



**Esri International User Conference | San Diego, CA**  
**Technical Workshops | July 13-14, 2011**

# **ArcGIS API for Microsoft Silverlight/WPF—An Introduction**

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# Agenda

- **Silverlight platform**
- **API Overview**
  - **Getting Started**
- **Building Apps**
  - **Configurable Viewer**
- **Road Ahead**



Microsoft®  
**Silverlight™**



Windows  
Presentation  
Foundation

# ArcGIS 10 — A Complete System

**Easier  
More Powerful  
and Everywhere**



# Microsoft's Silverlight Platform

- Premier Web and Mobile platform
- Backed by Microsoft and Esri
- Silverlight 5+
- Support on future systems



# ArcGIS API for Silverlight

- Powerful Web Mapping API
- Use **ArcGIS Server/Online**, Bing Maps & other data services
- Integrates with Microsoft development environments
- Common, rich development experience



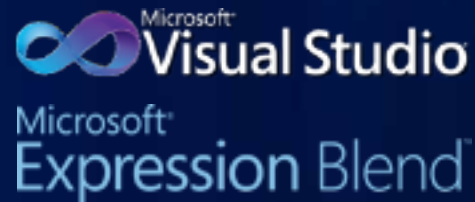
# Requirements

- **Tooling**

- **Microsoft Visual Studio 2010**
  - **Silverlight 4 Tools for Visual Studio 2010 -or- SP1**
- **Expression Blend 4**

- **Platforms**

- **Silverlight 4**

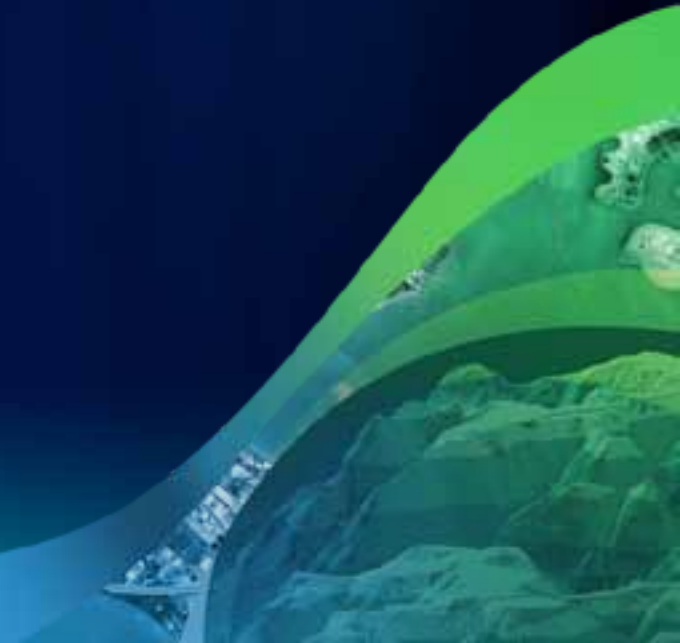


# Libraries



- **ESRI.ArcGIS.Client.dll**
    - Map, ArcGIS Layers, Graphics, Geometry, Symbols
  - **ESRI.ArcGIS.Client.WebMap.dll**
  - **ESRI.ArcGIS.Client.Bing.dll**
  - **ESRI.ArcGIS.Client.Behaviors.dll**
  - **ESRI.ArcGIS.Client.Toolkit.dll\***
    - Common set of controls for map interaction
  - **ESRI.ArcGIS.Client.Toolkit.DataSources.dll\***
    - Common set of data sources
- \* CodePlex URL: <http://esrisilverlight.codeplex.com>

