Programming Next Generation User Interfaces Using Windows Presentation Foundation

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Technologies for delivering next generation UX

- **Windows Vista**: Deliver the next generation of rich UX on Windows Vista
- **Web**: Deliver rich UX to the Web
- **WPF/E**: Deliver rich UX to a wide set of platforms
Platform

**WinFX**

- **New managed API** for Microsoft Windows
- Superset of the .NET Framework. New functionalities, optimized for Windows Vista
- Win32 apps can be incorporated into the WinFX model
- WinFX will be available for Windows XP by installing the WinFX Runtime Components
Platform  Windows Presentation Foundation

- Unified content and application model
- Better designer / developer collaboration
- Exciting user interfaces
- Higher fidelity information
- Increased end user satisfaction
Integrated Vector-based Graphics and Composition

• Modern graphics capabilities
  – 2D and 3D graphics
  – Image effects and codec
  – Hardware accelerated sub-pixel ClearType
  – Video and audio

• Revolutionizing the Graphics and Media pipeline
  – Across the display, audio, printing, and remoting sub-systems
  – Direct3D-based hardware acceleration throughout the rendering pipeline

• Anticipates future hardware technologies
  – Resolution independence
  – Double floating point precision
  – Deeper color pipeline
Platform ▶ WPF ▶ Microsoft Max
Platform ➤ WPF ➤ Healthcare Center

Example

Abercrombie, Kim E.
25y Female
Epiphysial Arrest

Live Monitors
- ECG-Sinus Rhythm
- ECG-Junctional Tachy
- ECG-Accelerated IVR
- Pulse
- O2 Saturation

Live Monitors
- ECG-Sinus Rhythm
- ECG-Junctional Tachy

Workspace

Vital Signs
<table>
<thead>
<tr>
<th>Time</th>
<th>Heart Rate</th>
<th>Rasp Rate</th>
<th>bp Sys</th>
<th>bp Diast</th>
<th>bp Mean</th>
<th>temp C</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15 am</td>
<td>70</td>
<td>24</td>
<td>140</td>
<td>70</td>
<td>93</td>
<td>37.2</td>
</tr>
<tr>
<td>10:00 am</td>
<td>74</td>
<td>28</td>
<td>138</td>
<td>68</td>
<td>91</td>
<td>37</td>
</tr>
</tbody>
</table>

Diagnostic
- Diagnosis: 19:30
- Patient Room Live Video: Live FEZ
- Heart Ultrasound Video: 16:33
- Radiology X-ray: 16:44
Example

Redpoint Jacket
An outstanding technical insulator, use the Redpoint as a layer in cold weather or on its own when temperatures aren’t brutal.

FEATURES
- Elastic-bound flexible cuffs
- Two hand pockets
- Left vertical chest pocket
- Streamlined
- PrimaLoft® insulation

EXPEDITIONS
- Sleep, Deep, and Out
- The North Face Flight

TECHNOLOGY
- DURABLE WATER RESISTANT FINISH
- PRIMALOFT® ONE INSULATION

SELECT COLOR BELOW. DRAG PRODUCT TO ROTATE.

RETURN TO EXPEDITION
STEEP, DEEP, AND OUT OF CONTROL

OBJECTIVE: EXPLORE UNCHARTED VERTICAL TERRAIN VIA HELISKIING

BACKCOUNTRY IN ALBERTA, UTAH AND ALASKA
Developer & Designer Collaboration ➤ About XAML

- XML based (text)
- Extensible Application Markup Language
- Declarative
- UI Descriptive
- Access the WPF Platform
- Open specification
Declarative Programming for Windows

XAML

- Markup for Windows
  - Build applications in simple declarative statements
  - Can be used for any CLR object hierarchy

- Code and content are separate
  - Streamline collaboration between designers and developers

- Easy for tools to consume and generate

C#

```csharp
Button b1 = new Button();
b1.Content = "OK";
b1.Background = new SolidColorBrush(Colors.LightBlue);
b1.Width = 100;
```

VB.NET

```vbnet
Dim b1 As New Button
b1.Content = "OK"
b1.Background = New SolidColorBrush(Colors.LightBlue)
b1.Width = 100
```
Demo
Windows Presentation Foundation/Everywhere ("WPF/E")

• Subset of WPF focused on interactive content

• Great integration with web
  – Cross platform and cross browser
  – Supports JavaScript and C#/VB.Net

• XAML is the enabling technology

• Available Soon
  – Customer preview in Q3 2006
  – Web release in first half of 2007
  – Device release in second half of 2007
"WPF/E" Architecture

Browser

Content Package

Images
Fonts
Video/Audio
XML - Data
XAML

Programming Model

JavaScript
C# / VB.NET

Plug-ins

Application / OS

Native API

Platform Specific Hosting Model

“WPF/E” Runtime

Native “WPF/E” API

UI & Rendering Core

Platform Abstraction Layer
“WPF/E” Web Platforms

• Operating Systems
  – Win XP, Win2K, Win2K3, Vista
    > Considering Win9X
  – Mac OS X 10.*
  – Considering Linux and Solaris

• Browsers
  – IE 5.5+
  – Mozilla 1+, Firefox 1+
  – Opera 7+
  – Safari 1+
"WPF/E" Features

Core Runtime

Base Services
- XML/XAML Parser
- Accessibility
- Input and Eventing
- Property System

Media Integration Layer
- 2D
- Audio
- Imaging
- Composition Engine
- Text
- Video
- Animation

Other Services
- Core Controls
- Container Controls
- Basic Layout
"WPF/E" Web Programming Model

• XAML and JavaScript in a web page
  – Access "WPF/E" via JavaScript
  – Support inline and external XAML/script

• XAML and .NET Framework code
  – "WPF/E" hosts an x-platform .NET runtime
    > Code (C#/VB.NET) is compiled into an intermediate language (IL)
    > IL is run in a secure and “managed” environment
  – "WPF/E" loads external package containing IL and XAML
Questions?