ComponentOne

Cube for WPF

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Table of Contents

ComponentOne Cube for WPF Overview

ComponentOne Cube™ for WPF provides a 3D rotating cube for innovative navigation in WPF. **Cube for WPF** allows you to present information using a 3D metaphor. **Cube for WPF** includes one control, **C1Cube**, that allows you to put **UIElement** objects on faces of a cube, and then rotate the cube to show one element at a time.

For a list of the latest features added to **ComponentOne Studio for WPF**, visit What's New in Studio for WPF.

This is a legacy product. The **C1Cube** control has been moved into the **C1.WPF.Legacy.dll** assembly and is no longer in active development. You can continue to use this control by updating references to point to the **C1.WPF.Legacy.dll** assembly.

Getting Started

Get started with the following topics:

Help with ComponentOne Studio for WPF

Getting Started

For information on installing **ComponentOne Studio for WPF**, licensing, technical support, namespaces and creating a project with the control, please visit Getting Started with Studio for WPF.

What's New

For a list of the latest features added to **ComponentOne Studio for WPF**, visit What's New in Studio for WPF.

Key Features

ComponentOne Cube for WPF allows you to create customized, rich applications. Make the most of **Cube for WPF** by taking advantage of the following key features:

- **Cube Metaphor**

  Cube enables you to present information innovatively using a familiar mental model – that of a cube, or block.

- **Innovative 3D Navigation**

  Programmatically rotate the cube to show the **UIElement** attached to a specific page. The rotations are animated and visually engaging.

- **Fully Interactive Navigation System**

  Users may interact with and rotate the cube using the mouse. Users can also interact with objects and controls on each cube face.

Cube for WPF Quick Start

The following quick start guide is intended to get you up and running with **Cube for WPF**. In this quick start you'll start in Visual Studio and create a new project, add a **Cube for WPF** control to your application, and customize the appearance and behavior of the control.

Step 1 of 3: Creating the Cube Application

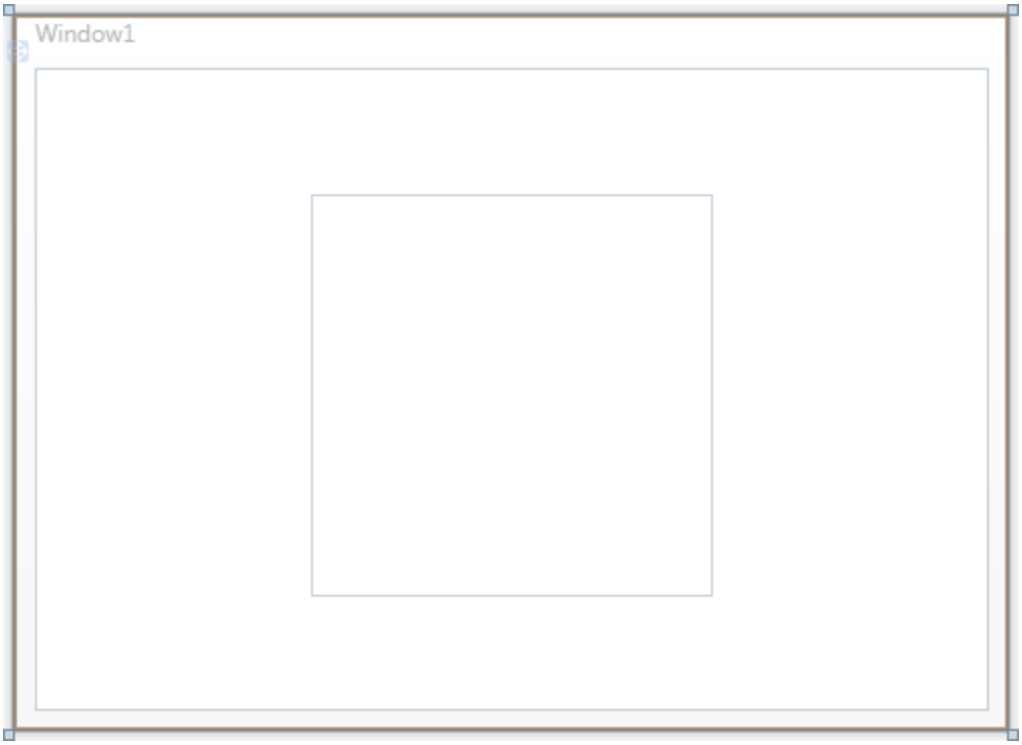
In this step you'll create a WPF application using **Cube for WPF**. When you add a C1Cube control to your application, you'll have a complete, functional cube-like interface that you can add images, controls, and other elements to. To set up your project and add a C1Cube control to your application, complete the following steps:

1. Create a new WPF project in Visual Studio. For more information about creating a WPF project, see Creating a .NET Project in Visual Studio.
2. In the Solution Explorer, right-click the **References** item and choose **Add Reference**. Select the **C1.WPF**, **C1.WPF.Legacy**, and **WPFToolkit** assemblies and click **OK** to add references to your project.
3. Navigate to the Visual Studio Toolbox, and double-click the **C1Cube** icon to add the control to the window.
4. Resize the Window and reposition the **C1Cube** control in the Window.
5. Navigate to the Properties window and set the **C1Cube** control's **Height** and **Width** to **200**.

   The XAML will appear similar to the following:

   ```
   <c1ext:C1Cube Name="C1Cube1" Margin="138,63,138,57" Height="200"
   Width="200" />
   ```

   The page's Design view should now look similar to the following image (with the C1Cube control selected on the form):



You've successfully set up your application's user interface, but if you run your application now a blank window will appear. This is because the C1Cube control currently contains no content. In the next step you'll add content to the C1Cube control, and then you'll add code to your application to add functionality to the control.

