

/THEORY/IN/PRACTICE

A beetle is shown in the upper right corner, moving diagonally down and to the left. It has left a long, winding trail of small, irregular footprints that extends across the entire red background. The beetle is dark and its shadow is cast to the left.

Beautiful Testing

Leading Professionals Reveal
How They Improve Software

O'REILLY®

Edited by Tim Riley
& Adam Goucher

CONTENTS

PREFACE	xiii
<i>by Adam Goucher</i>	

Part One BEAUTIFUL TESTERS

1	WAS IT GOOD FOR YOU?	3
	<i>by Linda Wilkinson</i>	
2	BEAUTIFUL TESTING SATISFIES STAKEHOLDERS	15
	<i>by Rex Black</i>	
	For Whom Do We Test?	16
	What Satisfies?	18
	What Beauty Is External?	20
	What Beauty Is Internal?	23
	Conclusions	25
3	BUILDING OPEN SOURCE QA COMMUNITIES	27
	<i>by Martin Schröder and Clint Talbert</i>	
	Communication	27
	Volunteers	28
	Coordination	29
	Events	32
	Conclusions	35
4	COLLABORATION IS THE CORNERSTONE OF BEAUTIFUL PERFORMANCE TESTING	37
	<i>by Scott Barber</i>	
	Setting the Stage	38
	100%?!? Fail	38
	The Memory Leak That Wasn't	45
	Cah't Handle the Load? Change the UI	46
	It Can't Be the Network	48
	Wrap-Up	51

Part Two BEAUTIFUL PROCESS

5	JUST PEACHY: MAKING OFFICE SOFTWARE MORE RELIABLE WITH FUZZ TESTING	55
	<i>by Kamran Khan</i>	
	User Expectations	55
	What Is Fuzzing?	57
	Why Fuzz Test?	57

	Fuzz Testing	60
	Future Considerations	65
6	BUG MANAGEMENT AND TEST CASE EFFECTIVENESS <i>by Emily Chen and Brian Nitz</i>	67
	Bug Management	68
	The First Step in Managing a Defect Is Defining It	70
	Test Case Effectiveness	77
	Case Study of the OpenSolaris Desktop Team	79
	Conclusions	83
	Acknowledgments	83
	References	84
7	BEAUTIFUL XMPP TESTING <i>by Remko Tronçon</i>	85
	Introduction	85
	XMPP 101	86
	Testing XMPP Protocols	88
	Unit Testing Simple Request-Response Protocols	89
	Unit Testing Multistage Protocols	94
	Testing Session Initialization	97
	Automated Interoperability Testing	99
	Diamond in the Rough: Testing XML Validity	101
	Conclusions	101
	References	102
8	BEAUTIFUL LARGE-SCALE TEST AUTOMATION <i>by Alan Page</i>	103
	Before We Start	104
	What Is Large-Scale Test Automation?	104
	The First Steps	106
	Automated Tests and Test Case Management	107
	The Automated Test Lab	111
	Test Distribution	112
	Failure Analysis	114
	Reporting	114
	Putting It All Together	116
9	BEAUTIFUL IS BETTER THAN UGLY <i>by Neal Norwitz, Michelle Levesque, and Jeffrey Yasskin</i>	119
	The Value of Stability	120
	Ensuring Correctness	121
	Conclusions	127
10	TESTING A RANDOM NUMBER GENERATOR <i>by John D. Cook</i>	129
	What Makes Random Number Generators Subtle to Test?	130
	Uniform Random Number Generators	131

