

WPF Fundamentals



Outline

- Why WPF?
- Xaml
- Programming model
- Design tools

WPF

- Windows Presentation Foundation
- Beyond USER32 and GDI32
- Part of .NET ≥ 3.0
 - Ships with current versions of Windows
 - Redistributable for XP & Windows 2003

Why WPF?

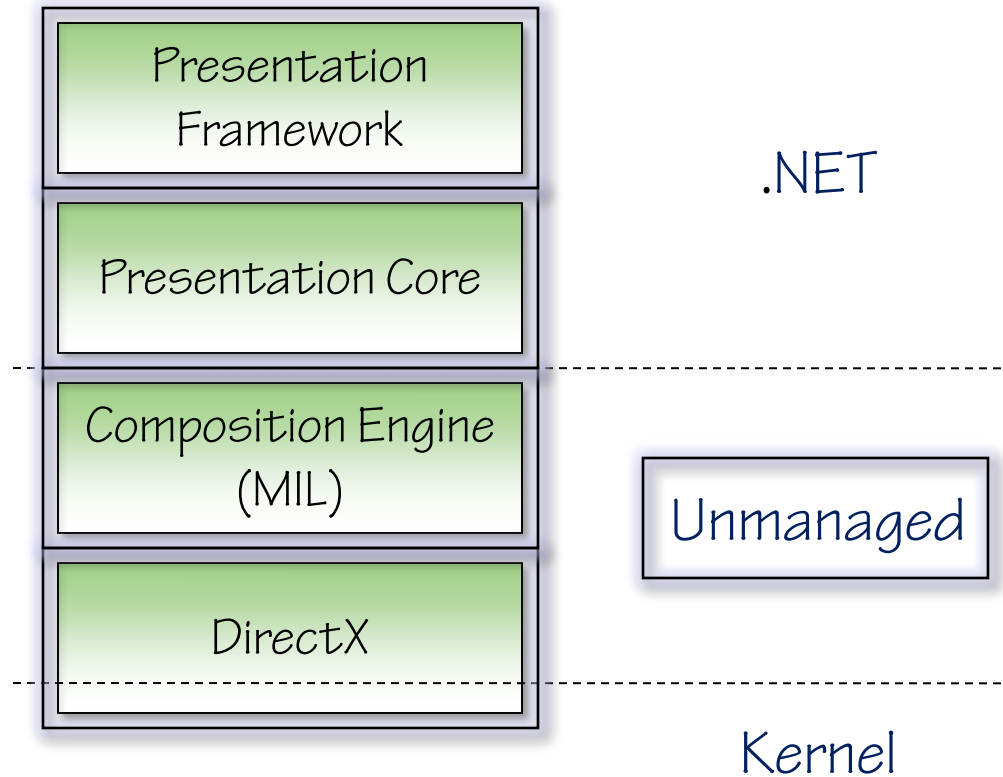
- **Hardware**
 - Power
 - Resolution
- **Raised expectations**
 - Computers so much cooler in movies
 - Consoles
- **Lessons from the web**
 - Branding
 - Markup

Integration

- Today – choose your poison
- WPF: single integrated solution

WPF

WPF Design



Xaml

```
<Button x:Name="myButton"  
        FontSize="24"  
        FontFamily="Candara"  
        Foreground="DarkRed">  
  
    _Click me!  
</Button>
```

```
Button myButton = new Button();  
myButton.FontSize = 24;  
myButton.FontFamily =  
    new FontFamily("Candara");  
myButton.Foreground =  
    Brushes.DarkRed;  
myButton.Content = "_Click me!";
```



