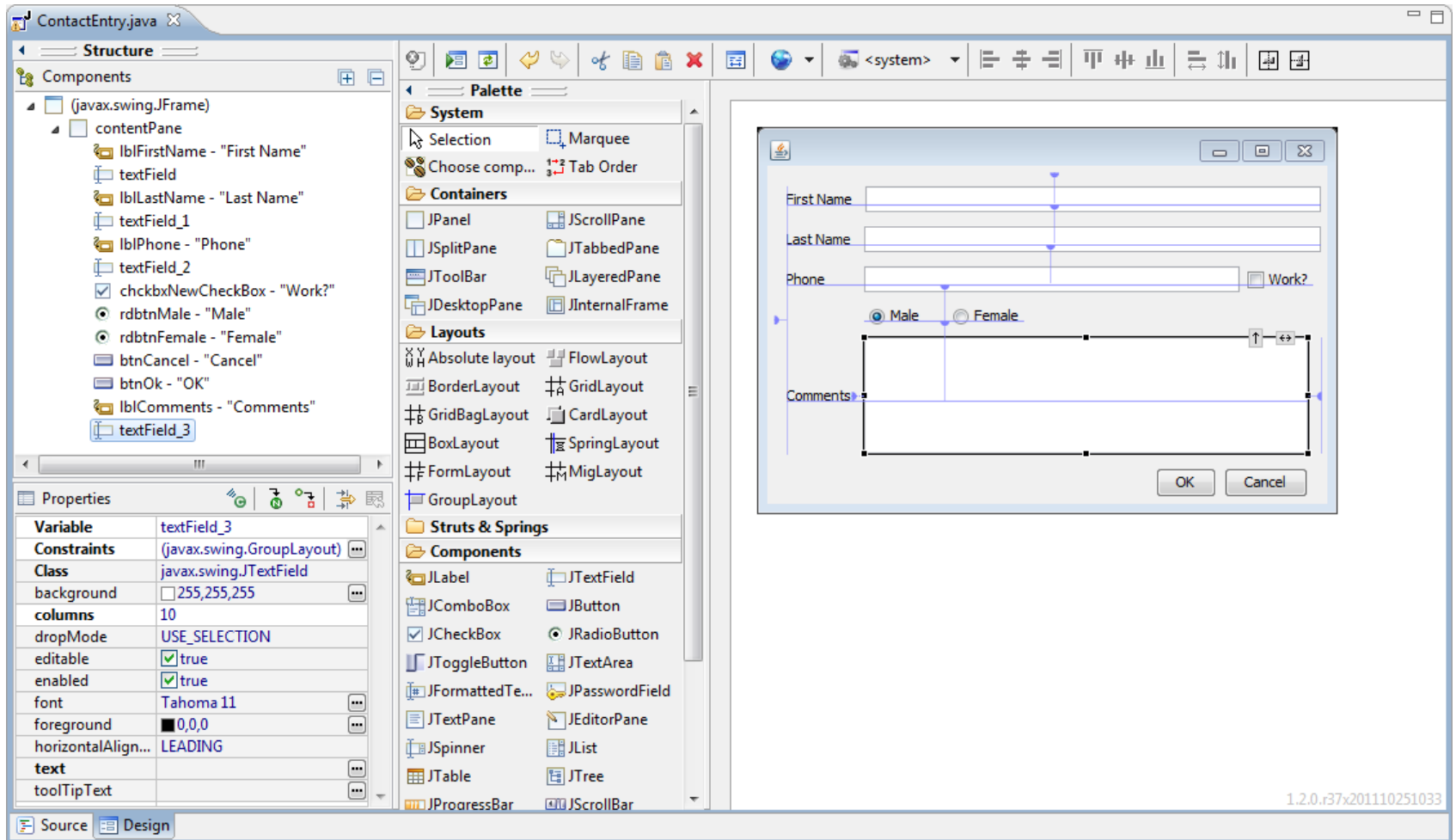
<http://eclipse.org/windowbuilder/>



# Gallery – Swing Designer



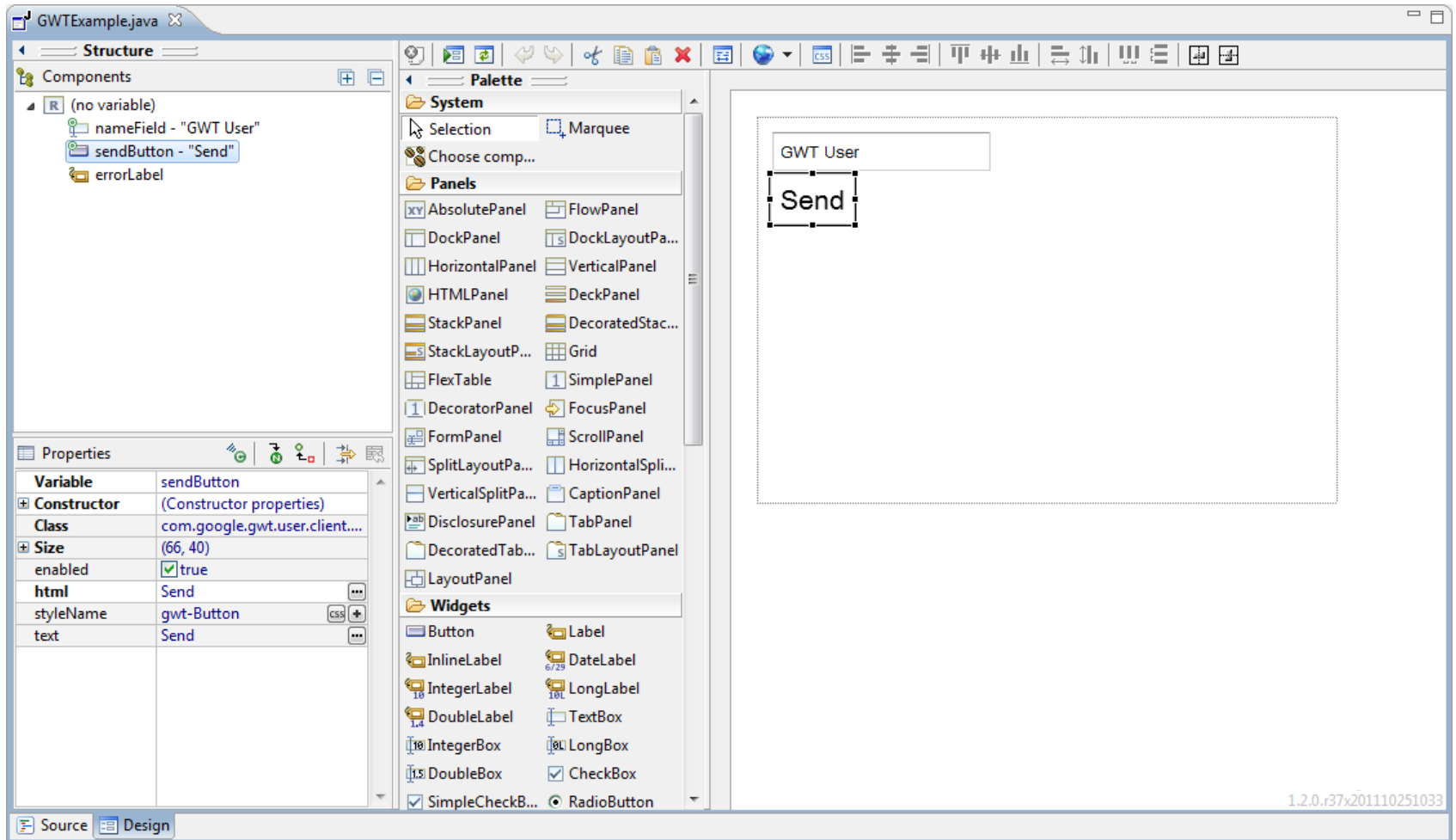
<http://eclipse.org/windowbuilder/>



# Gallery – GWT Designer



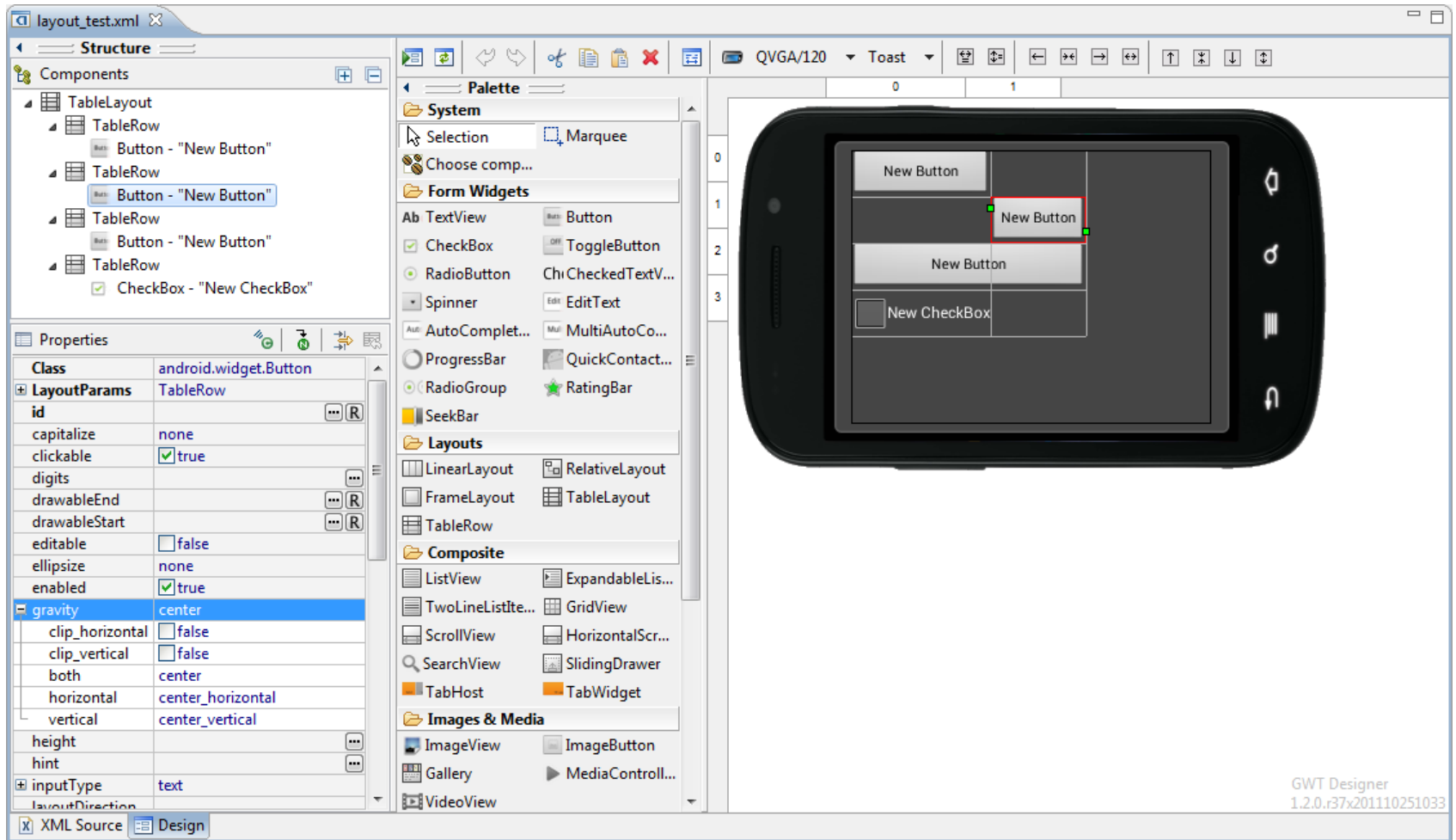
<http://code.google.com/p/gwt-designer/>



# Gallery – Android Designer



<http://code.google.com/a/eclipselabs.org/p/android-designer>



# Get More Info

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Where to get it:

<http://eclipse.org/windowbuilder/download.php>

<https://developers.google.com/java-dev-tools/download>

<https://developers.google.com/web-toolkit/tools/download-gwt-designer>

<http://code.google.com/a/eclipselabs.org/p/android-designer/downloads>

Documentation:

<https://developers.google.com/java-dev-tools/wbpro/>

Issue tracker, source:

<https://bugs.eclipse.org/bugs/> → Tools > WindowBuilder

<http://dev.eclipse.org/svnroot/tools/org.eclipse.windowbuilder>

<https://svn.codespot.com/a/eclipselabs.org/windowbuilder-extras/trunk>

Forum:

[http://eclipse.org/forums/index.php?t=thread&frm\\_id=214](http://eclipse.org/forums/index.php?t=thread&frm_id=214)