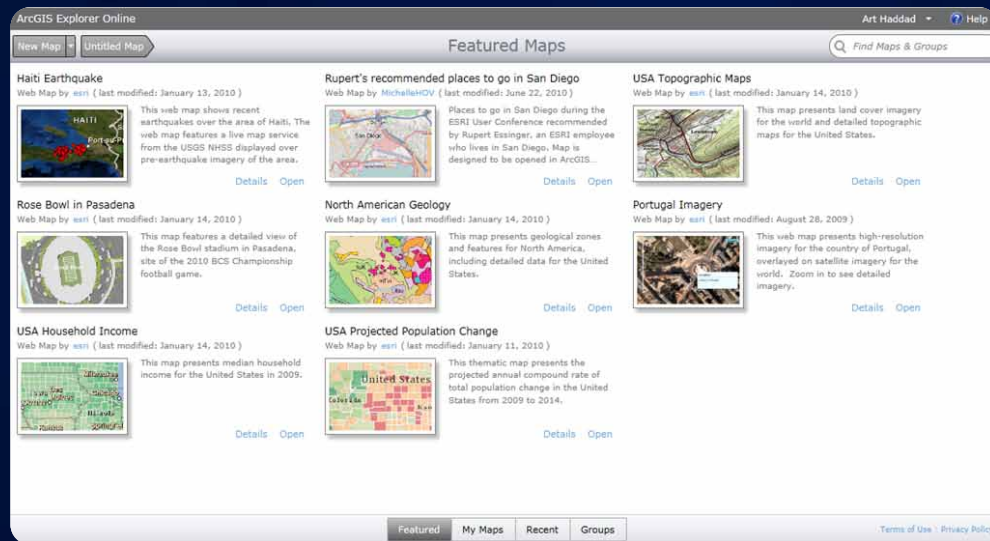
# API Highlights





# WebMap Documents

- Read, process, utilize WebMap documents
  - Created and hosted on ArcGIS Online, ArcGIS Portal



# Wrap Around

- **Continuous pan East to West**
- **Works with:**
  - **Dynamic Maps**
  - **Features**
  - **Editing**
- **Supported in**
  - **WGS84, Web Mercator**










# InfoWindow control

- Available in Toolkit
- Similar, but different than MapTip
  - Can be displayed any time
  - Show on map action
  - Can remain visible after interaction
    - Anchored to a position relative to the map



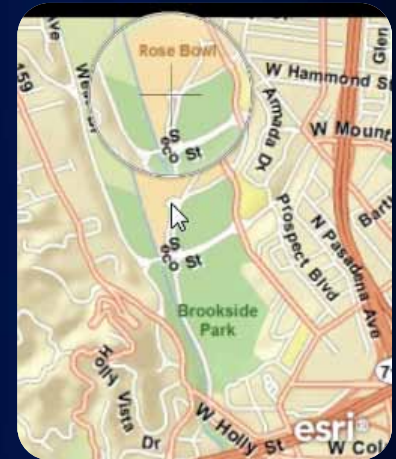
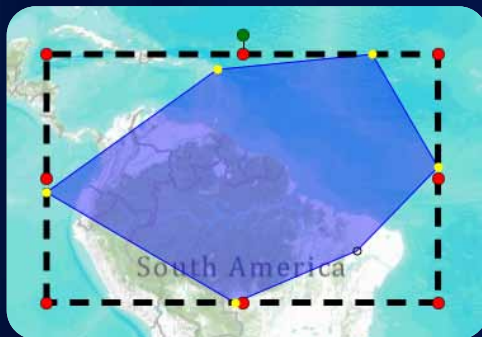
# Touch/Gestures

- **Support for Touch and Gestures**
  - Map Navigation, Draw support

			
Tap	Double-Tap	Pan/Drag	Touch & Hold
			
Flick	Stretch	Pinch	

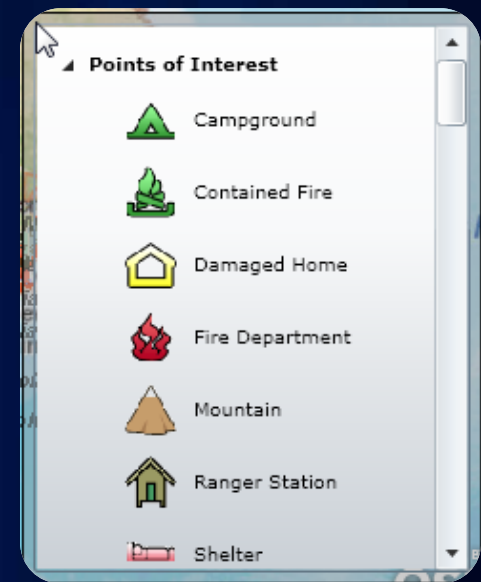
# Graphics and Editing

- **Edit and draw magnifier**
  - Interactive editing experience to support touch devices
- **New arrow, circle, ellipse, triangle types**
- **Rotate, scale, move geometry**



# Legend Control

- Available in Toolkit library
- Legend is Templatable
  - Controls can be added to layer items
    - Radio buttons, check boxes, etc
- Symbol swatches for Feature Layers and ArcGIS Dynamic Map Service Layers can be retrieved and displayed



# ScaleLine and Attribution controls

- Attribution automatically shows copyright text from all visible layer services
- Fully style-able





