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# WINDOWS PRESENTATION FOUNDATION

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# TELERIK

## DELIVER MORE THAN EXPECTED

*One-stop provider for .NET tools  
& UI components*



# PHIL.ABOUT()

- Patterns & Practices Evangelist, Telerik, Inc.
- Microsoft MVP
- MCSD, MCDBA, CSM, CSP
- Developer().Speaker().Writer()
- Lead Director, Cincinnati .NET User's Group
- Founder, Agile Conferences, Inc.

# WHAT IS WPF?

- Windows Presentation Foundation
- Next Generation Rich User Application Platform
  - Declarative UI (XAML)
    - Smart Client
    - Web (RIA/Silverlight)
- Based on DirectX (not GDI/GDI+)
  - Vector Based
  - Supports true Hardware Acceleration
  - Resolution Independence
    - Apps don't shrink on high-resolution monitors
- Leaps ahead with binding
  - Data and other Elements

# WHAT ELSE IS IN WPF?

- Flexible flow layout model
- Styles and Templates
- OOTB document handling features
  - Wrapping, Columns, Justification, etc
- True animation – not timer based
  - Fades, etc
- A/V support (through WMP)
- Commands
- Routed Events
  - Event Bubbling and Tunneling

# WHAT'S NEW IN .NET 4?

- DataGrid, DatePicker, Calendar, Ribbon Controls
- Layout Rounding
- Multi-Touch support
- Custom Dictionaries
- Behaviors\*
- Animation Easing
- Binding String Format

# WHAT'S MISSING

- WPF – What's missing
  - *Visual* Inheritance
  - MDI – complete lack of support
  - ExtenderProvider support
  - MaskedTextBox – You can roll your own
  - ErrorProvider/HelpProvider
  - AutoComplete – minimal functionality (only from the Items, no environmental support, etc

# AGENDA

- Layout/Layout Containers
- Commands
- Custom Dictionaries
- Behaviors
- Binding

# MENUS

- Use “\_” instead of “&” for Hot-Key
- Beware for XAML order vs Grid Order
- Similar to WinForms except
  - MenuItem is a container control
  - Use <Separator> instead of “-”

# LAYOUT

- “Web”-like layout model with Flexible Flow
  - Gone are explicit sizing, absolute positioning, etc
  - Containers try to allocate element’s requested space
- Layout Process
  - Measure
    - Loop through all elements asking for preferred size
  - Arrange
    - Container places elements in appropriate position

# ATTACHED PROPERTIES

- Properties defined in one element used in another
  - `Grid.Row/Grid.Column`
- Translated into method calls
  - `Grid.SetRow(control,x)`

# LAYOUT CONTAINERS

- Standard
  - Grid
    - Most commonly used (default Window Panel)
  - StackPanel, WrapPanel, DockPanel
    - Used for UI Tweaks
  - Canvas
    - Absolute (think WinForms) positioning
    - InkCanvas - Supports Digital Ink
- Specialized
  - UniformGrid, TabPanel, ToolBarPanel, ToolBarOverflowPanel

# ELEMENTS & CONTROLS

- Everything is an Element
  - Controls are elements that can:
    - Receive Focus
    - Accept User Input
- Content Controls
  - Hold a single element
    - Window (Special)
    - Labels, Buttons, CheckBox, RadioButton, ToolTips
    - ScrollViewer, Border, Expander
- Text Controls
  - TextBox , PasswordBox – Strings Only
  - RichTextBox – Sophisticated Content – FlowDocument

# LIST CONTROLS

- List Controls (ItemsControl)
  - Selectors
    - ListBox, ComboBox, TabControl
  - Non-Selectors
    - Menus, ListView, GridView, TreeView, ToolBar
- Range Based Controls
  - ScrollBar, ProgressBar, Slider

# EVENTS

- Routed Events replace usual .NET events
  - Direct
    - Originate in one element and don't pass on
  - Bubbling
    - Travel up the element tree
  - Tunneling
    - Travel down the element tree
- Can add event handlers for child elements
  - `<Grid Button.Click="ClickEvent" ...`

# COMMANDS

- WPF Command Model adds:
  - Delegates to the Appropriate Commands
  - Keeps state of control tied into state of Command
    - Can\_Execute
- Consists of:
  - Commands – represents an application task
  - Command Bindings – links command to code
  - Command Sources – trigger the command
  - Command Target – element on which the command is being performed

# BEHAVIORS

- Used to encapsulate UI functionality
- Must install Expression Blend 3 SDK
  - Reference:
    - `System.Windows.Interactivity` (core)
    - `Microsoft.Expression.Interactions`

# CUSTOM DICTIONARIES

- Enable by setting `SpellCheck.IsEnabled="True"`
- Text File (<name>.lex) for custom words
- Add as a resource, assign to the `CustomDictionaries` collection

# ELEMENT BINDING

- Allows for powerful UI constructs all defined in XAML
- Can bind elements value directly to another element
  - ▶ No more coding “onChanged” etc events

# DATA BINDING

- Supports
  - IDataErrorInfo
  - INotifyPropertyChanged
  - INotifyCollectionChanged
- Can bind to \*any\* Dependency Property
- Choice of
  - Datasets
  - Data Objects

# WINFORMS/WPF INTEROP

- System.Windows.Forms.Integration
  - WindowsFormsIntegration.dll
- WindowsFormsHost (WF in WPF)
  - `Var host = new WindowsFormsHost();`
  - `host.Child = winform;`
  - `UIElement.Children.Add(host);`
- ElementHost (WPF in WF)
  - `ElementHost.EnableModelessKeyboardInterop(window)`

# ADDITIONAL RESOURCES

- WPF
  - <http://www.codeplex.com/WPF>
  - <http://windowsclient.net/wpf/default.aspx>

# CONTACT ME

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