RadDiagram For Silverlight and WPF

This tutorial will introduce the RadDiagram control, part of the Telerik suite of XAML controls.

Setting Up The Project

To begin, open Visual Studio and click on the Telerik menu option. Under *Rad Controls For Silverlight* click on *Create New Telerik Project*. Name your project, accept Silverlight 5 and in the Project Configuration Wizard dialog check *Diagram* (notice that the dependent references are automatically checked as well), as shown in figure 1.

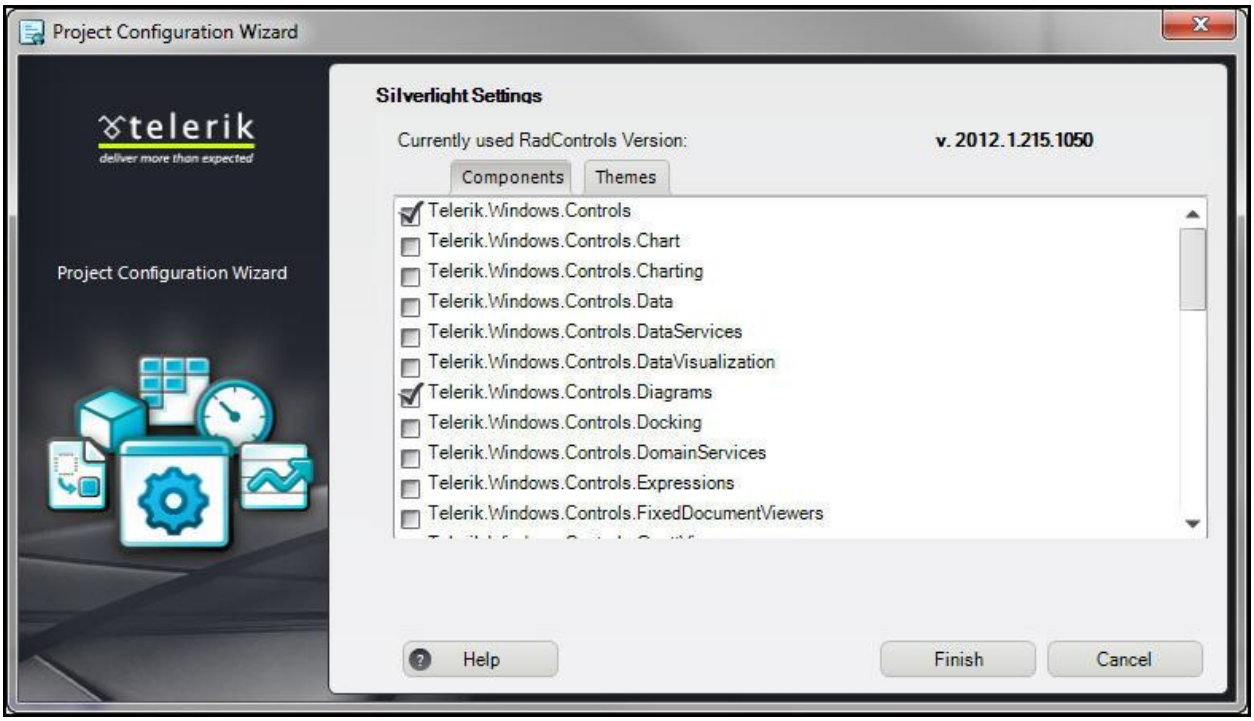

Figure 1

When you click ok, the necessary assemblies are added to the References as shown in figure 2

Note: If you do not have Windows.Controls.Diagrams.Expression.Design installed on your computer you will get a warning that the Design Time may be broken. You can safely ignore this warning for this example.

