

Silverlight 4 Unleashed

Introduction

Honing Your Basic Skills

What Can You Learn from *Silverlight 2 Unleashed*?

About Code in This Book

Adding a Reference to a Namespace

Setting the Right Project as Startup

Using the var Keyword

Happy Coding!

Chapter 1

Three Years of Silverlight

Discovering Silverlight 4

Learning Silverlight Is Betting on the Future

How Can They Be So Fast?

How About Compatibility with Older Versions?

Cross-Browser and Cross-Platform Compatibility

Windows and Macintosh

Linux

Alternatives to Silverlight

In the Web Browser

Out of the Browser

Legacy Technologies

A Short History of Silverlight

Silverlight 1.0

Silverlight 2

Silverlight 3

And Silverlight 4[el]

Previewing the Future of Silverlight

Installing Silverlight 4 as a User

Opening a Silverlight 4 application

What to Do If Silverlight Is Not Installed?

Exploring Silverlight 4 Demos

Deep Zooming the Matterhorn

Getting Involved Socially with Sobees

Navigating with Bing Maps Streetside and PhotoSynth

Visualizing information with the Pivot viewer

Drawing on the web with Fantasia

How Can You Get Involved?

Summary

Chapter 2

Setting Up and Discovering Your Environment

Installing Visual Studio

Visual Studio 2010

Visual Web Developer Express

Installing the Silverlight Tools for Visual Studio

Verifying the Installation

Inspecting the Application

Unpacking an XAP File

Using the Visual Studio Designer

Implementing Hello Silverlight

Checking the Properties Editor

Adding Some Text

Using Design Time Width and Height

Saving the Application

Installing Expression Blend

Creating a New Silverlight Application

Opening Hello Silverlight

Adding an Effect

Creating a Pulse Animation

Triggering the Storyboard

Testing the Application

Summary

Chapter 3

Extending Your Application with Controls

Extending XAML

Mapping a Prefix to a CLR Namespace

Why Is a Prefix Not Always Needed?

Adding a Namespace to Any Element

Defining Your Own URI and Mapping CLR Namespaces

What's a Control?

User Controls

Custom Controls

Summary

Chapter 4

Investigating Existing Controls

Reviewing the Basics

Show Me Some Code!

Changes in Existing Controls

Mouse Wheel Support

Localizing for Right-to-Left Languages

Getting a Control Template's Current State

Adding SelectedValue and SelectedValuePath

Adding Command and CommandParameter

Presenting and Editing Text with the RichTextBox

Zooming with the Viewbox

Opening a ChildWindow

Finding More Information

Where to Find Additional Controls?

Do You Really Need a Control?

The Silverlight Toolkit

Third-Party Providers

Summary

Chapter 5

Understanding Dependency Properties

Inheriting DependencyObject

Threading

Accessing a Dependency Property's Value

Using a DependencyObject as Data Item

Registering Dependency Properties

Defining Metadata

Initializing Dependency Objects

Understanding Attached Properties

Using Attached Properties for Values

- Registering an Attached Property
- Using Custom Attached Properties in XAML
- Implementing an Attached Behavior
- Building on Attached Behaviors with Blend Behaviors
- Adding a New Property with Snippets
 - Installing the Snippets for Silverlight
 - Using the Snippets
- Calculating a Dependency Property's Value
 - Getting the Property's Base Value
 - Reading the Local Value
- Summary

Chapter 6

Working with data: Binding, grouping, sorting and filtering

- Diving into Data Bindings
 - Understanding a binding's elements
 - Setting the Source
 - Refining the Path
 - Flowing in Two Directions
 - Converting the Values
 - Changing the Format
 - Handling Special Cases
 - Property Trigger
 - Validating Input
- Using the Visual Studio Binding Dialog
- Using the Expression Blend Binding Dialog
- Debugging Data Bindings
 - Checking the Output Tab
 - Creating a Test Converter
- Grouping, Filtering and Sorting Data
 - Working with the CollectionViewSource
 - Using a PagedCollectionView
 - Binding Directly to the Source
- Summary

Chapter 7

Understanding the Model-View-ViewModel Pattern

About Design Patterns

Separating the Concerns

Why Is Separation Good?