Step 2 of 3: Adding Content to the Cube Control

In the previous step you created a WPF application and added the C1Cube control to your project. In this step you'll add content to the C1Cube control. To customize your project and add content to the C1Cube control in your application, complete the following steps:

1. Switch to XAML view. In the next steps you'll add XAML markup to your application to add content to the cube.
2. Add a Grid to the **C1Cube** control, by updating the XAML markup so it appears similar to the following:.

```
<c1ext:C1Cube Name="C1Cube1" Margin="138,63,138,57" Height="200"
Width="200">
    <Grid c1ext:C1Cube.Face="Front">
        <Grid.Background>
            <RadialGradientBrush>
                <GradientStop Color="#FFCF5B49"/>
                <GradientStop Color="#FFA7210D" Offset="1"/>
            </RadialGradientBrush>
        </Grid.Background>
    </Grid>
</c1ext:C1Cube>
```

   You added a grid with a radial gradient background. Notice that the Face property was set in the grid tag. The Face property is an attached property that specifies the face the content appears on. See Cube Face (page 11) for more information.
3. Add the following markup just after the `</Grid>` tag in the XAML markup you just added to add content to each of the cube's faces :

```
<Grid c1ext:C1Cube.Face="Left">
    <Grid.Background>
        <RadialGradientBrush>
            <GradientStop Color="#FF59803A"/>
            <GradientStop Color="#FF315D0E" Offset="1"/>
        </RadialGradientBrush>
    </Grid.Background>
</Grid>
<Grid c1ext:C1Cube.Face="Top">
    <Grid.Background>
        <RadialGradientBrush>
            <GradientStop Color="#FF3EA5CE"/>
            <GradientStop Color="#FF147CA7" Offset="0.996"/>
        </RadialGradientBrush>
    </Grid.Background>
</Grid>
<Grid c1ext:C1Cube.Face="Back">
    <Grid.Background>
        <RadialGradientBrush>
            <GradientStop Color="#FFF0B74C"/>
            <GradientStop Color="#FFF69B04" Offset="1"/>
        </RadialGradientBrush>
    </Grid.Background>
</Grid>
<Grid c1ext:C1Cube.Face="Right">
    <Grid.Background>
        <RadialGradientBrush>
            <GradientStop Color="#FF9A24C3"/>
            <GradientStop Color="#FF5F0080" Offset="1"/>
        </RadialGradientBrush>
    </Grid.Background>
</Grid>
<Grid c1ext:C1Cube.Face="Bottom">
    <Grid.Background>
        <RadialGradientBrush>
            <GradientStop Color="#FFFFEA70"/>
            <GradientStop Color="#FFFFD900" Offset="1"/>
        </RadialGradientBrush>
    </Grid.Background>
</Grid>
```

In this step you added content to the C1Cube control. In the next step you'll further customize the control and run the application to observe run-time interactions.

Step 3 of 3: Running the Cube Application

Now that you've created a WPF application and customized the application's appearance, the only thing left to do is run your application. To run your application and observe **Cube for WPF**'s run-time behavior, and then further customize the control, complete the following steps:

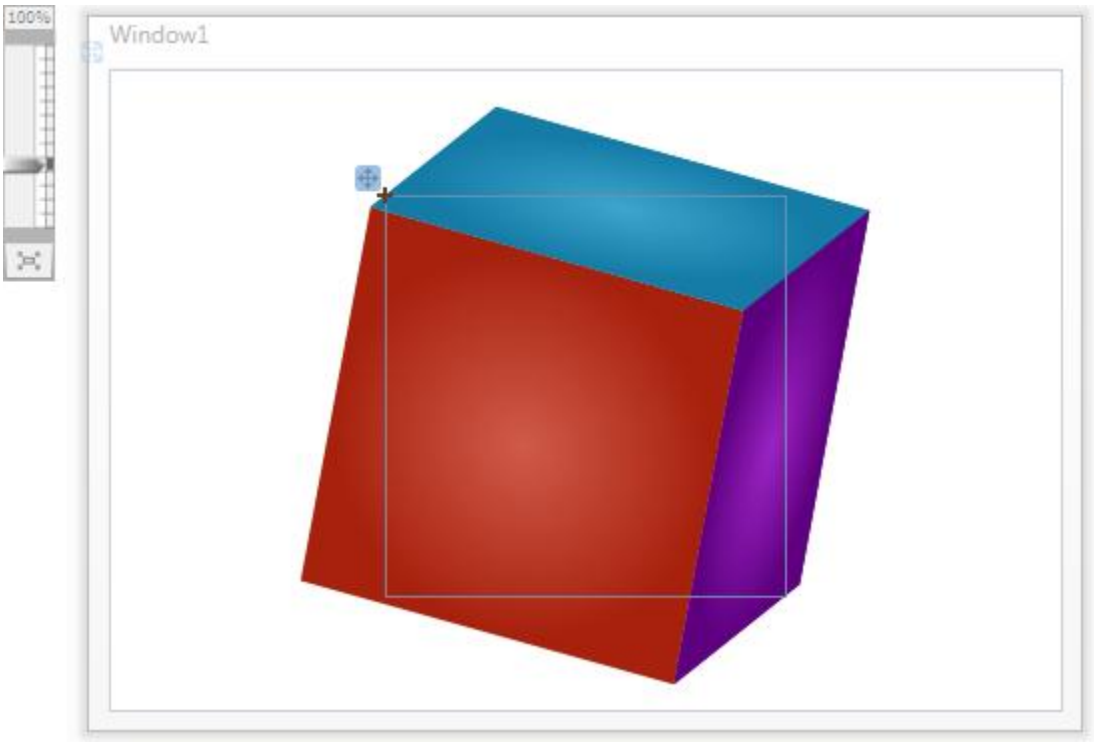
1. From the **Debug** menu, select **Start Debugging** to view how your application will appear at run time.