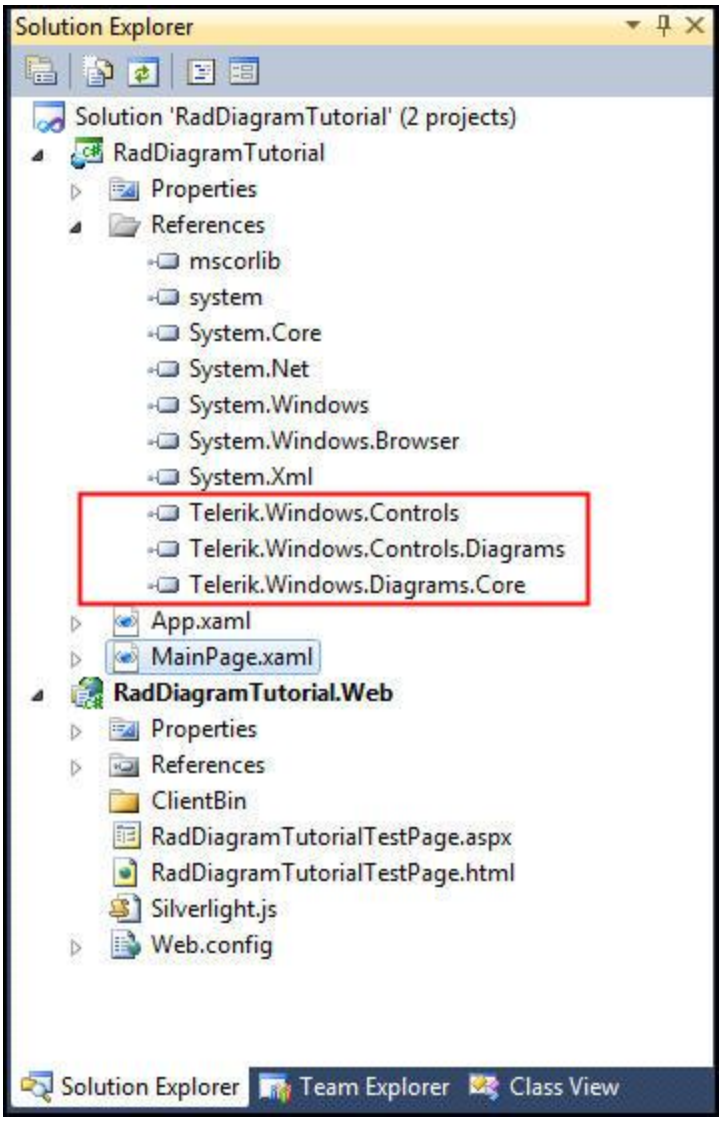

Figure 2

Your application will open to MainPage.xaml and, thanks to the Telerik Visual Studio extensions, the namespace t*elerik* will already have been created in the XAML heading.

```
<UserControl x:Class="RadBarCode.GettingStarted.MainPage"
             xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
             xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
             xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
             xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
             xmlns:telerik="http://schemas.telerik.com/2008/xaml/presentation"
             mc:Ignorable="d" d:DesignWidth="640" d:DesignHeight="480">
```

To begin, add the Xaml for an instance of the RadDiagram,

```
        <telerik:RadDiagram Name="xRadDiagram" Margin="9,0,0,0">
```

```
        </telerik:RadDiagram>
```

You'll see that the designer immediately creates a grid as the background for the diagram.

Let's add a number of shapes to the diagram,

```
<telerik:RadDiagram Name="xRadDiagram" Margin="9,0,0,0">
    <telerik:RadDiagramShape Content="Diagram #1" Position="-400,-200" />
    <telerik:RadDiagramShape Content="Diagram #2" Position="-200,-200" />
    <telerik:RadDiagramShape Content="Diagram #3" Position="-100,-100" Name="s1" />
    <telerik:RadDiagramShape Content="Diagram #4" Position="100,100"  Name="s2"/>
    <telerik:RadDiagramShape Content="Diagram #5" Position="100,0"  Name="s3"/>
    <telerik:RadDiagramShape Content="Diagram #6" Position="50,50"  Name="s4"/>
</telerik:RadDiagram>
```

Note that some of the shapes are positioned outside of the window.

Our next step is to connect some of the shapes together.

```
<telerik:RadDiagramConnection
   Source="{Binding ElementName=s1}" Target="{Binding ElementName=s2}" />
```

Note that we use Element Binding to bind the source to the target.

If we run the application we can zoom in and out on the diagram using the mouse wheel, but we can't move the elements around. To get started with panning and more, drag three buttons to the bottom of the diagram,

```
        <Button Content="Connector" Height="23" HorizontalAlignment="Left"
Margin="29,437,0,0" Name="Connector" VerticalAlignment="Top" Width="75"
Click="Connector_Click" />
        <Button Content="Pan" Height="23" HorizontalAlignment="Left" Margin="110,437,0,0"
Name="Pan" VerticalAlignment="Top" Width="75" Click="Pan_Click" />
        <Button Content="Pointer" Height="23" HorizontalAlignment="Left"
Margin="191,437,0,0" Name="Pointer" VerticalAlignment="Top" Width="75"
Click="Pointer_Click" />
```

Add a click event for each of the three buttons. Add a MouseTool as the ActiveTool for each of the three event handlers,

```
private void Connector_Click(object sender, RoutedEventArgs e)
{
    xRadDiagram.ActiveTool = MouseTool.ConnectorTool;

}

private void Pan_Click(object sender, RoutedEventArgs e)
{
    xRadDiagram.ActiveTool = MouseTool.PanTool;
```

```
}

private void Pointer_Click(object sender, RoutedEventArgs e)
{
    xRadDiagram.ActiveTool = MouseTool.PointerTool;

}
```