	Nonuniform Random Number Generators	132
	A Progression of Tests	134
	Conclusions	141
11	CHANGE-CENTRIC TESTING	143
	by Murali Nandigama	
	How to Set Up the Document-Driven, Change-Centric Testing Framework?	145
	Change-Centric Testing for Complex Code Development Models	146
	What Have We Learned So Far?	152
	Conclusions	154
12	SOFTWARE IN USE	155
	by Karen N. Johnson	
	A Connection to My Work	156
	From the Inside	157
	Adding Different Perspectives	159
	Exploratory, Ad-Hoc, and Scripted Testing	161
	Multiuser Testing	163
	The Science Lab	165
	Simulating Real Use	166
	Testing in the Regulated World	168
	At the End	169
13	SOFTWARE DEVELOPMENT IS A CREATIVE PROCESS	171
	by Chris McMahon	
	Agile Development As Performance	172
	Practice, Rehearse, Perform	173
	Evaluating the Ineffable	174
	Two Critical Tools	174
	Software Testing Movements	176
	The Beauty of Agile Testing	177
	QA Is Not Evil	178
	Beauty Is the Nature of This Work	179
	References	179
14	TEST-DRIVEN DEVELOPMENT: DRIVING NEW STANDARDS OF BEAUTY	181
	by Jennitta Andrea	
	Beauty As Proportion and Balance	181
	Agile: A New Proportion and Balance	182
	Test-Driven Development	182
	Examples Versus Tests	184
	Readable Examples	185
	Permanent Requirement Artifacts	186
	Testable Designs	187
	Tool Support	189
	Team Collaboration	192
	Experience the Beauty of TDD	193
	References	194

15	BEAUTIFUL TESTING AS THE CORNERSTONE OF BUSINESS SUCCESS	195
	by <i>Lisa Crispin</i>	
	The Whole-Team Approach	197
	Automating Tests	199
	Driving Development with Tests	202
	Delivering Value	206
	A Success Story	208
	Post Script	208
16	PEELING THE GLASS ONION AT SOCIALTEXT	209
	by <i>Matthew Heusser</i>	
	It's Not Business... It's Personal	209
	Tester Remains On-Stage; Enter Beauty, Stage Right	210
	Come Walk with Me, The Best Is Yet to Be	213
	Automated Testing Isn't	214
	Into Socialtext	215
	A Balanced Breakfast Approach	227
	Regression and Process Improvement	231
	The Last Pieces of the Puzzle	231
	Acknowledgments	233
17	BEAUTIFUL TESTING IS EFFICIENT TESTING	235
	by <i>Adam Goucher</i>	
	SLIME	235
	Scripting	239
	Discovering Developer Notes	240
	Oracles and Test Data Generation	241
	Mindmaps	242
	Efficiency Achieved	244
<hr/>		
Part Three	BEAUTIFUL TOOLS	
18	SEEDING BUGS TO FIND BUGS: BEAUTIFUL MUTATION TESTING	247
	by <i>Andreas Zeller and David Schuler</i>	
	Assessing Test Suite Quality	247
	Watching the Watchmen	249
	An AspectJ Example	252
	Equivalent Mutants	253
	Focusing on Impact	254
	The Javalanche Framework	255
	Odds and Ends	255
	Acknowledgments	256
	References	256
19	REFERENCE TESTING AS BEAUTIFUL TESTING	257
	by <i>Clint Talbert</i>	
	Reference Test Structure	258

	Reference Test Extensibility	261
	Building Community	266
20	CLAM ANTI-VIRUS: TESTING OPEN SOURCE WITH OPEN TOOLS	269
	by <i>Tomasz Kojm</i>	
	The Clam Anti-Virus Project	270
	Testing Methods	270
	Summary	283
	Credits	283
21	WEB APPLICATION TESTING WITH WINDMILL	285
	by <i>Adam Christian</i>	
	Introduction	285
	Overview	286
	Writing Tests	286
	The Project	292
	Comparison	293
	Conclusions	293
	References	294
22	TESTING ONE MILLION WEB PAGES	295
	by <i>Tim Riley</i>	
	In the Beginning...	296
	The Tools Merge and Evolve	297
	The Nitty-Gritty	299
	Summary	301
	Acknowledgments	301
23	TESTING NETWORK SERVICES IN MULTIMACHINE SCENARIOS	303
	by <i>Isaac Clerencia</i>	
	The Need for an Advanced Testing Tool in eBox	303
	Development of ANSTE to Improve the eBox QA Process	304
	How eBox Uses ANSTE	307
	How Other Projects Can Benefit from ANSTE	315
A	CONTRIBUTORS	317
	INDEX	323