   The application will appear similar to the following:

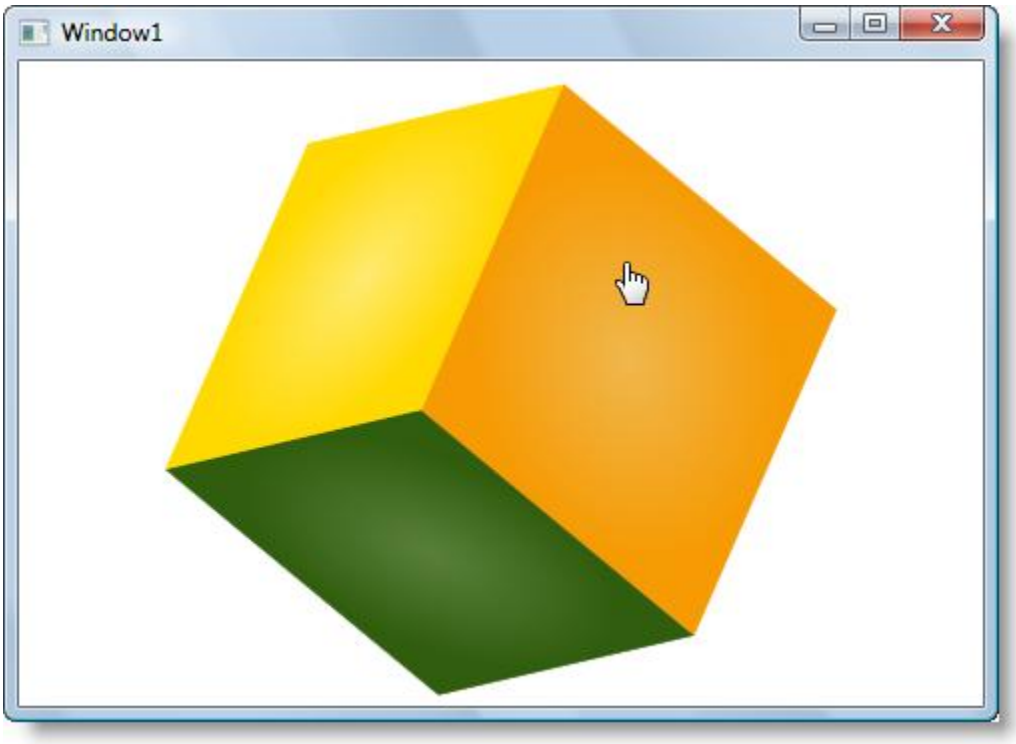
The C1Cube control appears as a simple square. Notice that the red gradient that initially appears is the one added to the Front Face of the cube.

2. Try to click on the C1Cube control to interact with it. Notice that nothing happens. In the next step you'll return to the application to change the initial appearance of the control and make the cube interactive.
3. Close the window and return to the project in Visual Studio.
4. Select **C1Cube1** in Design view and navigate to the Properties window.
5. In the Properties window, check the IsDraggable check box to allow the cube to be dragged at run time.
6. In the Properties window, change the initial angle of the cube by setting the RotationX, RotationY, and RotationZ properties to **15**.

   The control will now appear similar to the following image in Design view:



7. From the **Debug** menu, select **Start Debugging** to view the application. Notice that the cube initially appears at an angle.
8. Click the cube and notice that you can now rotate the cube when performing a drag-and-drop operation:



Congratulations! You've completed the **Cube for WPF** quick start and created a simple WPF application, added and customized a **Cube for WPF** control, and viewed some of the run-time capabilities of the control.

Working with Cube for WPF

ComponentOne Cube for WPF includes the C1Cube control, a simple cube control that acts as a container, allowing you to add controls, images, and more to an interactive and visually engaging cube. When you add the C1Cube control to a XAML window, it exists as a container, similar to a panel, that can be customized and include added content.

The control's interface looks similar to the following image:

In the cube above, controls have been added to each face of the control.

Basic Properties

ComponentOne Cube for WPF includes several properties that allow you to set the functionality of the control. Some of the more important properties are listed below. Note that you can see Cube for WPF Appearance Properties (page 13) for more information about properties that control appearance.

The following properties let you customize the C1Cube control:

Property	Description
IsDraggable	Gets or sets a value indicating whether the cube can be rotated by dragging with the mouse. See Cube Interaction (page 11) for more information and Allowing the Cube to be Dragged (page 21) for an example.
RotationX	Gets or sets the rotation of the cube in the X-axis. See Cube Rotation (page 12) for more information and Changing the Cube's Initial Rotation (page 20) for an example.
RotationY	Gets or sets the rotation of the cube in the Y-axis. See Cube Rotation (page 12) for more information and Changing the

	Cube's Initial Rotation (page 20) for an example.
RotationZ	Gets or sets the rotation of the cube in the Z-axis. See Cube Rotation (page 12) for more information and Changing the Cube's Initial Rotation (page 20) for an example.
ShowFaceDelay	Gets or sets the time in seconds that it takes to go to a new face when the current Face is set. See Showing a Cube Face (page 23) for an example.
Face	An attached property that gets or sets the face of the cube on which an object is placed. See Cube Face (page 11) for more details.

Basic Events

ComponentOne Cube for WPF includes several events that allow you to set interaction and customize the control. Some of the more important events are listed below.

The following events let you customize the C1Cube control:

Event	Description
IsMouseOverChanged	Event raised when the **IsMouseOver** property has changed.
RotationXChanged	Event raised when the RotationX property has changed.
RotationYChanged	Event raised when the RotationY property has changed.
RotationZChanged	Event raised when the RotationZ property has changed.

Basic Methods

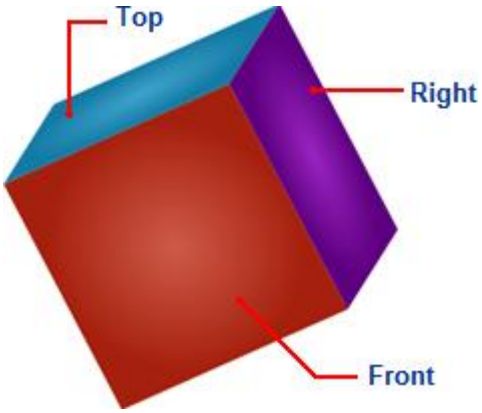
ComponentOne Cube for WPF includes several methods that allow you to set interaction and customize the control. Some of the more important methods are listed below.

The following methods let you customize the C1Cube control:

Method	Description
GetFace	Gets the value of the Face attached property for the specified element.
OnApplyTemplate	Loads the relevant control template so that its parts can be referenced.
Rotate	Rotates the cube. See Cube Rotation (page 12) for more information and Rotating the Cube (page 21) for an example.
RotateTo	Smoothly rotates the cube to a specified position. Rotates the cube. See Cube Rotation (page 12) for more information and Rotating the Cube (page 21) for an example.
SetFace	Sets the value of the Face attached property for the specified element. See Adding Items to a Cube (page 19) for an example.
ShowFace	Smoothly rotates the cube so that a face faces forward. See Showing a Cube Face (page 23) for an example.
ShowItem	Smoothly rotates the cube so that the face an item is in faces forward.

