Layout

Outline

- **Common layout properties**

- **Panels**

- **ScrollViewer**

- **Navigation**

Layout Process

- **Two phase process:**
  - Measure
  - Arrange

- **Measure:**
  - Walk UI tree, determine preferred sizes
  - Constrained or unconstrained
  - Size to content

- **Arrange:**
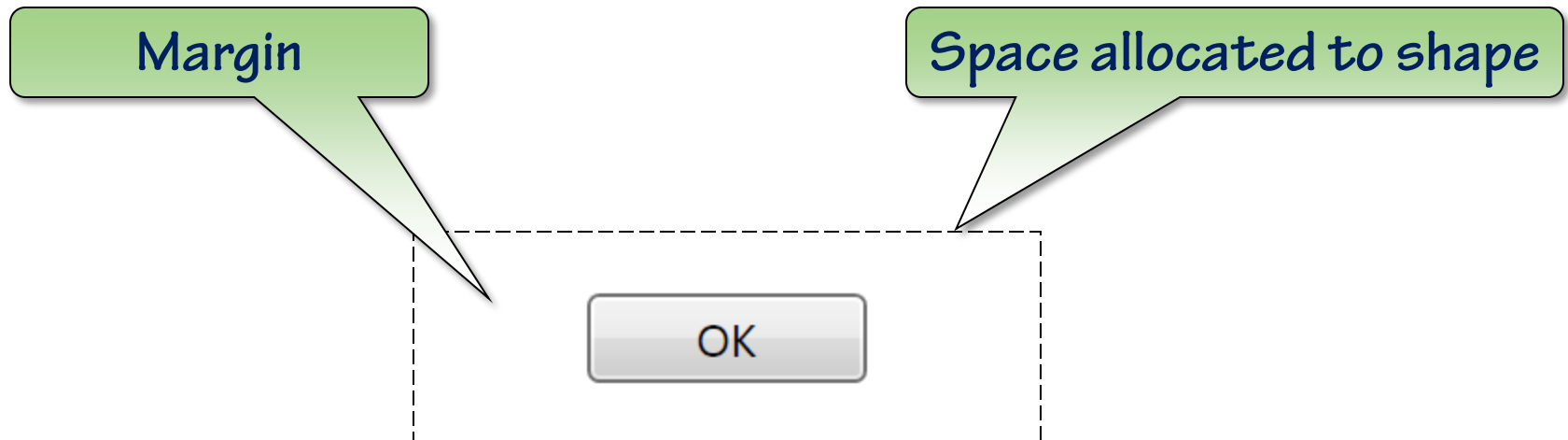 - Walk UI tree, assign sizes and positions

Declarative layout

- **Resizable**

- **Dynamic**
  - Data
  - Localization

Common Layout Properties
Margin
Padding
HorizontalAlignment
VerticalAlignment
Min/MaxWidth
Min/MaxHeight
Width, Height