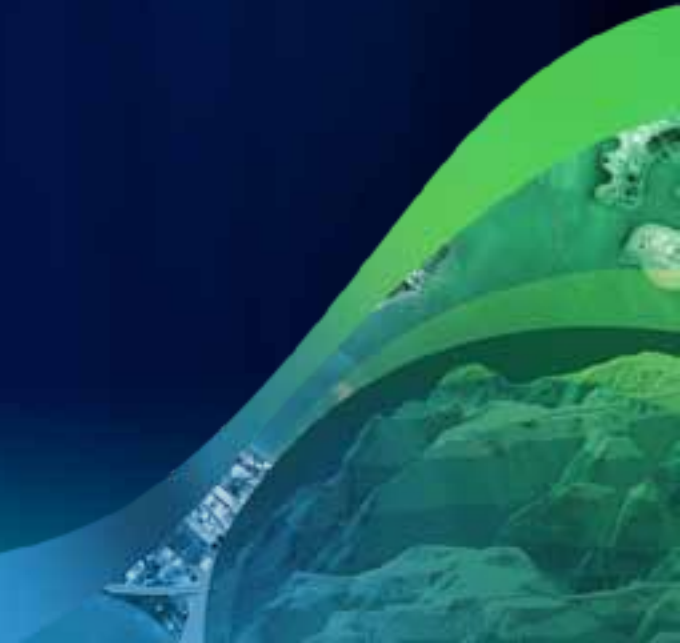
# IDE Integration

- Design-time support
  - Expression Blend 4 and Visual Studio 2010
- Application templates





# Building Apps



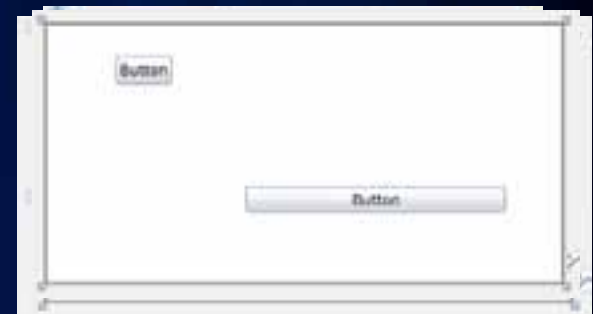
# XAML and Code Behind

- UserControl has container class to layout elements
- *xmlns* declarations  $\equiv$  *using* statement in C# and *Imports* in VB.NET

```
<UserControl x:Class="MyUserControl"
    xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
    xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml">
    <Grid x:Name="LayoutRoot">
        ...
    </Grid>
</UserControl>
```

# Layout containers in XAML

- Container classes or layout controls group and position controls
- Core container classes
  - **Grid**: grid format with rows and columns



```
<Grid>
  <Grid.ColumnDefinitions>
    <ColumnDefinition width="1*" />

  <StackPanel >
    <Button Content="Button" Margin="5" />
  </StackPanel>
</Grid>

<Canvas>
  <Button Content="Button" Margin="5" Canvas.Left="50" Canvas.Top="20" />
  <Button Content="Button" Margin="5" Canvas.Left="150" Canvas.Top="120"
    Width="200" Height="20" />
</Canvas>

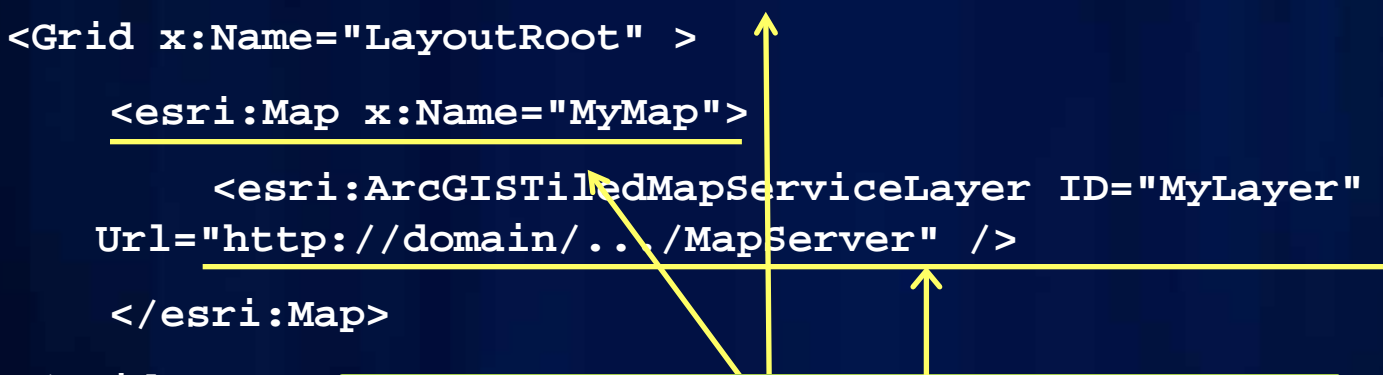
  <Button Content="Button" Margin="5" />
  <Button Content="Button" Margin="5" />
  <Button Content="Button" Margin="5" />
</StackPanel>
</StackPanel>
```