Cube Face

C1Cube, as is typical of cubes, has six faces. To make it easier to define where content is placed, each face is named. Faces are defined as **Front**, **Back**, **Left**, **Right**, **Top**, and **Bottom**. Each face has an opposite face, **Front** and **Back**, **Left** and **Right**, and **Top** and **Bottom** are opposite pairs. By default, the **Front** face is initially visible. In the image below the **Front**, **Top**, and **Right** faces are visible:



You can add content to each of **Cube for WPF**'s faces by using the Face attached property. You would set the face that an item appears, by setting the Face attached property on that item. For example, in the following XAML markup you can see that the button within the C1Cube control is placed on the front face of the cube:

```
<c1ext:C1Cube Name="c1cube1" Height="200">
<Button Content="Click Me!" MinHeight="50" c1ext:C1Cube.Face="Front"/>
</c1ext:C1Cube>
```

You can use the ShowFace method to smoothly rotate the cube so a particular face is facing forward. See Showing a Cube Face (page 23) for an example. You can also use the GetFace and SetFace methods to get or set the value of the Face attached property for the specified element. See Adding Items to a Cube (page 19) for an example.

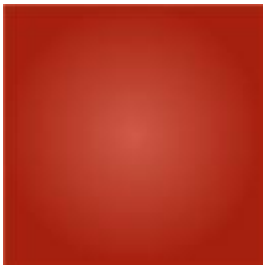
Cube Interaction

Users can interact with items in the cube, or the C1Cube control itself at run time. By default users can interact with controls placed within the cube. For example, if you place a button or drop-down box within the C1Cube control, it will be clickable by users at run time:

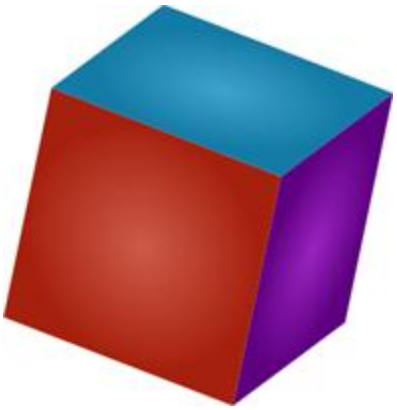
The C1Cube control itself can be dragged and manipulated at run time if the IsDraggable property is set to **True** (by default **False**). When the IsDraggable property is set to **True**, the cube can be rotated at run time by performing a drag-and-drop operation. When IsDraggable is **True**, however, items within the cube by default cannot be interacted with. So, for example, users would not be able to click the drop-down box or button in the image above.

Cube Rotation

The C1Cube control can be rotated on the X, Y, and Z axes. You can control the initial rotation of the cube by setting the RotationX, RotationY, and RotationZ properties. By default all three properties are set to **0** and only the front face of the cube is visible:



When the RotationX, RotationY, and RotationZ properties are all set to **20**, however, the cube appears at an angle and three faces are visible:



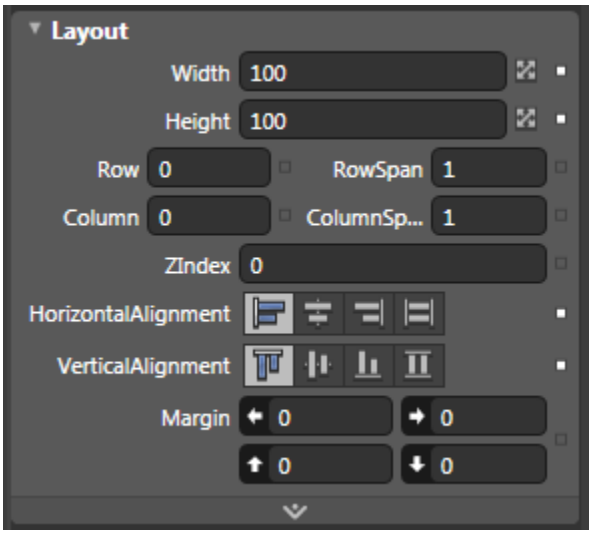
You can also use the Rotate and RotateTo methods to rotate or smoothly rotate the cube to a specific angle. You can also use the RotationXChanged, RotationYChanged, and RotationZChanged events to customize what happens when the cube is rotated.

Cube for WPF Layout and Appearance

The following topics detail how to customize the C1Cube control's layout and appearance. You can use built-in layout options to lay your controls out in panels such as Grids or Canvases. Themes allow you to customize the appearance of the grid and take advantage of WPF's XAML-based styling. You can also use templates to format and lay out the control and to customize the control's actions.

Layout in a Panel

You can easily lay out the C1Cube and other controls in your WPF application, using the attached layout properties. For example, you can lay out your control in a **Grid** panel with its **Row**, **ColumnSpan**, and **RowSpan** properties and in a **Canvas** panel with its **Left** and **Top** properties. For example, the C1Cube control includes the following **Layout** properties when located within a **Grid** panel:



You can change the sizing, alignment, and location of the C1Cube control within the **Grid** panel.

Cube for WPF Appearance Properties

ComponentOne Cube for WPF includes several properties that allow you to customize the appearance of the control. You can change the color, border, and height of the control. The following topics describe some of these appearance properties.

Color Properties

The following properties let you customize the colors used in the control itself:

Property	Description
Background	Gets or sets a brush that describes the background of a control. This is a dependency property.

Alignment Properties

The following properties let you customize the control's alignment:

Property	Description
HorizontalAlignment	Gets or sets the horizontal alignment characteristics applied to this element when it is composed within a parent element, such as a panel or items control. This is a dependency property.

VerticalAlignment	Gets or sets the vertical alignment characteristics applied to this element when it is composed within a parent element such as a panel or items control. This is a dependency property.

Border Properties

The following properties let you customize the control's border:

Property	Description
BorderBrush	Gets or sets a brush that describes the border background of a control. This is a dependency property.
BorderThickness	Gets or sets the border thickness of a control. This is a dependency property.

