

# Foundations of ASP.NET AJAX



Robin Pars, Laurence Moroney, and John Grieb

## **Foundations of ASP.NET AJAX**

**Copyright © 2007 by Robin Pars, Laurence Moroney, and John Grieb**

All rights reserved. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage or retrieval system, without the prior written permission of the copyright owner and the publisher.

ISBN-13 (pbk): 978-1-59059-828-3

ISBN-10 (pbk): 1-59059-828-8

Printed and bound in the United States of America 9 8 7 6 5 4 3 2 1

Trademarked names may appear in this book. Rather than use a trademark symbol with every occurrence of a trademarked name, we use the names only in an editorial fashion and to the benefit of the trademark owner, with no intention of infringement of the trademark.

Lead Editor: Ewan Buckingham

Technical Reviewers: Andy Olsen, Fabio Claudio Ferracchiati

Editorial Board: Steve Anglin, Ewan Buckingham, Tony Campbell, Gary Cornell, Jonathan Gennick,

Jason Gilmore, Kevin Goff, Jonathan Hassell, Matthew Moodie, Joseph Ottinger, Jeffrey Pepper,

Ben Renow-Clarke, Dominic Shakeshaft, Matt Wade, Tom Welsh

Project Manager: Beth Christmas

Copy Editor: Julie McNamee

Associate Production Director: Kari Brooks-Copony

Production Editor: Janet Vail

Compositor: Gina Rexrode

Proofreader: Lisa Hamilton

Indexer: Broccoli Information Management

Cover Designer: Kurt Krames

Manufacturing Director: Tom Debolski

Distributed to the book trade worldwide by Springer-Verlag New York, Inc., 233 Spring Street, 6th Floor, New York, NY 10013. Phone 1-800-SPRINGER, fax 201-348-4505, e-mail [orders-ny@springer-sbm.com](mailto:orders-ny@springer-sbm.com), or visit <http://www.springeronline.com>.

For information on translations, please contact Apress directly at 2855 Telegraph Avenue, Suite 600, Berkeley, CA 94705. Phone 510-549-5930, fax 510-549-5939, e-mail [info@apress.com](mailto:info@apress.com), or visit <http://www.apress.com>.

The information in this book is distributed on an “as is” basis, without warranty. Although every precaution has been taken in the preparation of this work, neither the author(s) nor Apress shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this work.

The source code for this book is available to readers at <http://www.apress.com>.

*I would like to dedicate this book to the memory of Steve Irwin. May the world have more people as knowledgeable, genuine, enthusiastic, benevolent, and compassionate as him.*

*—Robin Pars*

*This book is dedicated to Rebecca, my wonderful wife and constant supporter.*

*I just don't know what I would do without her.*

*Also to Claudia and Christopher, the greatest daughter and son a guy could ask for!*

*—Laurence Moroney*



# Contents at a Glance

About the Authors .....	xiii
About the Technical Reviewers .....	xiv
Acknowledgments .....	xv
Introduction .....	xvii
<b>CHAPTER 1</b> Introducing AJAX .....	1
<b>CHAPTER 2</b> Taking AJAX to the Next Level .....	17
<b>CHAPTER 3</b> The Microsoft AJAX Library: Making Client-Side JavaScript Easier .....	31
<b>CHAPTER 4</b> ASP.NET AJAX Client Libraries .....	55
<b>CHAPTER 5</b> Introducing Server Controls in ASP.NET AJAX .....	81
<b>CHAPTER 6</b> Using Server Controls in ASP.NET AJAX .....	109
<b>CHAPTER 7</b> Using the ASP.NET AJAX Control Toolkit (Part 1) .....	131
<b>CHAPTER 8</b> Using the ASP.NET AJAX Control Toolkit (Part 2) .....	165
<b>CHAPTER 9</b> AJAX-Style Mapping Using the Virtual Earth SDK .....	205
<b>CHAPTER 10</b> Building a Sample Application Using ASP.NET AJAX .....	225
<b>INDEX</b> .....	257



# Contents

About the Authors .....	xiii
About the Technical Reviewers .....	xiv
Acknowledgments .....	xv
Introduction .....	xvii
<b>CHAPTER 1    Introducing AJAX .....</b>	<b>1</b>
Delving into the History of Web Application Technology .....	1
Thin Client Applications Save the Day .....	6
AJAX Enters the Picture .....	7
Using the XMLHttpRequest Object .....	10
Using Visual Studio 2005 .....	12
Seeing a Simple Example in Action .....	12
Summary .....	15
<b>CHAPTER 2    Taking AJAX to the Next Level .....</b>	<b>17</b>
Introducing ASP.NET 2.0 Server Controls .....	17
Synchronous vs. Asynchronous Web Applications .....	24
Introducing the ASP.NET AJAX Architecture .....	25
An Overview of the AJAX Library .....	26
The Microsoft AJAX Library and Web Services .....	27
JavaScript Object Notation (JSON) .....	28
An Overview of the ASP.NET 2.0 AJAX Extensions .....	28
Summary .....	29