pluralsight
see what you can learn

Margin

- **Space around edges**

Margin

Space allocated to shape

OK

```
<Button Margin="20" ... />
```
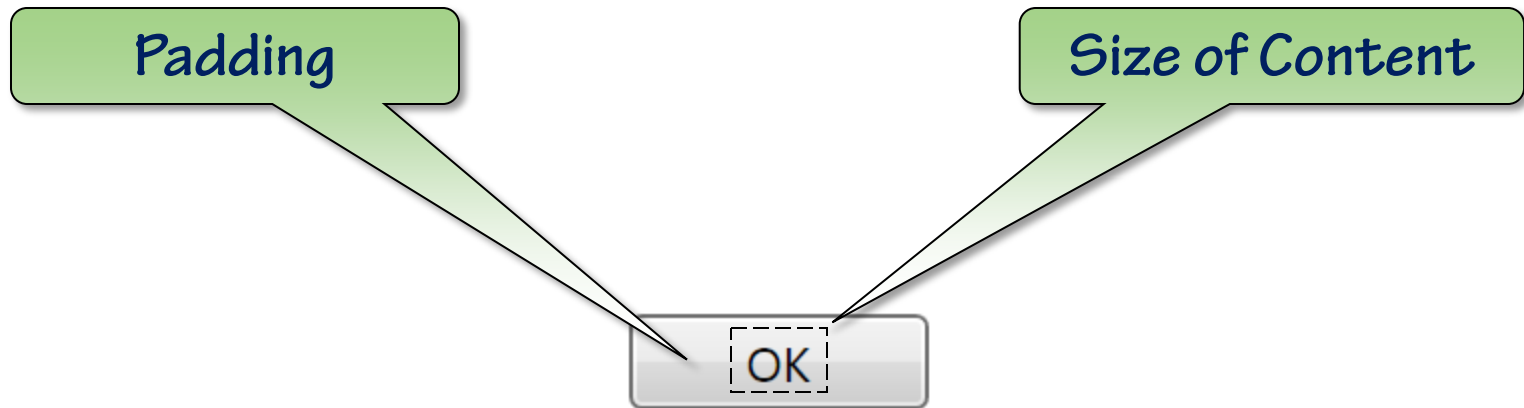
```
<Button Margin="20,30" ... />
```

```
<Button Margin="20,30,40,50" ... />
```
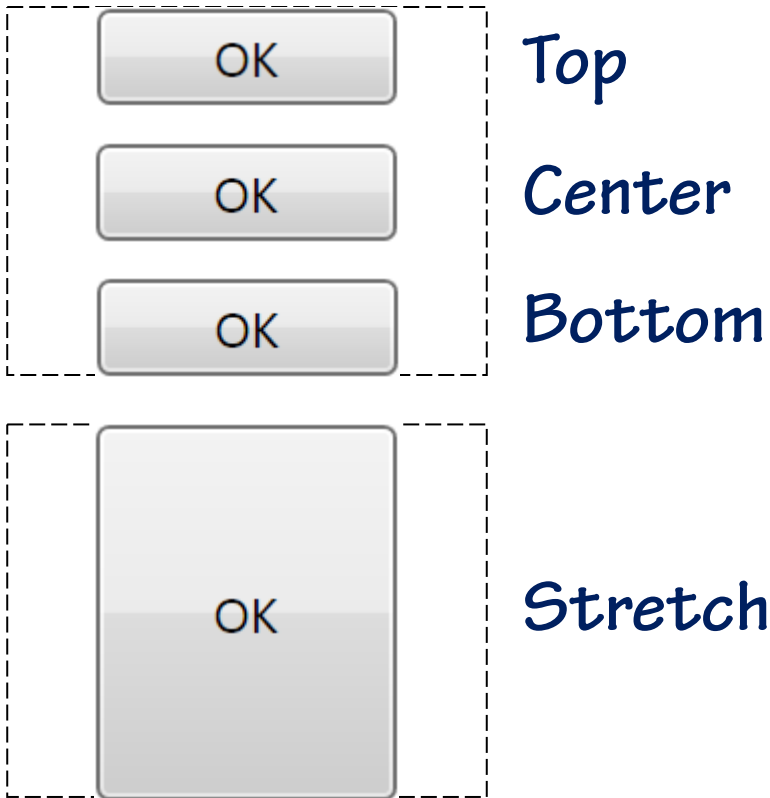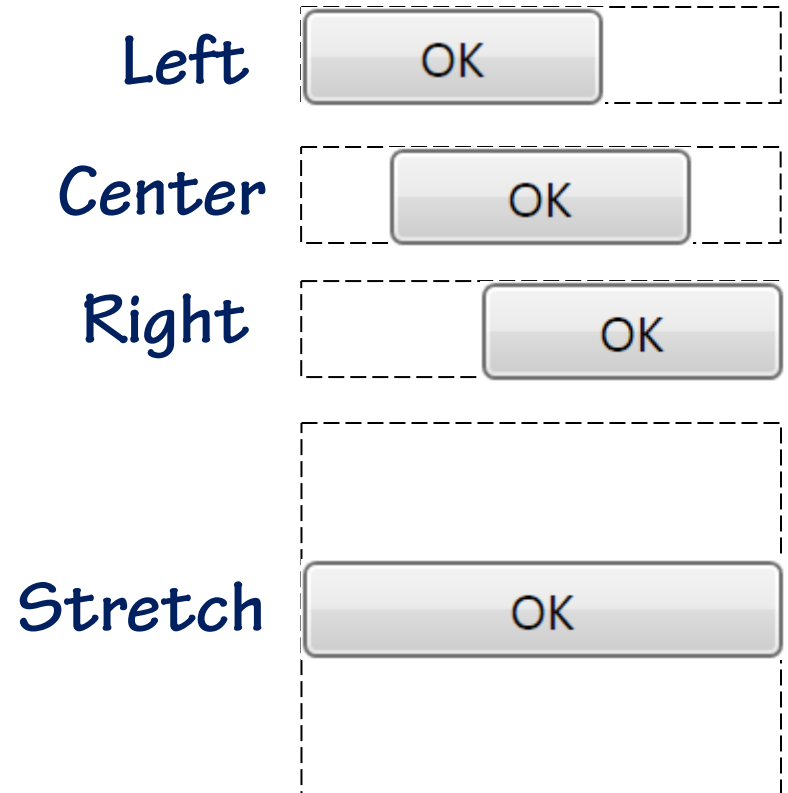
Padding