Classic Separation Patterns

History of MVVM

Developing Expression Blend

Presentation Model for WPF and Silverlight

Architecture of MVVM

Translating to Silverlight

Binding the View to the View-model

Understanding the Data Context

Inheriting the Data Context

Binding to the View

Building a Sample Application

The Model's Interface

Building a CustomerViewModel

Calling the Service in the MainViewModel

Binding to Results

Testing the Application

Bridging the Separation

Implementing a ViewModelBase Class

Using Commands

Sending Messages

Using an MVVM Framework

What Could Be Better?

Summary

Chapter 8

Using Data Controls

Filtering and Paging with the PagedCollectionView

Preparing the Sample

Building the PagedCollectionView

Filtering Data

Paging Through Data

Optimizing Data Handling

Implementing Custom Sorting

Adding a DataPager Control

- Customizing the Display

Validating Data Input

- Using Interface-Based Validation

- Validating with Data Annotations

- Validating Before or After the Data Is Set

- Validating on the Client and on the Server

Reviewing the DataGrid

- Using the DataGrid with Automatic Columns

- Choosing Between DataGrid and ListBox

Editing Data in the DataForm

- Adding a Description

- Validating the Input

- Committing Changes Manually

- Defining Fields Manually

- Getting more information

- Making a Simple Property Editor

Summary

Chapter 9

Connecting to the Web

- Getting Information from Cross-Domain Servers

 - Checking Whether a Policy File Exists

 - Working Around Cross-Domain Restrictions

- Placing Simple Calls

 - Informing the User

 - Learning with a Sample

 - Downloading Strings

 - Detecting Errors, Checking the Result

 - Opening a Resource for Reading

 - Uploading a String

 - Opening a Resource for Writing

 - Accessing Headers

- Sending Complex Messages

 - Posting a File to the Server with HttpWebRequest

- Discovering the New Networking Stack

- Using the Client HTTP Stack

- Using Other HTTP Methods

- Using the CookieContainer

- Handling Responses

- Handling XML Responses

- Handling JSON Responses

- Communicating with WCF

- Setting Up a Service

- Connecting the Client Application

- Updating the Code on the Server

- Publishing the Service

- Summary

- Chapter 10

- Creating resources, styles and templates

- Working with resources in XAML

- Using local resources

- Merging dictionaries

- Resolving resources

- Working with resources in Blend

- Merging a resource dictionary

- Creating new resources

- Selecting a resource for a property

- Using the resources panel

- Cleaning up unused resources

- Using the Pistachio tool

- Styling a control

- Using implicit styles

- Creating a hierarchy of styles

- Creating a new style in Blend

- Templating a control

- Copying a template in Blend

- Creating a custom easing function

- Making a control in Blend

- Applying a theme

- Summary

Chapter 11

Mastering Expression Blend

What Is Blend, Exactly?

- Working as a Tool for Integrators

- Editing XAML Markup

Making an Application Blend

- Why Is Some Code Not Executed?

- Why Does Some Code Fail?

- Detecting the Cause of an Exception

- Isolating Code in Design Mode

- Creating Design Time Data in Blend

- Understanding the Design-Time Data Context

Using Blend Behaviors

- Behavior, Trigger, or Action?