Size Properties

The following properties let you customize the size of the control:

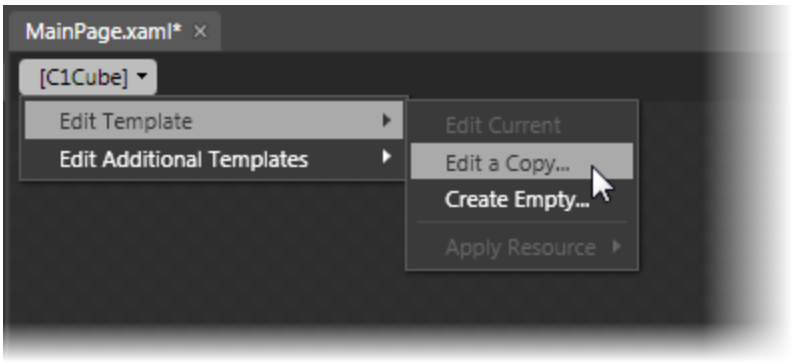
Property	Description
Height	Gets or sets the suggested height of the element. This is a dependency property.
MaxHeight	Gets or sets the maximum height constraint of the element. This is a dependency property.
MaxWidth	Gets or sets the maximum width constraint of the element. This is a dependency property.
MinHeight	Gets or sets the minimum height constraint of the element. This is a dependency property.
MinWidth	Gets or sets the minimum width constraint of the element. This is a dependency property.
Width	Gets or sets the width of the element. This is a dependency property.

Cube Templates

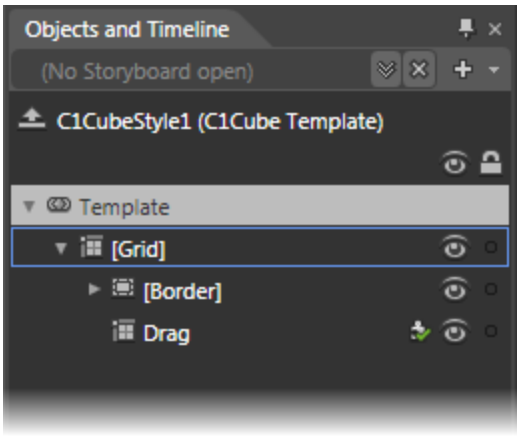
One of the main advantages to using a WPF control is that controls are "lookless" with a fully customizable user interface. Just as you design your own user interface (UI), or look and feel, for WPF applications, you can provide your own UI for data managed by **ComponentOne Cube for WPF**. Extensible Application Markup Language (XAML; pronounced "Zammel"), an XML-based declarative language, offers a simple approach to designing your UI without having to write code.

Accessing Templates

You can access templates in Microsoft Expression Blend by selecting the C1Cube control and, in the menu, selecting **Edit Template**. Select **Edit a Copy** to create an editable copy of the current template or **Create Empty**, to create a new blank template.



Once you've created a new template, the template will appear in the **Objects and Timeline** window:



Note: If you create a new template through the menu, the template will automatically be linked to that template's property. If you manually create a template in XAML you will have to link the appropriate template property to the template you've created.

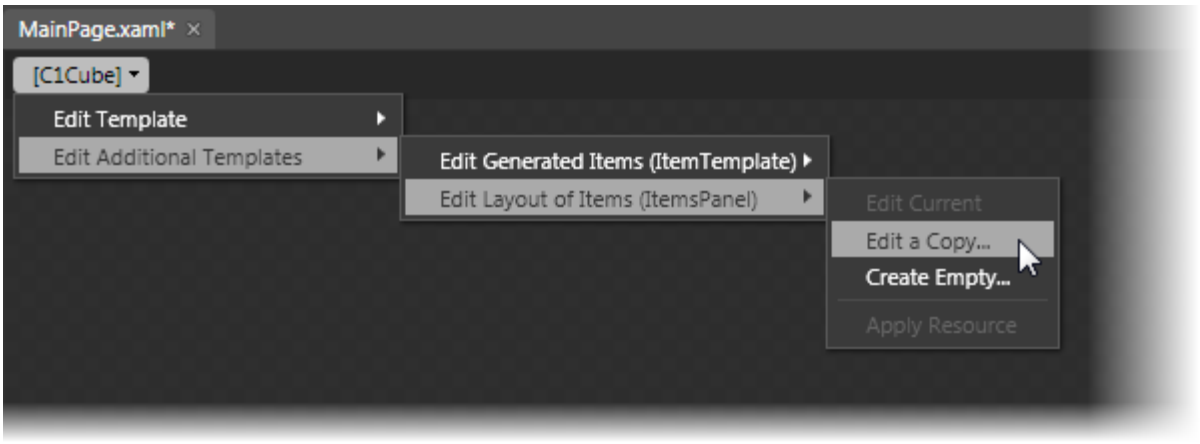
Note that you can use the Template property to customize the template.

Item Templates

ComponentOne Cube for WPF's cube control is an **ItemsControl** and a container for other elements. As such, C1Cube includes templates to customize items placed within the cube. These templates include an **ItemTemplate** template. You use the ItemTemplate to specify the visualization of the data objects.

Accessing Templates

You can access these templates in Microsoft Expression Blend by selecting the C1Cube control and, in the menu, selecting **Edit Additional Templates**. Choose **Edit Generated Items (ItemTemplate)** or **Edit Layout of Items (ItemsPanel)** and select **Create Empty** to create a new blank template or **Edit a Copy**.



A dialog box will appear allowing you to name the template and determine where to define the template.

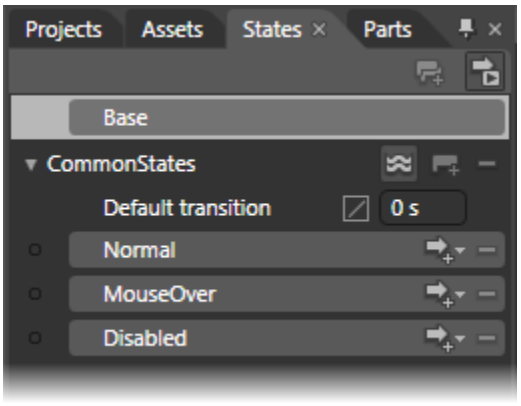
Cube Styles

ComponentOne Cube for WPF's C1Cube control provides several style properties that you can use to change the appearance of the control. Some of the included styles are described in the table below:

Style	Description
Style	Gets or sets the style used by this element when it is rendered. This is a dependency property.