Run the application and click on the Pan button. You'll be able to drag the entire diagram against the background. You can pan the RadDiagram by holding control and moving the mouse and you can zoom in and out with the mouse button. For additional keyboard shortcuts see http://www.telerik.com/help/silverlight/raddiagrams-features-shortcuts.html

If you click on the connector tool, you'll notice connector points showing on whichever shape you hover the mouse over, and you can drag connector lines between the shapes as shown in figure 3

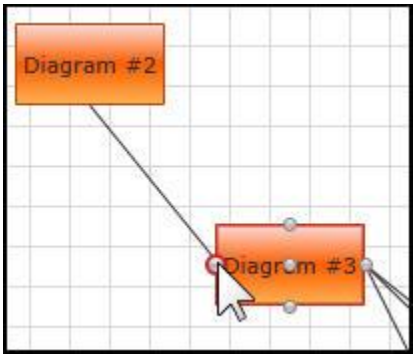

Figure 3

Click on the pointer button and then double click on a shape to edit its data, or grab its rotation marker, and change the angle of the shape, as shown in figure 4,

Figure 4

Editing The Diagram

Allowing Copy, Paste, Cut and Delete is as simple as setting the appropriate attributes on the RadDiagram control itself,

```
<telerik:RadDiagram
    Name="xRadDiagram"
    Margin="9,0,0,0"
    AllowCopy="True"
    AllowCut="True"
    AllowPaste="True"
    AllowDelete="True">
```

Once you've added these attributes, run the application, pan the shapes into place and click on a shape. Hit control-C and Silverlight will ask if you want to allow the web application to access the clipboard. Click Yes, and you can copy that shape and paste it elsewhere on the diagram, as shown in figure 5,