- WPF designed to be Xaml-friendly

UI tree

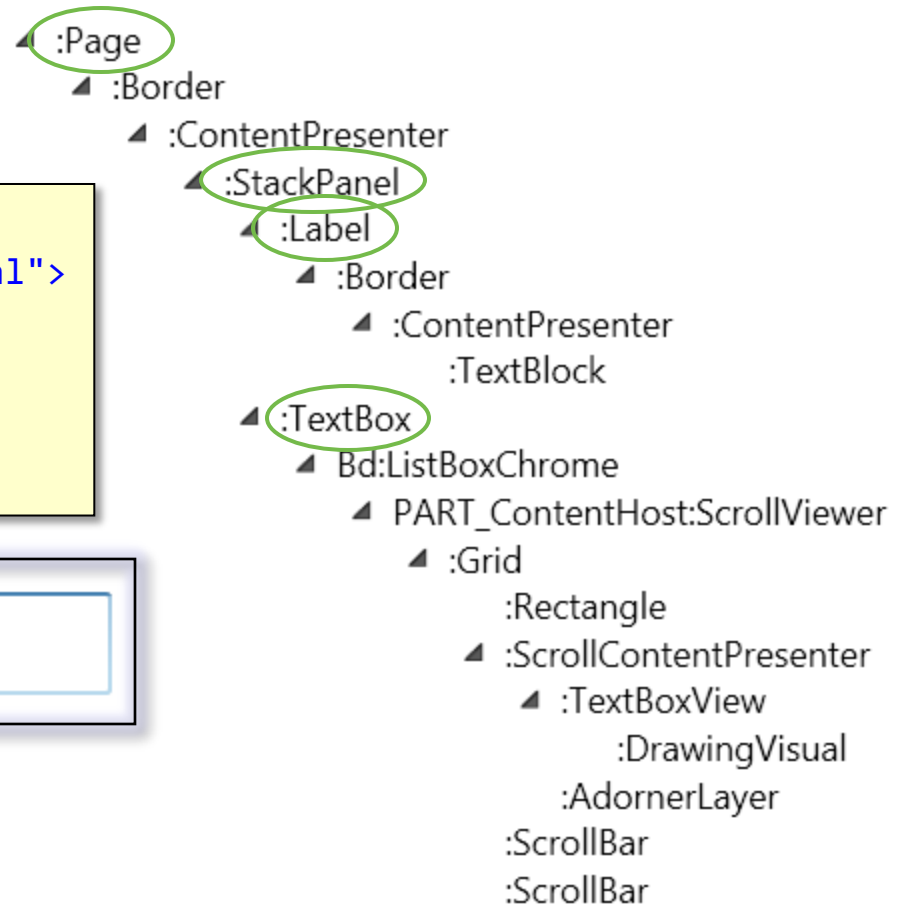
- Logical tree of elements

- Controls and primitives

```
<Page>  
  <StackPanel Orientation="Horizontal">  
    <Label>Name:</Label>  
    <TextBox Width="90" />  
  </StackPanel>  
</Page>
```

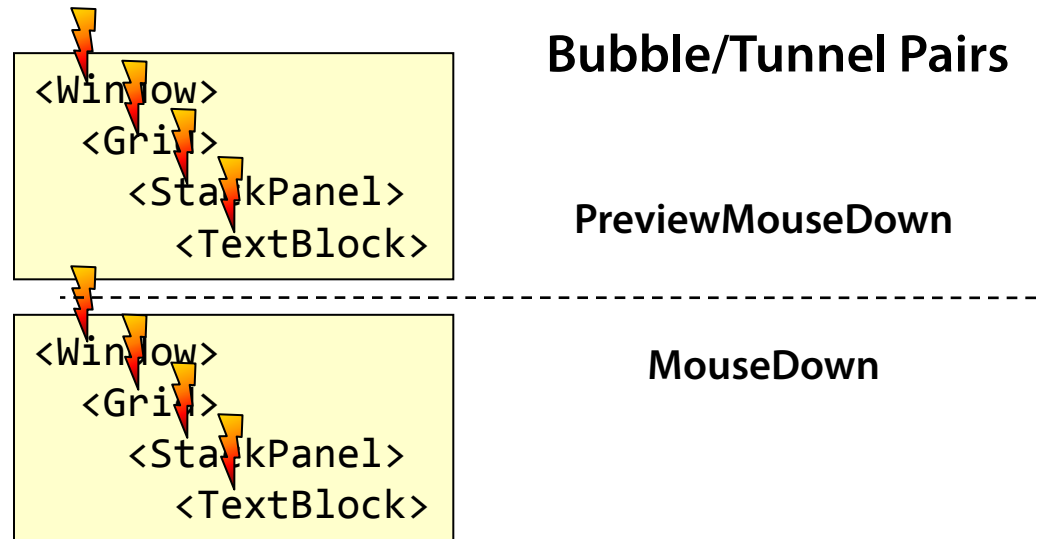
- 'Visual' tree

Name:



Events and commands

- **Bubbling and tunneling events**



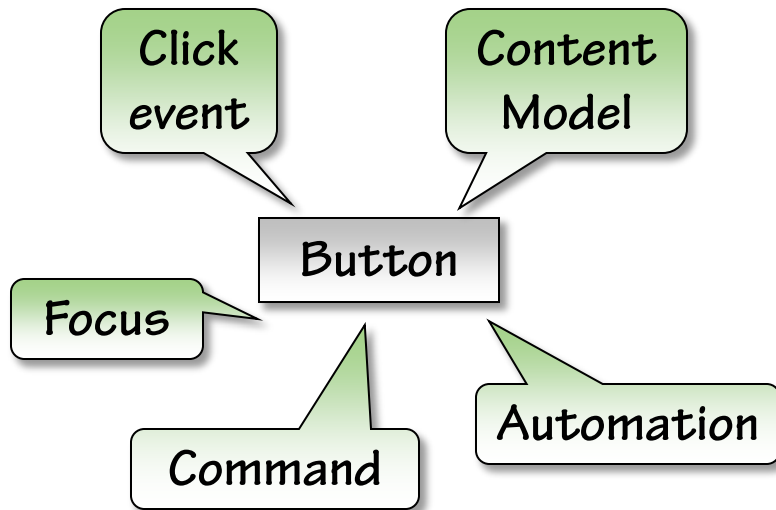
- **Commands**

- Keyboard shortcuts, stylus gestures
- Integration with menus and button

Controls

- Elements with behavior

Control



Template



Primitive elements

- **Vector graphics**
 - Rectangle, Ellipse, Path
- **Simple text**
 - TextBlock
- **Bitmaps and video**
 - Image, Media



Hello, *world!*



Layout

Panel Type	Layout Style
Grid	Advanced table/grid-based layout
Canvas	Fixed layout; also supports anchoring
StackPanel	Simple left to right, or top to bottom
DockPanel	Similar to Windows Forms docking
WrapPanel	Flow-like formatting

Flowed text

- **FlowDocument**
 - HTML-like feature set
 - Reader controls

Stylish Text


A FlowDocument contains text that will be formatted by WPF to adapt to the available space.

A FlowDocument may contain any mixture of text styles. You can also add inline user interface elements such as a `Button`. And of course, since one of the key benefits of WPF is integration, you can use a FlowDocument anywhere you like in a WPF user interface. For example, you could use one as the



*Figure 1:
forest*

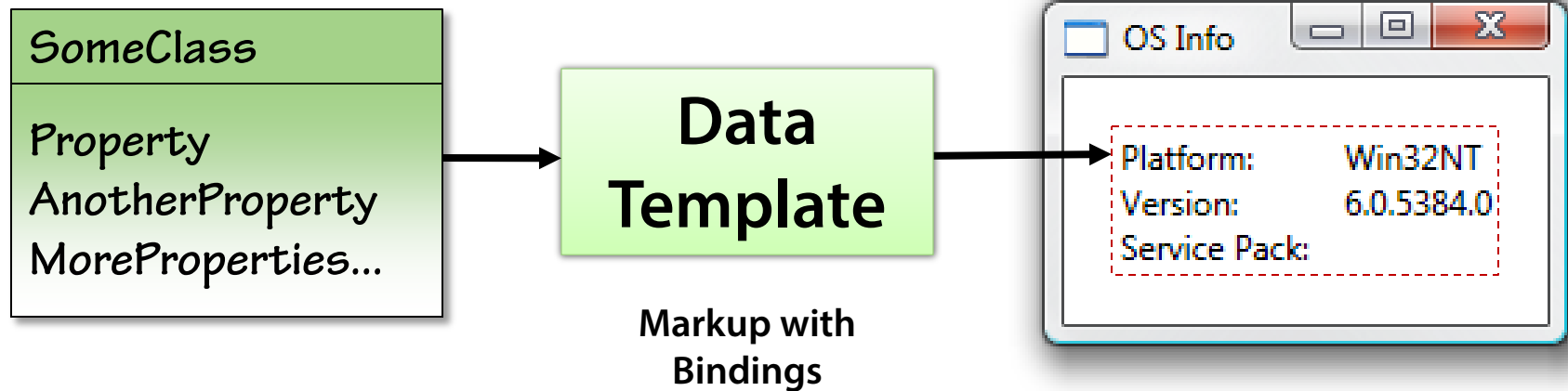
FlowDocument offers a number of features familiar from HTML, including:

- Lists (both numbers and bullets)
- The ability to embed inline images: 
- Floating elements around which the text will flow (such as *Figure 1*)

WPF makes it much easier to render text in columns than HTML. This is useful because columns allow shorter line lengths, which improve reading speeds.

Data

- Ubiquitous data binding support
- DataTemplates



Deployment

- **Classic MSI**
- **ClickOnce**
- **XBAP**
- **Client-only framework**
 - Introduced in 3.5 sp1
 - Setup bootstrapper
or
 - Deploy via ClickOnce

Silverlight

- **Cross platform**

- Windows and Mac (3rd party Linux support)
- Internet Explorer, Firefox, Safari, and Chrome

- **Core CLR**

- Supports C#, VB.NET
- Subset of full class library

- **Resembles WPF**

- Xaml, templates, many similar classes
- Very different internal implementation

Designers

- Expression Blend
- Visual Studio

Summary

- Most powerful Windows UI framework
- .NET API for code or markup
- Integrated UI platform