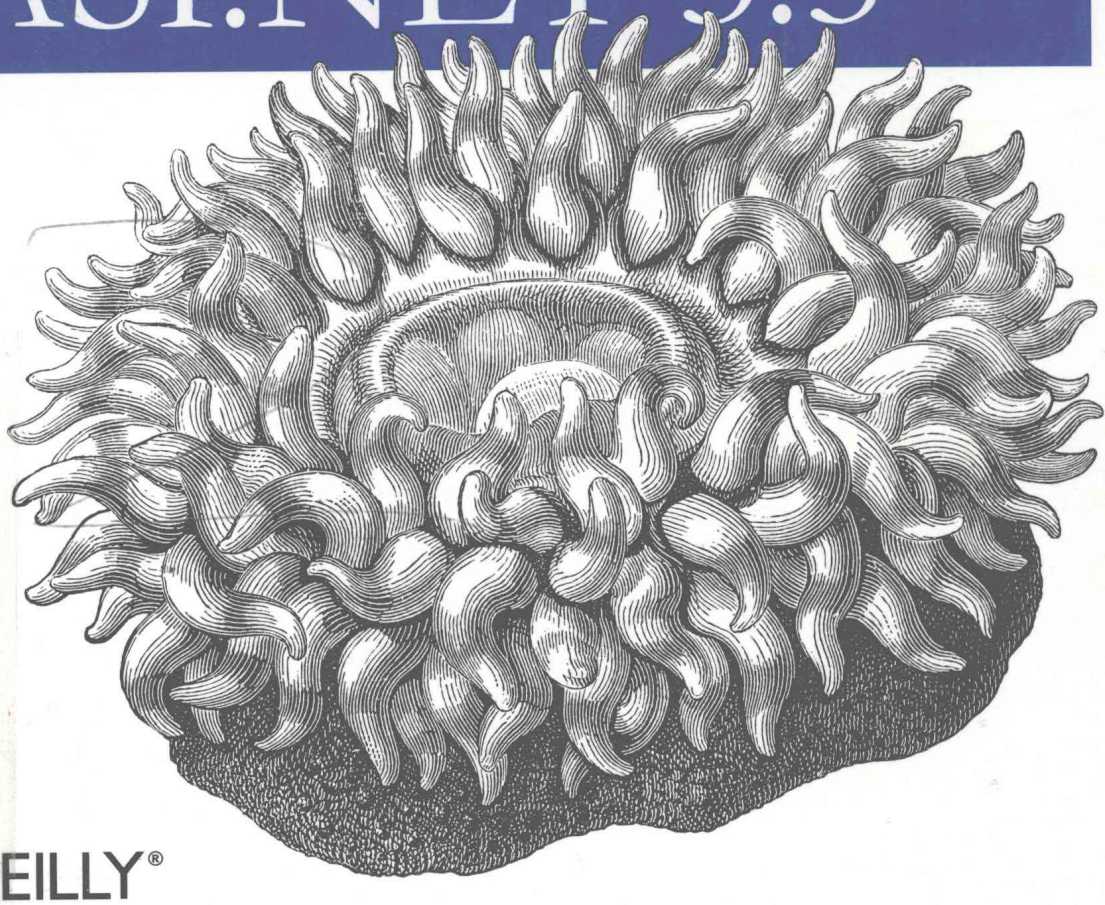
ASP.NET 3.5构建Web 2.0门户网站(影印版)

Building a Web 2.0 Portal with ASP.NET 3.5



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ASP.NET 3.5构建Web 2.0门户网站(影印版)

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Preface

Web 2.0 Ajax portals are among the most successful web applications of the Web 2.0 generation. iGoogle and Pageflakes are the pioneers in this market and were among the first to show Ajax's potential. Portal sites give users a personal homepage with one-stop access to information and entertainment from all over the Web, as well as dashboards that deliver powerful content aggregation for enterprises. A Web 2.0 portal can be used as a content repository just like a SharePoint or DotNetNuke site. Because they draw on Ajax to deliver rich, client-side interactivity, Web 2.0 portals improve usability and provide faster performance compared to non-Ajax web sites. Also, because portals are commonly composed of widgets (small plug-and-play type applications), there's no limit to how much functionality you can provide, simply by adding more and more widgets. Their use also keeps the core architecture of the portal clean and simple because widgets are developed and maintained independently. DotNetNuke is a great example of a widget-powered portal concept that has created a new era in highly decoupled enterprise web applications.

This book takes a fresh new look at portal solutions using the latest cutting-edge technologies from Microsoft. In developing personal, educational, community, and enterprise portals, I have had to deal with many interesting design, development, scalability, performance, and production challenges. In this book, I have tried to show solutions to some of these challenges by building an open source Web 2.0 Portal prototype, and then walk you through the design and architectural challenges, advanced Ajax concepts, performance optimization techniques, and server-side scalability challenges involved. The prototype also shows you practical implementation of the cutting-edge *.NET 3.0 and 3.5* frameworks, including *LINQ* and the *Windows Workflow Foundation*. Moreover, it explores Ajax web site details, browser performance and compatibility challenges, security challenges, and *ASP.NET AJAX* framework advantages and shortcomings.