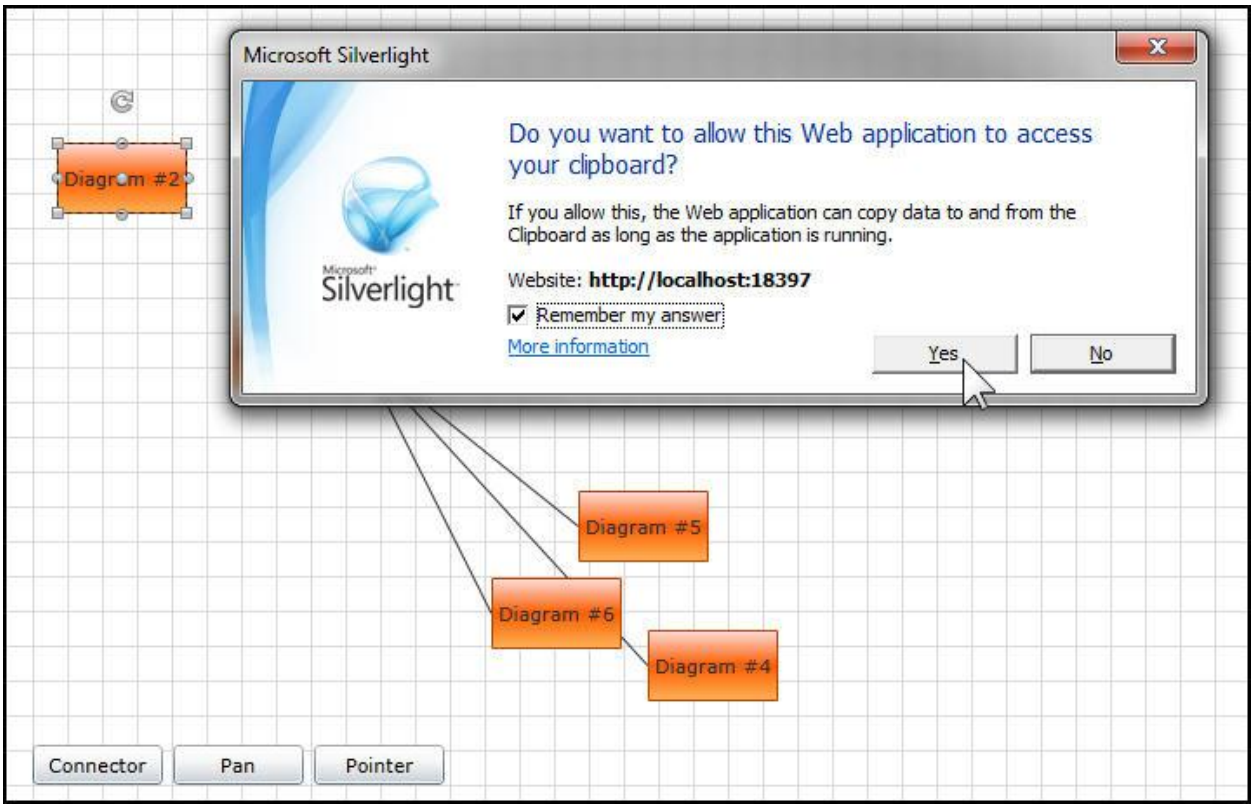

Figure 5

Custom Shape

You can add your own shapes to the diagram by generating the shape in, e.g., Expression Blend and then grabbing the resulting path. Note that in the following custom shape the path is broken up across multiple lines to fit in this posting, but you will want the path to be on a single line with no carriage returns or line feeds,

```
<telerik:RadDiagramShape Geometry="M9.4136295,2.4576555E-05 C14.800209,-0.013108866
21.555286,5.2417045 22.176739,5.7343717 L22.197632,5.7509871 L22.217262,5.7353773
C22.838715,5.2427092 29.593792,-0.012109431 34.98037,0.0010241366 C35.357132,0.0019429834
35.727203,0.028634096 36.088013,0.084530063 C42.004845,1.0011631 47.504379,6.5009952
42.3377,16.251131 C37.251743,25.848923 27.320799,36.495747 22.4014,37.30304
L22.224001,37.326874 L22.224001,37.333 L22.22303,37.332958 L22.200874,37.329983
L22.170971,37.334 L22.170465,37.325897 L21.992601,37.301998 C17.073202,36.494705
7.1422567,25.847895 2.056303,16.250114 C-3.1103802,6.4999881 2.3891582,1.0001625
8.3059864,0.083530508 C8.6667957,0.027634615 9.0368671,0.00094353169
9.4136295,2.4576555E-05 z"  Content="Diagram #11" Position="120, 125"/>
```

It turns out that this draws a heart shape. Once this is added to your diagram, this shape can be used like any other, as shown in figure 6,

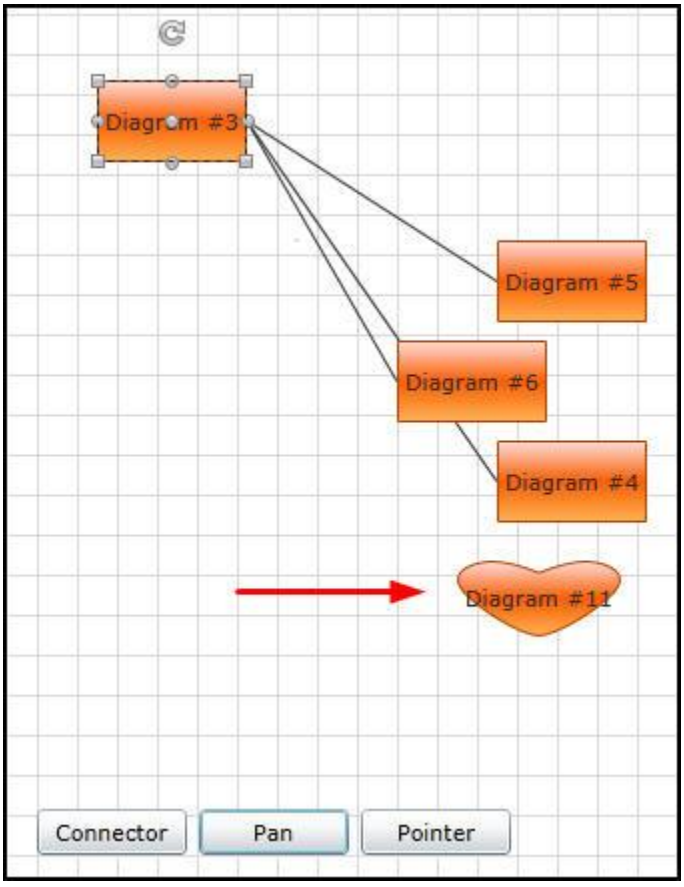

Figure 6

Customizing the Look and Feel

A very simple change we can make is to change the color of the background of the Grid. You do that by adding the background attribute to the RadGridView.

```
<telerik:RadDiagram
    Name="xRadDiagram"
    Margin="9,0,0,0"
    AllowCopy="True"
    AllowCut="True"
    AllowPaste="True"
    AllowDelete="True"
    Background="AntiqueWhite">
```

You can also change the background of any of the individual shapes,

```
<telerik:RadDiagramShape Content="Diagram #4" Background="Aqua" Foreground="Red"
Position="100,100"  Name="s2"/>
```

You can also change the Fontsize, FontFamily, etc.