Cube Visual States

In Microsoft Expression Blend, you can add custom states and state groups to define a different appearance for each state of your user control – for example, the visual state of the control could change on mouse over. You can view and edit visual states by creating a new template. Once you've done so the available visual states for that part will be visible in the **Visual States** window:



Common states include **Normal** for the normal appearance of the item, **MouseOver** for the item on mouse over, and **Disabled** for when the item is not enabled. Focus states include **Unfocused** for when the item is not in focus and **Focused** when the item is in focus.

Cube for WPF Samples

Please be advised that this ComponentOne software tool is accompanied by various sample projects and/or demos, which may make use of other ComponentOne development tools included with the ComponentOne Studios. Samples can be accessed from the **ComponentOne Studio for WPF ControlExplorer**. To view samples, on your desktop, click the **Start** button and then click **All Programs | ComponentOne | Studio for WPF | Samples | WPF ControlExplorer**.

C# Samples

The following C# sample is included:

Sample	Description
ControlExplorer	The **Cube** page in the **ControlExplorer** sample demonstrates how to add content to and customize the C1Cube control.

Cube for WPF Task-Based Help

The following task-based help topics assume that you are familiar with Visual Studio and Expression Blend and know how to use the C1Cube control in general. If you are unfamiliar with the **ComponentOne Cube for WPF** product, please see the Cube for WPF Quick Start (page 3) first.

Each topic in this section provides a solution for specific tasks using the **ComponentOne Cube for WPF** product. Most task-based help topics also assume that you have created a new WPF project and added a C1Cube control named "c1cube1" to the project – for information about creating the control, see Creating a Cube (page 17).

Creating a Cube

You can easily create a C1Cube control at design time, in XAML, and in code. Note that if you create a C1Cube control as in the following steps, it will appear as an empty container. You will need to add items to the control for it to appear as a cube at run time. For an example, see Adding Items to a Cube (page 19).

At Design Time in Blend

To create a C1Cube control in Visual Studio, complete the following steps:

1. Click once on the design area of the window to select it.
2. Double-click the **C1Cube** icon in the Toolbox to add the control to the panel. The C1Cube control will now exist in your application.
3. If you choose, can customize the control by selecting it and setting properties in the Properties window.

In XAML

To create a C1Cube control using XAML markup, complete the following steps:

1. In the Visual Studio Solution Explorer, right-click the **References** folder in the project files list. In the context menu choose **Add Reference**, select the **C1.WPF.dll** and **C1.WPF.Legacy.dll** assemblies, and click **OK**.
1. Add a XAML namespace to your project by adding `xmlns:c1ext="http://schemas.componentone.com/wpf/C1Legacy"` to the initial `<Window>` tag. It will appear similar to the following:

```
<Window xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
xmlns:c1ext="http://schemas.componentone.com/wpf/C1Legacy"
x:Class="C1CubeCS101909.Window1" Title="Window1" Height="358" Width="498">
```

2. Add a `<c1ext:C1Cube>` tag to your project within the `<Grid>` tag to create a C1Cube control. The markup will appear similar to the following:

```
<Grid>
    <c1ext:C1Cube x:Name="c1cube1" Height="300" Width="300"/>
    </c1ext:C1Cube>
</Grid>
```

This markup will create an empty C1Cube control named "c1cube1" and set the control's size.

In Code

To create a C1Cube control in code, complete the following steps:

1. In the Visual Studio Solution Explorer, right-click the **References** folder in the project files list. In the context menu choose **Add Reference**, select the **C1.WPF.dll** and **C1.WPF.Legacy.dll** assemblies, and click **OK**.
2. In XAML view, give the initial grid in the window a name, by updating the tag so it appears similar to the following:

```
<Grid x:Name="LayoutRoot">
```

3. Right-click within the **Window1.xaml** window and select **View Code** to switch to Code view
4. Add the following import statements to the top of the page:
   - Visual Basic

```
Imports C1.WPF
Imports C1.WPF.Legacy
```

   - C#

```
using C1.WPF;
using C1.WPF.Legacy;
```

5. Add code to the page's constructor to create the C1Cube control. It will look similar to the following:
   - Visual Basic

```
Public Sub New()
    InitializeComponent()
    Dim c1cube1 as New C1Cube
    c1cube1.Height = 300
    c1cube1.Width = 300
    LayoutRoot.Children.Add(c1cube1)
End Sub
```

   - C#

```
public Window1()
{
    InitializeComponent();
    C1Cube c1cube1 = new C1Cube();
    c1cube1.Height = 300;
    c1cube1.Width = 300;
    LayoutRoot.Children.Add(c1cube1);
}
```

This code will create an empty C1Cube control named "c1cube1", set the control's size, and add the control to the page.

What You've Accomplished

You've created a C1Cube control. Note that when you create a C1Cube control as in the above steps, it will appear as an empty container. You will need to add items to the control for it to appear as a cube at run time. For an example, see Adding Items to a Cube (page 19).

Adding Items to a Cube

You can add any sort of arbitrary content to a C1Cube control. This includes text, images, layout panels, and other standard and 3rd-party controls. In this example, you'll add a **TextBlock** control to a C1Cube control, but you can customize the steps to add other types of content instead.

At Design Time in Blend

To add a **TextBlock** control to the cube in Blend, complete the following steps:

1. Click the C1Cube control once to select it.
2. Navigate to the Toolbox, and double-click the **TextBlock** item to add the control to the C1Cube control.
3. In the XAML view you can specify the face of the cube the **TextBlock** should appear in by adding `c1ext:C1Cube.Face="Front"` to the `<TextBlock/>` tag so that it appears like the following:
```
<TextBlock c1ext:C1Cube.Face="Front"/>
```
4. If you choose, can customize the C1Cube and **TextBlock** controls by selecting each control and setting properties in the Properties window. For example, set the **TextBlock**'s **Text** property to "Hello World!".