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# XAML : Creating a Map 101

```
<UserControl x:Class="ArcGISSilverlightSDK.Map"
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
  xmlns:esri="http://schemas.esri.com/arcgis/client/2009">
  <Grid x:Name="LayoutRoot" >
    <esri:Map x:Name="MyMap">
      <esri:ArcGISTiledMapServiceLayer ID="MyLayer"
        Url="http://domain/.../MapServer" />
    </esri:Map>
  </Grid>
</UserControl>
```



VB.NET:

```
Dim layer As ArcGISTiledMapServiceLayer =
  New ArcGISTiledMapServiceLayer()
layer.ID = "MyLayer"
layer.Url = "http://domain/.../MapServer"
MyMap.Layers.Add(layer)
```

```
Dim MyMap As MyMap = New MyMap()
LayoutRoot.Children.Add(MyMap)
```

# Getting Started

- Demos
  - **A simple application**
- Resource Center
  - **Interactive SDK**
  - **Documentation**
  - **Samples**
  - **CodePlex**

# Silverlight Viewer



- Configurable *ready-to-deploy* Web client
  - Built with ArcGIS API for Silverlight
- **Easily and quickly** create Web mapping applications
  - Complete set of core GIS tools and functionality
- **No programming required**
  - Ideal for novice Web application creators
- **Extend with Add-Ins**
  - Tools, Behaviors, Layouts, Layers, Controls

# Status



- **V 2.2 - released June 2011**
  - ArcGIS API for Silverlight
  - ArcGIS API for WPF
  - ArcGIS API for Windows Phone
- **V 3.0 beta - Q3**
  - WPF part of 10.1 ArcGIS Runtime SDK for WPF
- **V 2.3 – early Q4**

# More Silverlight sessions!

- **Advanced Silverlight**
  - **Wed 1:30 PM - 2:45 PM Room 8**
  - **Thu 3:15 PM - 4:30 PM Room 32 B**
- **Silverlight Viewer - Intro**
  - **Tue 3:15 PM - 4:30 PM Room 5 A/B**
  - **Thu 1:30 PM - 2:45 PM Room 5 A/B**
- **Silverlight Viewer - Add-Ins**
  - **Wed 11:00 AM – 12:30 PM Exhibit Hall C (Web Demo Theater)**
  - **Wed 4:00 PM – 4:45 PM Exhibit Hall C (Web Demo Theater)**

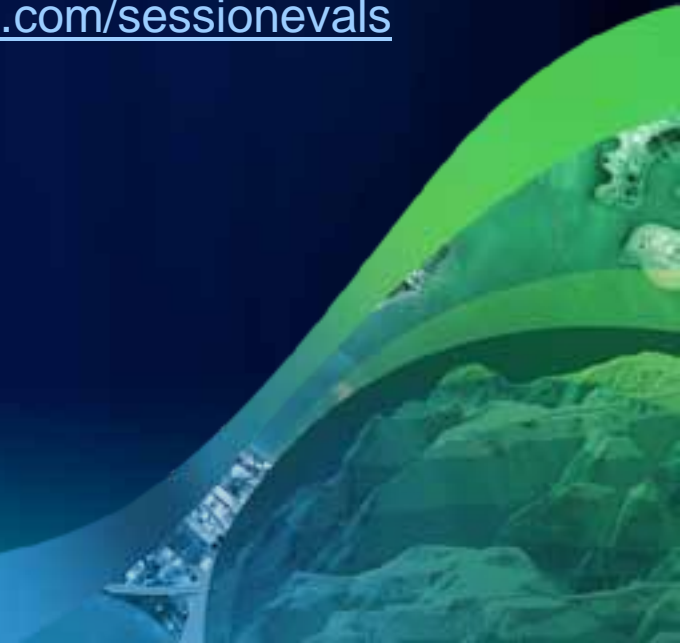


## More Silverlight sessions!

- Road Ahead - Silverlight
  - Wed 3:15 PM – 3:35 PM  
Room 6 A
- Road Ahead – WPF
  - Wed 12:00 PM – 1:00 PM  
Exhibit Hall C (Desktop Developer Demo Theater)

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