

01011011000100100100101010101101100010010010010

Table of Contents

Foreword by Alberto Savoia	xiii
Foreword by Patrick Copeland	xvii
Preface	xxiii
Chapter 1 Introduction to Google Software Testing	1
Quality≠Test	5
Roles	6
Organizational Structure	8
Crawl, Walk, Run	10
Types of Tests	12
Chapter 2 The Software Engineer in Test	15
The Life of an SET	17
Development and Test Workflow	17
Who Are These SETs Anyway?	22
The Early Phase of a Project	22
Team Structure	24
Design Docs	25
Interfaces and Protocols	27
Automation Planning	28
Testability	29
SET Workflow: An Example	32
Test Execution	40
Test Size Definitions	41
Use of Test Sizes in Shared Infrastructure	44
Benefits of Test Sizes	46
Test Runtime Requirements	48
Case 1: Change in Common Library	52
Test Certified	54
An Interview with the Founders of the Test Certified Program	57
Interviewing SETs	62
An Interview with Tool Developer Ted Mao	68
An Interview with Web Driver Creator Simon Stewart	70

Chapter 3	The Test Engineer	75
	A User-Facing Test Role	75
	The Life of a TE	76
	Test Planning	79
	Risk	97
	Life of a Test Case	108
	Life of a Bug	113
	Recruiting TEs	127
	Test Leadership at Google	134
	Maintenance Mode Testing	137
	Quality Bots Experiment	141
	BITE Experiment	153
	Google Test Analytics	163
	Free Testing Workflow	169
	External Vendors	173
	An Interview with Google Docs TE Lindsay Webster	175
	An Interview with YouTube TE Apple Chow	181
Chapter 4	The Test Engineering Manager	187
	The Life of a TEM	187
	Getting Projects and People	189
	Impact	191
	An Interview with Gmail TEM Ankit Mehta	193
	An Interview with Android TEM Hung Dang	198
	An Interview with Chrome TEM Joel Hynoski	202
	The Test Engineering Director	206
	An Interview with Search and Geo Test Director Shelton Mar	207
	An Interview with Engineering Tools Director Ashish Kumar	211
	An Interview with Google India Test Director Sujay Sahni	214
	An Interview with Engineering Manager Brad Green	219
	An Interview with James Whittaker	222
Chapter 5	Improving How Google Tests Software	229
	Fatal Flaws in Google's Process	229
	The Future of the SET	231
	The Future of the TE	233
	The Future of the Test Director and Manager	234
	The Future of Test Infrastructure	234
	In Conclusion	235

Appendix A Chrome OS Test Plan	237
Overview of Themes	237
Risk Analysis	238
Per-Build Baseline Testing	239
Per-LKG Day Testing	239
Per-Release Testing	239
Manual Versus Automation	240
Dev Versus Test Quality Focus	240
Release Channels	240
User Input	241
Test Case Repositories	241
Test Dashboarding	241
Virtualization	241
Performance	242
Stress, Long-Running, and Stability	242
Test Execution Framework (Autotest)	242
OEMs	242
Hardware Lab	242
E2E Farm Automation	243
Testing the Browser AppManager	243
Browser Testability	243
Hardware	244
Timeline	244
Primary Test Drivers	246
Relevant Documents	246
Appendix B Test Tours for Chrome	247
The Shopping Tour	247
The Student Tour	248
Suggested Areas to Test	248
The International Calling Tour	249
Suggested Areas to Test	249
The Landmark Tour	249
Suggested Landmarks in Chrome	249
The All Nighter Tour	250
Suggested Areas to Test	250
The Artisan's Tour	251
Tools in Chrome	251
The Bad Neighborhood Tour	251
Bad Neighborhoods in Chrome OS	251
The Personalization Tour	252
Ways to Customize Chrome	252

Appendix C Blog Posts on Tools and Code	253
Take a BITE out of Bugs and Redundant Labor	253
Unleash the QualityBots	255
RPF: Google's Record Playback Framework	257
Google Test Analytics—Now in Open Source	260
Comprehensive	260
Quick	260
Actionable	260
Sustained Value	260
Index	265