In XAML

For example, to add a **TextBlock** control to the cube add `<TextBlock c1ext:C1Cube.Face="Front" Text="Hello World!"/>` within the `<c1ext:C1Cube>` tag so that it appears similar to the following:
```
<c1ext:C1Cube x:Name="c1cube1" Height="300" Width="300">
    <TextBlock c1ext:C1Cube.Face="Front" Text="Hello World!"/>
</c1ext:C1Cube>
```

In Code

For example, to add a **TextBlock** control to the cube, add code to the page's constructor so it appears like the following:

- Visual Basic
```
Public Sub New()
    InitializeComponent()
    Dim txt1 as New TextBlock
    txt1.Text = "Hello World!"
    C1Cube1.Items.Add(txt1)
    C1Cube.SetFace(txt1, CubeFace.Top)
End Sub
```
- C#
```
public MainPage()
{
    InitializeComponent();
    TextBlock txt1 = new TextBlock();
    txt1.Text = "Hello World!";
    c1Cube1.Items.Add(txt1);
    C1Cube.SetFace(txt1, CubeFace.Top);
}
```

What You've Accomplished

You've added a control to the C1Cube control. Run the application and observe that the **TextBlock** control has been added to the front face of the C1Cube control. You can similarly add other content and controls.

Clearing Items in a Cube

You may choose to allow users to clear all items from the C1Cube control at run time, or you may need to clear the items collection when binding and then rebinding the control to another data source.

For example, to clear the cube's content, add the following code to your project:

- Visual Basic
```
Me.C1Cube1.Items.Clear()
```
- C#
```
this.c1Cube1.Items.Clear();
```

What You've Accomplished

The control's content will be cleared. If you run the application, you will observe that the cube is blank.

Changing the Cube's Initial Rotation

You can control the initial rotation of the cube by setting the RotationX, RotationY, and RotationZ properties. See Cube Rotation (page 12) for more information. By default only the front face of the cube is visible., but you can customize this by setting the rotation property at design time, in XAML, and in code.

At Design Time in Blend

To set the cube's initial rotation at design time, complete the following steps:

1. Click the C1Cube control once to select it.
2. Navigate to the Properties window and set the RotationX, RotationY, and RotationZ properties to **20**.

In XAML

For example, to set the cube's initial rotation, add `RotationX="20" RotationY="20" RotationZ="20"` to the `<c1ext:C1Cube>` tag so that it appears similar to the following:

```
<c1ext:C1Cube x:Name="C1Cube1" Height="300" Width="300" RotationX="20"
RotationY="20" RotationZ="20">
```

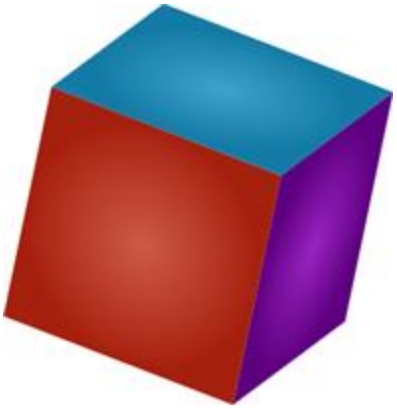
In Code

For example, to set the cube's initial rotation, add the following code to your project in the page's constructor:

- Visual Basic
```
Me.C1Cube1.RotationX = "20"
Me.C1Cube1.RotationY = "20"
Me.C1Cube1.RotationZ = "20"
```
- C#
```
this.C1cube1.RotationX = "20";
this.C1cube1.RotationY = "20";
this.C1cube1.RotationZ = "20";
```

What You've Accomplished

You've changed the initial rotation of the cube. Run the application and observe that the cube appears at an angle and three faces are visible:



Allowing the Cube to be Dragged

The C1Cube control can be dragged and manipulated at run time if the IsDraggable property is set to **True**. When the IsDraggable property is set to **True**, the cube can be rotated at run time by performing a drag-and-drop operation. See Cube Interaction (page 11) for more information.

> **Note:** When IsDraggable is **True**, items within the cube by default cannot be interacted with.

The following steps customize the C1Cube control at design time, in XAML, and in code.

At Design Time

To set the IsDraggable property at design time, complete the following steps:

1. Click the C1Cube control once to select it.
2. Navigate to the Properties window and check the check box next to the **IsDraggable** item.

In XAML

For example, to set the IsDraggable property, add `IsDraggable="True"` to the `<c1ext:C1Cube>` tag so that it appears similar to the following:

```
<c1ext:C1Cube x:Name="C1Cube1" Height="300" Width="300"
IsDraggable="True">
```

In Code

For example, to set the IsDraggable property, add the following code to your project:

- Visual Basic
```
Me.C1Cube1.IsDraggable = True
```
- C#
```
this.c1Cube1.IsDraggable = true;
```

What You've Accomplished

The C1Cube control can now be dragged and manipulated at run time. Run the application and note that you can rotate the cube by performing a drag-and-drop operation.

Rotating the Cube

You can use the Rotate and RotateTo methods to rotate or smoothly rotate the cube to a specific angle. For more information, see Cube Rotation (page 12). In this topic you'll add two buttons to your application, one that rotate the cube instantly using the Rotate method and one that will rotate the cube smoothly using the RotateTo method.