- Adding a Blend Behavior in Code

- Creating a New Blend Behavior

Finding More Information

Summary

Chapter 12

Sketching the User Experience

Sketching as a Discovery Process

- Using Sketching/Wireframing Tools

- Other Kinds of Sketching

Discovering SketchFlow

- Creating a New SketchFlow Application

- Checking the Panels

- Creating and Connecting Screens

Building the UI

- Creating a Component Screen

- Using Sketch Controls

- Exploring the Sketch Controls

- Creating States and Transitions

- Building an Animation

Deploying the SketchFlow Application

Running the Prototype

Giving Feedback

Importing and Managing User Feedback

Importing and Exporting

Importing from Photoshop and Illustrator

Importing from PowerPoint

Exporting to Word

Integrating and Collaborating

Integrating into SharePoint

Integrating into Team Foundation Server

Summary

Chapter 13

Creating Line-of-Business Applications

Preparing the Server-Side

Prerequisites

Preparing the Server-Side Application

Creating the Silverlight Client

Bringing the Client and the Server Together

Adding a Domain Service

Inspecting the Domain Service Class

Inspecting the Metadata

Creating a New Server-Side Query

Working with the Visual Designer

Understanding the DomainDataSource

Calling a Query with Parameter

Sorting the Data

Adding a Pager

Refactoring the Application to MVVM

Adding a Viewmodel

Adapting the XAML Markup

Customizing the Columns

Localizing the User Interface

Adding a RelayCommand Class

Executing the CRUD Operations in Code

Displaying Messages from the View-model

Deleting an Order

Validating the Values

Filtering the Data

Showing Feedback While Processing

Sharing Code

Summary

Chapter 14

Enhancing Line-of-Business Applications and Running Out of the Browser

Enhancing LOB Applications

Adding Paging

Showing Errors

Reconciling Data

Copying and Pasting Rows

Printing

Taking Silverlight Out of the Browser

Setting Up the Application

Uninstalling the Application

Debugging the OOB Application

Looking Under the Hood

Changing the Settings

Updating the Application

Installing from the Code

Saving Files

Working Offline

Summary

Chapter 15

Developing Navigation Applications and Silverlight for Windows Phone 7

Navigating with Silverlight

Should You Always Use a Navigation Application?

Creating a New Navigation Application

Accessing Navigation Information

Providing Custom Navigation

Adding Navigation to a Non-Navigation Application

Developing with Silverlight for Windows Phone 7

Getting Hardware

Targeting a Specific Audience

Developing for Windows Phone 7

Developing for a Uniform Hardware Platform

Designing for the Phone

Installing the Tools

Selling Your Applications

Building Compatible Applications for the Desktop and the Phone

Continuing the Exploration

Summary

Chapter 16

Using Effects and Recording Media

Creating Effects with Pixel Shaders

Writing, Finding, and Compiling Shader Files

Creating and Modifying Shaders with Shazzam

Integrating Shaders in the Application

Adding Properties and Animating Shaders

Using Shaders for Transitions in the VSM

Accessing the Webcam and the Microphone

Getting the List of Devices

Enabling Access

Displaying the Video Output

Detecting Whether Other Applications Use the Device

Capturing Audio

Converting to a WAV File

Creating a Sink

Using the SaveFileDialog

Using the Sink and Adding Commands

Wiring the Commands

Testing Audio Recording

Writing to a Bitmap

Saving the Picture to a PNG File

Manipulating Pixels

Extending WriteableBitmap

Using the Open File Dialog

Learning About News in Media

Summary

Chapter 17

New Transforms, Right Click, HTML Browser, WebBrowserBrush and Isolated Storage

Transforming Elements in a Projection

- Setting Additional Properties

- Using a Matrix3DProjection

- Animating the PlaneProjection

Composing Transforms

Handling the Right-Click Event

- Handling a Routed Event

- Displaying a Context Menu

Hosting an HTML Browser (Out of Browser Only)

- Understanding the Limitations

- Building a Simple Web Browser

- Loading HTML Content from Memory

- Invoking JavaScript

Writing and Reading in the Isolated Storage

- Saving to the Isolated Storage

- Reading from the Isolated Storage

- Deleting Files

- Using the IsolatedStorageSettings

- Trusting the Isolated Storage or Not

Painting with HTML

Summary

Chapter 18

Drag and Drop, Full Screen, Clipboard, COM Interop, Duplex Polling, Notification Windows and Splash Screens