- **Space between boundary and content**

Padding

Size of Content

OK

```
<Button Padding="3" ... />
```

```
<Button Padding="2,3" ... />
```

```
<Button Padding="2,3,4,5" ... />
```

Alignment

VerticalAlignment

OK — Top

OK — Center

OK — Bottom

OK — Stretch

HorizontalAlignment

Left — OK

Center — OK

Right — OK
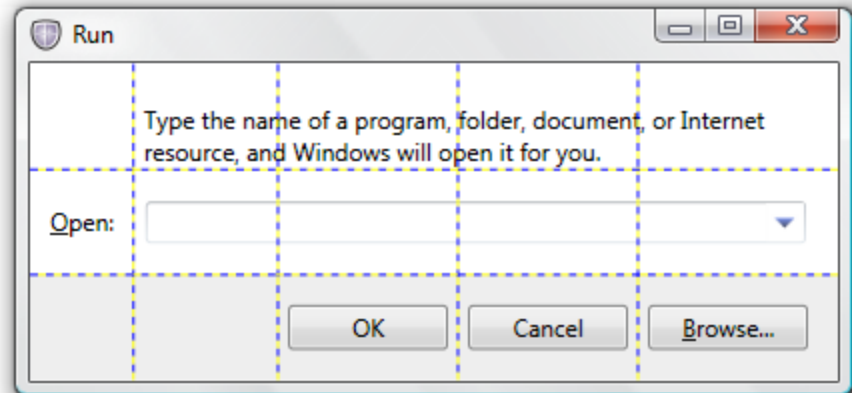
Stretch — OK

Content Alignment

- **HorizontalContentAlignment**

- **VerticalContentAlignment**

Explicit Width and Height

- **Width and Height**

- **MinWidth and MinHeight**
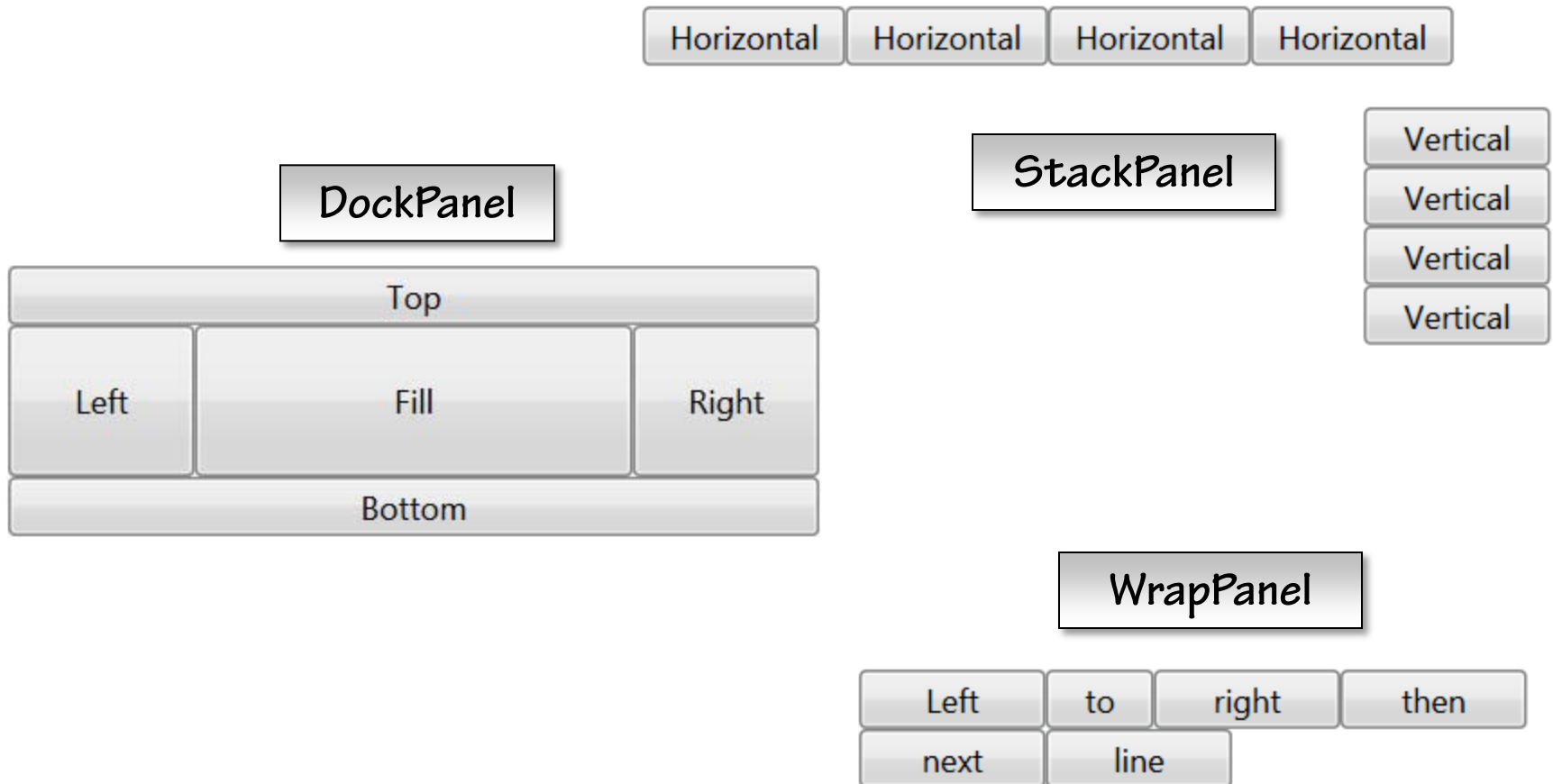
- **MaxWidth and MaxHeight**

Grid

- **Column & row sizing:**
  - Automatic
  - Fixed
  - Proportional

- **Elements can span cells**

- **Fine control with Margin**

GridSplitter

- **Add to a cell**

- **Set direction**

- **Resizes columns/rows when dragged**

DockPanel, StackPanel, WrapPanel

Horizontal **Horizontal** **Horizontal** **Horizontal**

DockPanel

StackPanel

| Vertical |
| Vertical |
| Vertical |
| Vertical |

Top		
Left	Fill	Right
Bottom		

WrapPanel

Left	to	right	then
next	line		

Canvas

- **Absolute positioning**

- **Inflexible**
  - For drawings

```xml
<Canvas Width="100" Height="100">

  <Ellipse Canvas.Left="10" Canvas.Top="10"
           Width="80" Height="80"
           Fill="Orange" />

  <TextBlock Canvas.Left="120" Canvas.Top="55"
             Text="Foo" />

</Canvas>
```

ScrollViewer

- **Wraps any element**

```
<ScrollViewer>

    <Image ... />

</ScrollViewer>
```

Viewbox

- Scales content to fit

Windows

- **Window – fixed content**

- **Popup – transient window**

Navigation

- **NavigationWindow**
  - Contains a Page
  - Can navigate between pages

- **Frame**
  - Nested navigation area

Summary

- **Common layout properties**

- **Panels**

- **ScrollViewer**

- **Navigation**