<b>CHAPTER 3</b>	<b>The Microsoft AJAX Library: Making Client-Side JavaScript Easier</b>	31
	JavaScript with the Microsoft AJAX Library	31
	Downloading and Installing ASP.NET 2.0 AJAX Extension 1.0	32
	Creating Your First AJAX Application	32
	Adding a Custom JavaScript Class	34
	Using the AJAX Script Manager to Deliver Your Custom Class	37
	Coding and Running the Application	40
	Using Namespaces and Classes in JavaScript	41
	Using Inheritance in JavaScript	43
	Implementing Interfaces in JavaScript	45
	Accessing Server Resources from JavaScript	49
	Summary	54
<b>CHAPTER 4</b>	<b>ASP.NET AJAX Client Libraries</b>	55
	JavaScript Type Extensions	55
	Array and Boolean Extensions	55
	Date Extensions	58
	Error Extensions	59
	Number Extension	61
	Object Extension	63
	String Extension	64
	The Sys Namespace	66
	Sys.Application	67
	Sys.Component and Client Component Model	70
	Sys.UI	71
	Sys.UI.DomElement	72
	Sys.UI.DomEvent	75
	Global Shortcuts	77
	Other Commonly Used Classes in the Sys Namespace	78
	Sys.Browser	78
	Sys.StringBuilder	78
	Summary	80



<b>CHAPTER 5</b>	<b>Introducing Server Controls in ASP.NET AJAX</b>	81
	Using ASP.NET AJAX Server Controls in Visual Studio 2005	81
	Introducing the ScriptManager Control	83
	Using the ScriptManager	83
	Programming with the ScriptManager	84
	Introducing the ScriptManagerProxy Control	90
	Introducing the UpdatePanel Control	95
	Using the UpdatePanel Control	95
	Programming with UpdatePanel	98
	Introducing the UpdateProgress Control	102
	Using the UpdateProgress Control	102
	Programming with the UpdateProgress Control	103
	Introducing the Timer Control	105
	Using the Timer Control	106
	Summary	108
<b>CHAPTER 6</b>	<b>Using Server Controls in ASP.NET AJAX</b>	109
	Using the UpdatePanel, UpdateProgress, and Timer Controls	109
	Using a Task List Manager	115
	Summary	129
<b>CHAPTER 7</b>	<b>Using the ASP.NET AJAX Control Toolkit (Part 1)</b>	131
	Installing the ASP.NET AJAX Control Toolkit	131
	The Accordion and AccordionPane Controls	133
	AlwaysVisibleControlExtender Control	135
	The AnimationExtender Control	137
	Using Fade Animation	138
	Using Length Animation	140
	Using Discrete Animation	144
	AutoCompleteExtender Control	144
	CalendarExtender Control	147
	CascadingDropDown Control	149
	CollapsiblePanelExtender Control	154
	ConfirmButtonExtender Control	157
	DragPanelExtender Control	159
	DropDownExtender Control	161
	Summary	163

<b>CHAPTER 8</b>	<b>Using the ASP.NET AJAX Control Toolkit (Part 2)</b>	165
	DropShadow and RoundedCorners Extenders	165
	DropShadow Extender	165
	RoundedCorners Extender	167
	DynamicPopulate Extender	168
	FilteredTextBox Extender	171
	HoverMenu Extender	172
	MaskedEdit and MaskedEditValidator Extenders	174
	ModalPopup Extender	177
	NoBot Extender	180
	NumericUpDown Extender	182
	PasswordStrength Extender	185
	PopupControl Extender	188
	Rating Control	190
	ReorderList Control	192
	ResizableControl Extender	195
	Slider Extender	197
	SlideShow Extender	198
	TabContainer and TabPanel Control	201
	Summary	204
 <b>CHAPTER 9</b>	 <b>AJAX-Style Mapping Using the Virtual Earth SDK</b>	 205
	Introduction to Microsoft Virtual Earth (VE)	205
	Programming the VEMap Control	206
	Creating a Simple Map	207
	Setting Longitude and Latitude	216
	Setting the Zoom Level	218
	Choosing a Map Type	219
	Specific or Relative Panning	220
	Using Pushpins	223
	Summary	224

■ <b>CHAPTER 10 Building a Sample Application Using ASP.NET AJAX</b> . . . .	225
Understanding the Application Architecture . . . . .	226
Creating the Application . . . . .	229
Creating Basic Company and Quote Information . . . . .	232
Creating the Price History Pane . . . . .	238
Creating the Charts & Analytics Pane . . . . .	241
Applying ASP.NET AJAX . . . . .	253
Summary . . . . .	255
■ <b>INDEX</b> . . . . .	257