# Practical Apache Struts2 Web 2.0 Projects

Ian Roughley

#### **Practical Apache Struts2 Web 2.0 Projects**

#### Copyright © 2007 by Ian Roughley

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): 978-1-59059-903-7 ISBN-10 (pbk): 1-59059-903-9

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.

Java<sup>TM</sup> and all Java-based marks are trademarks or registered trademarks of Sun Microsystems, Inc., in the US and other countries. Apress, Inc., is not affiliated with Sun Microsystems, Inc., and this book was written without endorsement from Sun Microsystems, Inc.

Lead Editor: Steve Anglin

Technical Reviewer: Frank Zammetti

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: Candace English

Copy Editor: Julie McNamee

Associate Production Director: Kari Brooks-Copony

Production Editor: Candace English

Compositor: Linda Weidemann, Wolf Creek Press

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, 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, 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.



### **Contents at a Glance**

Foreword		xii
About the Author.		
About the Technica	al Reviewer	xv
Acknowledgments	8	xvi
Introduction		XİX
CHAPTER 1	Web 2.0 and Struts2	1
CHAPTER 2	Getting Up and Running	11
CHAPTER 3	Framework Overview	37
CHAPTER 4	Application Overview	71
CHAPTER 5	Data Manipulation	89
CHAPTER 6	Wizards and Workflows	147
CHAPTER 7	Security	179
CHAPTER 8	Searching and Listings	209
CHAPTER 9	Syndication and Integration	237
CHAPTER 10	AJAX	
INDEX		227

## **Contents**

Foreword		Xiii
About the Author		xv
About the Technic	cal Reviewer	xvi
Acknowledgment	s	xvii
Introduction		xix
CHAPTER 1	Web 2.0 and Struts2	1
	What Is Web 2.0?	1
	Web Application Development 2.0	5
	Using this Book	
CHAPTER 2	Getting Up and Running	11
	The Build Process	11
	Maven2	12
	The Struts2 Starter Application	15
	The Maven2-Generated Directory and File Structure	
	The Maven2 Configuration File	
	Starter Application Features	
	Summary	35
CHAPTER 3	Framework Overview	37
	Walking Through a Request-Response	37
	The Request Initiation	38
	The Struts2 Servlet Filter	38
	The Action Invocation	
	The Action	
	Interceptors	
	The Results	40

	Exploring the Core Components	40
	Actions	41
	Interceptors	42
	Custom Interceptors	45
	The Value Stack and OGNL	46
	Results and Result Types	48
	Tag Libraries	49
	Configuring the Elements of the Framework	52
	The web.xml File	52
	Zero Configuration Annotations	52
	The struts.xml File	55
	Configuring the Execution Environment	65
	Extending the Framework	67
	Summary	69
CHAPTER 4	Application Overview	71
	The Application	71
	Use Cases	
	Integration Technologies	
	The Domain Model	
	An Agile Development Process	
	Continuous Integration	
	Integrating the Persistence Layer	
	Configuring the Dependencies	
	Installing MySQL	
	Configuring Hibernate	
	Using Hibernate to Create Data Access Objects	
	Summary	
CHAPTER 5	Data Manipulation	80
Oliai Teli O	•	
	The Use Case	
	CRUD Functionality	
	The Domain Model	
	Model-Driven Actions	
	Setup Code and Data Prepopulation	92
	Configuration	96

	The Action Class	98
	Single Unit of Work	98
	Zero Configuration	100
	Multiple Units of Work	108
	Unit Testing	112
	JSP Templates	116
	Internationalization	123
	Input Validation	127
	Exception Handling	133
	Unexpected Errors	134
	Changing the Workflow	135
	Recovery via User Interaction	135
	Displaying the Error	137
	File Uploads	140
	Action Modifications	
	XML-Configured Actions and Wildcard-Configured Actions.	
	Zero Configuration Actions	
	Summary	146
CHAPTER 6	Wizards and Workflows	147
	The Use Case	147
	The Scope Interceptor	
	Configuration	
	Workflow Elements	
	Custom Validations	
	Customizing the Rendering of Struts2 Tags	160
	Working with Subclassed Domain Objects	
	Implementing flash Scope	
	Action Validation Using OGNL	170
	An Alternative Approach to Entering Contestants	171
	Summary	178
CHAPTER 7	Security	179
	The Use Cases	179
	Container-Based Authentication	
	Configuring the Container	
	Configuring the Web Application	
	Accessing Role Information	
	The Roles Interceptor	

	Implementing Acegi	187
	Configuring Acegi	188
	The Acegi Application Context Configuration File	189
	Implementing a Custom Authentication Provider	191
	Authenticating the User	193
	Accessing Role Information	195
	Custom Authentication and Authorization	200
	Preventing Unauthorized Access	200
	Configuring Authorization	203
	Implementing Authentication	205
	Accessing Role Information	207
	Summary	208
OHADTED O	Correling and Listings	000
CHAPTER 8	Searching and Listings	209
	The Use Cases	209
	Setting the Stage	210
	Updating the Screen Layout	210
	Creating a Friendly Home Page	214
	Modularizing the List Rendering	217
	Search for Events by Name	220
	Developing a Search Form	227
	Consolidating List Actions	232
	Summary	236
CHAPTER 9	Syndication and Integration	237
	The Use Case	
	Implementing RSS	
	Results and Result Types	
	Configuring Result Types	
	Implementing the RSS Result Type	
	Implementing an Atom Feed	
	Consuming the RSS Feed with a Mashup	
	Configuring the GeoRSS Module	
	Geo-coding the Address and Creating the Feed Entry	
	Implementing the Mashup Client	
	Integrating a Map into the Home Page	260

	Implementing Web Services	262
	Mapping URLs to Actions	263
	Configuring Action Mappers	265
	Creating a Custom Action Mapper	266
	Implementing the RESTful Web Service Logic	271
	Summary	277
CHAPTER 10	AJAX	279
	The Use Cases	280
	Developing the Supporting Infrastructure	280
	Updating the Menu Options	281
	Implementing the Voting Use Cases	283
	Using the ajax Theme	291
	Configuring the Application	291
	Retrieving Action Results	292
	Invoking Actions as Events	294
	Additional ajax Theme Opportunities	299
	Using JavaScript	302
	Using the XML Result Type	
	Using the JSON Result Type Plug-in	310
	Using the Google Web Toolkit	
	Generating the GWT Starter Code	
	Configuring the Struts2 Plug-in	318
	Integrating Struts2 and GWT	319
	Summary	
INDEX		327