The project is available at *www.dropthings.com*. Dropthings is an open source example of what can be done with the new technologies from Microsoft. It is intended for educational purposes only. Although it does not come close to real web portal (like Pageflakes) in terms of its feature set, performance, security, and scalability, it does a good job of showing you how to put together several new technologies in a working web application.

Who This Book Is for

This book is primarily for ASP.NET 2.0 or 3.5 developers who have already developed one or more web applications and have a good grip on JavaScript and ASP.NET 2.0. The reader is also expected to have basic understanding of ASP.NET AJAX. This information is available in numerous publications, including several from O'Reilly that are listed in the Roadmap page for this book.

Intermediate developers, looking for ways to gain insight into web development challenges and learn how a successful production web site is built and run, will greatly benefit from this book. Advanced developers will learn how to build a rock solid web application that can withstand millions of hits every day around the clock, survive sudden scalability demands, prevent hack attempts and denial of service attacks, deploy and run a web site on a distributed cluster environment utilizing Content Delivery Networks (CDN), face real-life production challenges, and much more.

How This Book Is Organized

This book first describes what an Ajax web portal (aka a Web 2.0 portal) is and how it can be useful as a model for personal web sites, corporate intranets, or a mass consumer web application. Then it walks you through the architectural challenges of such an application and provides a step-by-step guide to solving design issues. It explains what a widget is and how widget architecture can create a highly decoupled web application that allows the addition of an infinite number of features to a web site.

It following chapters, you'll find step-by-step guides for developing several components of the web project using ASP.NET 2.0/3.5 and ASP.NET AJAX 1.0, the business layer in Workflow Foundation, and the data access layer using LINQ to SQL. Once the basic foundation is up, it goes deep into difficult challenges like first-time visit performance, browser compatibility and memory leaks, advanced caching techniques, putting too much content and functionality on a single page and so on. It then goes into some real-life Ajax and ASP.NET 2.0/3.5 challenges that I have solved in building high-volume commercial portals.

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I have also sprinkled a number of real-life war stories throughout the book that highlight some of the real-life problems I have encountered in building portals like Dropthings. You'll find them, not surprisingly, wherever you encounter the heading, "Real-Life."

Finally, it presents some hard-to-solve scalability and security challenges of Ajax portals and 13 production disasters that are common to web applications that reach millions of users all over the world.

Here's a chapter-by-chapter summary:

Chapter 1, *Introducing Web Portals and Dropthings.com*
: Introduces you to the attributes of a web portal and to the applications that you will learn to build throughout the book. Chapter 1 also shows you how ASP.NET AJAX and .NET 3.5 are used in the product.

Chapter 2, *Architecting the Web Portal and Widgets*
: Gives you an architectural overview of Dropthings.com. It also explains the widget architecture and how to build highly decoupled web applications using widgets. It touches on some performance and security challenges of Ajax web sites.

Chapter 3, *Building the Web Layer Using ASP.NET AJAX*
: Gives a detailed explanation on how the web application is built, starting from the homepage and the widgets. It shows how the drag-and-drop functionality is provided using ASP.NET AJAX 1.0, how a real widget is built, and how ASP.NET 3.5 is used to build the server-side part of the web layer.

Chapter 4, *Building the Data and Business Layers Using .NET 3.5*
: Shows how LINQ is used to build the data access later and .NET 3.0 is used to build the business layer by extensively using Workflow Foundation.

Chapter 5, *Building Client-Side Widgets*
: Shows how to build widgets using JavaScript for faster performance and better caching. It shows how a content bridge or proxy service is built that allows widgets to fetch content from external sources.

Chapter 6, *Optimizing ASP.NET AJAX*
: Goes deep into Ajax-enabled principles for making sites faster, more cache friendly, and scalable. It talks about browser specific challenges and many under-the-hood techniques to get maximum performance out of the Ajax framework.

Chapter 7, *Creating Asynchronous, Transactional, Cache-Friendly Web Services*
: Shows you how to build a custom web service call handler for Ajax calls in order to overcome some shortcomings in ASP.NET AJAX 1.0 and enable your web services to become asynchronous, transactional, and more cache-friendly. It also talks about scalability and security challenges of web applications that rely heavily on web services.

Chapter 8, *Improving Server-Side Performance and Scalability*
: An ASP.NET 2.0 web application has many scalability and performance surprises as it grows from a hundred-user to a million-user web site. Learn how to solve performance, reliability, and scalability challenges of a high volume web site.

Chapter 9, *Improving Client-Side Performance*
: Ajax web sites provide a lot of functionality on the client-side browser that introduces many browser specific challenges and JavaScript performance problems. This chapter provides many tips and tricks for overcoming speed and memory problems on the browser and making the UI load faster and be more responsive.

Chapter 10, *Solving Common Deployment, Hosting, and Production Challenges*
: Last step of a web project development is to successfully deploy the product and run it 24x7. Learn what it takes to deploy and run a high volume production web site solving software, hardware, hosting, and internet infrastructure problems that can bring down your web site and cause great harm to your business.