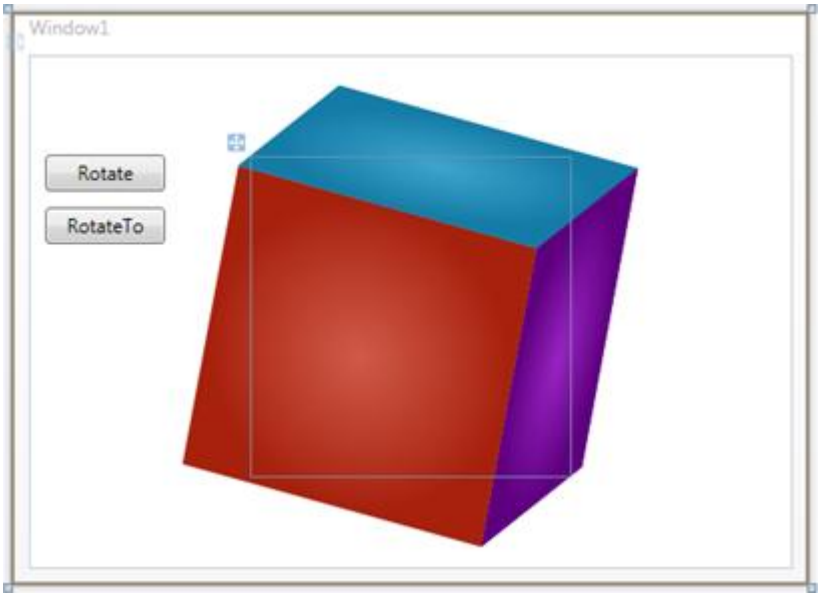
Complete the following steps:

1. Navigate to the Toolbox and double-click the **Button** item twice to add two **Button** controls to your application.
2. Move and resize the buttons so that they appear next to the cube.
3. Select **Button1**, navigate to the Properties window and set its **Content** property to "Rotate".
4. Select **Button2**, navigate to the Properties window and set its **Content** property to "RotateTo".
5. Double-click **Button1** to create the **Button_Click** event handler and switch to Code view.
6. Return to Design view and repeat the previous step with the **Button2** so each button has a **Click** event handler specified.

   The XAML markup will appear similar to the following:

```
<Button Height="23" HorizontalAlignment="Left" Margin="10,62,0,0"
Name="Button1" VerticalAlignment="Top" Width="75"
Click="Button1_Click">Rotate</Button>
<Button Height="23" HorizontalAlignment="Left" Margin="10,95,0,0"
Name="Button2" VerticalAlignment="Top" Width="75"
Click="Button2_Click">RotateTo</Button>
```

   The page should now look similar to the following:



7. In Code view, add the following import statements to the top of the page:
   - Visual Basic
     ```
     Imports C1.WPF
     Imports C1.WPF.Legacy
     ```
   - C#
     ```
     using C1.WPF;
     using C1.WPF.Legacy;
     ```
8. Add code to the **Click** event handlers so they look like the following:

- Visual Basic

```
Private Sub Button1_Click(ByVal sender as Object, ByVal e as
RoutedEventArgs)
    C1Cube1.Rotate(50,50,50)
End Sub

Private Sub Button2_Click(ByVal sender as Object, ByVal e as
RoutedEventArgs)
    C1Cube1.RotateTo(200,200,200, 1)
End Sub
```

- C#

```
private void button1_Click(object sender, RoutedEventArgs e)
{
    this.c1Cube1.Rotate(50,50,50);
}

private void button2_Click(object sender, RoutedEventArgs e)
{
    this.c1Cube1.RotateTo(200,200,200, 1);
}
```

This code rotates the cube to a set location when the buttons are clicked.

What You've Accomplished

In this topic you used the Rotate and RotateTo methods to rotate or smoothly rotate the cube to a specific angle. Run the application and click the **Rotate** button. Notice that the cube immediately turns to new location. Click the **RotateTo** button, notice that the cube turns to the new location smoothly with the delay specified in code.

Showing a Cube Face

In this topic you'll set the ShowFace method to smoothly rotate the cube so a particular face is facing forward. For more information, see Cube Face (page 11). In this topic you'll add two buttons to your application to show particular faces. Note that you can also use the ShowItem method to similarly show a particular item on a cube face.

Complete the following steps:

1. Navigate to the Toolbox and double-click the **Button** item twice to add two **Button** controls to your application.
2. Move and resize the buttons so that they appear next to the cube.
3. Select **Button1**, navigate to the Properties window, and set its **Content** property to "Show Left".
4. Select **Button2**, navigate to the Properties window, and set its **Content** property to "Show Top".
5. Double-click **Button1** to create the **Button_Click** event handler and switch to Code view.
6. Return to Design view and repeat the previous step with the **Button2** so each button has a **Click** event handler specified.

   The XAML markup will appear similar to the following:

```
<Button Height="23" HorizontalAlignment="Left" Margin="10,62,0,0"
Name="Show Left" VerticalAlignment="Top" Width="75"
Click="Button1_Click">Rotate</Button>
<Button Height="23" HorizontalAlignment="Left" Margin="10,95,0,0"
Name="Show Top" VerticalAlignment="Top" Width="75"
Click="Button2_Click">RotateTo</Button>
```

7. Switch to Code view and add the following import statements to the top of the page:

   - Visual Basic

     ```
     Imports C1.WPF
     Imports C1.WPF.Legacy
     ```

   - C#

     ```
     using C1.WPF;
     using C1.WPF.Legacy;
     ```

8. Add code to the **Click** event handlers so they look like the following:

   - Visual Basic

     ```
     Private Sub Button1_Click(ByVal sender as Object, ByVal e as
     RoutedEventArgs)
         Me.C1Cube1.ShowFaceDelay = "2"
            Me.C1Cube1.ShowFace(CubeFace.Left)
     End Sub

     Private Sub Button2_Click(ByVal sender as Object, ByVal e as
     RoutedEventArgs)
         Me.C1Cube1.ShowFaceDelay = "5"
            Me.C1Cube1.ShowFace(CubeFace.Top)
     End Sub
     ```

   - C#

     ```
     private void button1_Click(object sender, RoutedEventArgs e)
     {
         this.c1Cube1.ShowFaceDelay = "5";
            this.c1Cube1.ShowFace(CubeFace.Left);
     }

     private void button2_Click(object sender, RoutedEventArgs e)
     {
         this.c1Cube1.ShowFaceDelay = "5";
            this.c1Cube1.ShowFace(CubeFace.Top);
     }
     ```

   This code rotates the cube to a specific face when each button is clicked.

What You've Accomplished

In this topic you used the ShowFace method to smoothly rotate the cube so a particular face is facing forward. You also set the ShowFaceDelay property to control how quickly the cube moved to the face. Run the application and click the **Show Left** button. Notice that the cube turns to the **Left** face smoothly. Click the **Show Top** button, notice that the cube turns to the new location smoothly with a longer delay as specified in the code.