Dragging and Dropping

- Dragging Files on the Silverlight Application

- Drag-and-Drop Restrictions

Working in Full Screen

- Getting Keyboard Support in Full-Screen Mode (Elevated Permissions)

- Using Full Screen on a Monitor While Working on Another

Copying to and from the Clipboard

Working with COM (Elevated Permissions)

- Understanding the Restrictions

- Communicating with Microsoft Office
- Communicating over Duplex Polling
 - Implementing the Server-Side Service
 - Unregistering a Client
 - Configuring the Service
 - Implementing the Client
 - Unsubscribing and Resubscribing
 - Testing the Application
- Displaying Notification Windows
 - Understanding the Restrictions
 - Adding a Notification Window
 - Queuing Notification Windows
 - Interacting with the Main Window
- Creating a Custom Splash Screen
- Summary

Chapter 19

Authentication, Event to Command Binding, Random Animations, Multitouch, Local Communication and Bing Maps Control

- Logging In with Authentication
 - Creating a New Website
 - Adding and Managing Users
 - Configuring the Authentication Web Service
 - Checking the Access
 - Adding References to the Services
 - Implementing the Client
- Binding an Event to a Command
 - Executing a Command When a TextBox Loses Focus
- Building Random Animations
 - Creating the Base Animation in Blend
 - Randomizing the Animation
- Implementing Multitouch in Silverlight
 - Getting the Right Computer
 - Investigating Existing Elements
 - Using Multitouch Libraries
 - Scaling, Rotating, and Translating

- Implementing a Multitouch Application
- Using Multitouch in Windows Phone 7 Applications
- Finding more information

Enabling Local Communication

- Understanding the Restrictions
- Building a Receiver
- Building a Sender
- Testing the Application

Mapping with the Bing Maps Control

- Adding the Map
- Getting Location Information and Marking It
- Getting More Information

Summary

Chapter 20

Building Extensible and Maintainable Applications

Inverting Dependencies with Unity

- Refactoring to Smaller and Simpler Classes
- Setting Up the Services
- Calling the Setup method and Wiring Up
- Discovering More About Unity

Composing an Application with MEF

- Exporting and Importing
- Downloading on Demand
- What About Prism?

Using an MVVM Framework

- Discovering the Components
- Sending Messages

Summary

Chapter 21

Optimizing Performance

Improving the XAP Download Time

- Loading Content on Demand
- Caching Common Assemblies

Virtualizing the User Interface

- Virtualizing the ItemsControl

Unvirtualizing the ListBox

Simplifying the DataTemplate

Creating Items in Batches

Working in Threads

Accelerating the User Interface

Enabling Hardware Acceleration in the Browser

Enabling Hardware Acceleration Out of the Browser

Accelerating with Care

Accelerating in the Windows Phone 7

Using a Code Profiler

Avoiding Memory Leaks

Saving an Object on the Stack or the Heap

Collecting Garbage and Leaking Memory

Living a Shorter Life

Unregistering Event Handlers

Disposing Objects

Using Weak References

Finding a Leak

Summary

Chapter 22

Advanced Development Techniques

Using New C# and .NET Features

Using Modern Programming Syntax

Creating extension methods

Consuming Dynamic Objects

Using Named/Optional Parameters

Localizing Applications

Adding a Resource File

Making an Application Localizable

Using Tools

Downloading Resource Applications on Demand

Encrypting and Decrypting

Understanding the Encryption/Decryption Mechanism

Multithreading

What Is a Thread?

Using the ThreadPool

Dispatching Back to the UI Thread

Creating and Using a BackgroundWorker

Locking Critical Resources

Enhancing Multithreaded Code

Unit Testing the Application

Installing a Unit Test Framework

Adding Functionality with TDD

Using Code Coverage

Unit Testing Windows Phone 7 Applications

Summary

Conclusion