What You Need to Use this Book

You need Visual Studio 2008 Professional Edition and SQL Server 2005 Developer Edition. You can download the latest source code of the open source project from *www.codeplex.com/dropthings* and set it up locally.

The open source project running at Dropthings will greatly benefit from your contribution. You are welcome to participate in its development by extending the core framework or building new widgets for the project.

Conventions Used in This Book

The following typographical conventions are used in this book:

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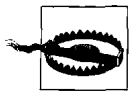

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The code for this book can be found here:

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About the Author

Omar AL Zabir is the CTO and co-founder of Pageflakes, a Microsoft MVP, the author of a popular .NET blog (*http://msmvps.com/omar*), and a frequent contributor to Code Project (*www.codeproject.com*). In 2006, Pageflakes out-ranked iGoogle, Live.com, Netvibes, and Protopage in a review conducted by Seattle-based SEOmoz.org.

Colophon

The animal on the cover of *Building a Web 2.0 Portal with ASP.NET 3.5* is a giant green sea anemone (*Anthopleura xanthogrammica*). These anemones are found on rocks in tidal pools, rocky outcroppings, and concrete pilings from Alaska to Panama in intertidal and subtidal zones. The giant green sea anemone varies in size but can reach heights of 30 cm, have a 17 cm base, and a crown or head of 25 cm.

The giant green sea anemone gets its color from green pigment in its epidermis, so the more sunlight it is exposed to, the more green it becomes. This anemone is a solitary and mostly stationary invertebrate from the Cnidaria phylum, which also includes jellyfish. Like a jellyfish, the giant green sea anemone stings its prey with poison tentacles and then draws the food to its mouth. These anemones enjoy a carnivorous diet of mussels, sea urchins, and small fish, and have been known to eat a giant crab in 15 minutes. Clownfish are immune to its stings and often have symbiotic relationships with anemones. Scientists are experimenting with the poison as a cardiotonic to help ailing human hearts.

The enemies of the giant green anemone include starfish, snails, and sea slugs. However, development in coastal areas, pollution, human foot traffic, and harvesting for home aquariums also pose significant threats.

The cover image is from *The Riverside Natural History*. The cover font is Adobe ITC Garamond. The text font is Linotype Birka; the heading font is Adobe Myriad Condensed; and the code font is LucasFont's TheSans Mono Condensed.

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CHAPTER 1

Introducing Web Portals and Dropthings.com

In this book, I will show you how to develop an Ajax-enabled Web 2.0-style portal.

The portal is built using ASP.NET 3.5, ASP.NET AJAX, and .NET 3.5, as well as Language-Integrated Query (LINQ) and SQL Server 2005. While building this application, you'll learn about the:

- Design decisions that must be made for and usability issues involved in a Web 2.0 user interface
- Architectural complexities and development challenges of JavaScript-rich, widget-enabled web sites
- Production and maintenance challenges of running a high-volume web application

Ajax web portals are among the most extreme implementations of client-side technologies you'll find on the Web. They not only use large amounts of JavaScript, CSS, and HTML, but also push the Ajax and server-side technologies to their limits for interactivity, performance, and scalability. By the time you finish reading this book, you will be equipped with enough technical know-how to launch a Web 2.0 Internet startup on your own.

The application example, which I have named Dropthings, for reasons that will become clear shortly, is a reduced feature set prototype of a real web portal, like Google's iGoogle or Pageflakes. You will be able to deploy the Dropthings on a production server and run it as your own personal web site, a group site, or even as a corporate intranet. Including drag-and-drop enabled widgets, complete support for personalization, the ability to place widgets on multiple pages, centralized authentication and authorization, and much more.

As you work through this book, you will see how Dropthings is architected and implemented. It's a real, living, breathing, open source web portal that you'll find at *http://www.dropthings.com*. Although the application does not compare to a real web portal in terms of its code quality, feature set, scalability, performance, and other aspects of the product, it works as a good proof of concept for several nascent technologies.

However, you can use it for your current day-to-day personal use, and you are welcome to support continued development of the project by adding more features to it or by making cool new widgets for it.

The open source project for Dropthings is hosted at *http://www.codeplex.com/dropthings*. Anyone can contribute.

Figure 1-1 shows the Dropthings site, which you will learn how to build in this book.

Figure 1-1. The Dropthings site is a widget-enabled Web 2.0 portal; you'll build one like it using ASP.NET 3.5, ASP.NET AJAX, the .NET Framework 3.5, and SQL Server 2005

Defining a Web Portal

A *web portal* is a page that allows a user to customize his homepage by dragging and dropping widgets onto it. This approach gives the user complete control over what content he sees on his home page, where on the page he wants to see it, and how he wants to interact with it.

A *widget* is a discrete piece on a web page that performs a particular function and comes with its own UI and set of features. Examples of widgets include to-do lists, address books, contact lists, RSS feeds, clocks, calendars, playlists, stock tickers, weather reports, traffic reports, dictionaries, games, or almost anything you can imagine that can be packaged up and dropped onto a web page. In a corporate environment, widgets can connect to internal systems; for example, an expense tracker widget can interact directly with the internal accounting system. If you are familiar

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