Acknowledgments xi
Foreword xxix
Preface to the Second Edition xxxiii

Part One Usability Testing: An Overview

Chapter 1 What Makes Something Usable? 3
What Do We Mean by “Usable”? 4
What Makes Something Less Usable? 6
Five Reasons Why Products Are Hard to Use 6
  Reason 1: Development Focuses on the Machine or System 7
  Reason 2: Target Audiences Expand and Adapt 8
  Reason 3: Designing Usable Products Is Difficult 9
  Reason 4: Team Specialists Don’t Always Work in
  Integrated Ways 9
  Reason 5: Design and Implementation Don’t Always
  Match 11
What Makes Products More Usable? 12
  An Early Focus on Users and Tasks 13
  Evaluation and Measurement of Product Usage 13
  Iterative Design and Testing 14
Attributes of Organizations That Practice UCD 14
  Phases That Include User Input 14
  A Multidisciplinary Team Approach 14
  Concerned, Enlightened Management 15
  A “Learn as You Go” Perspective 15
  Defined Usability Goals and Objectives 16
Contents

Chapter 1
What Are Techniques for Building in Usability?  16
Ethnographic Research  16
Participatory Design  17
Focus Group Research  17
Surveys  17
Walk-Throughs  18
Open and Closed Card Sorting  18
Paper Prototyping  18
Expert or Heuristic Evaluations  19
Usability Testing  19
Follow-Up Studies  20

Chapter 2  What Is Usability Testing?  21
Why Test? Goals of Testing  21
Informing Design  22
Eliminating Design Problems and Frustration  22
Improving Profitability  22
Basics of the Methodology  23
Basic Elements of Usability Testing  25
Limitations of Testing  25

Chapter 3  When Should You Test?  27
Our Types of Tests: An Overview  27
Exploratory or Formative Study  29
When  29
Objective  29
Overview of the Methodology  30
Example of Exploratory Study  32
Assessment or Summative Test  34
When  34
Objective  34
Overview of the Methodology  35
Validation or Verification Test  35
When  35
Objective  35
Overview of the Methodology  36
Comparison Test  37
When  37
Objective  37
Overview of the Methodology  38
Iterative Testing: Test Types through the Lifecycle  39
Test 1: Exploratory/Comparison Test  39
The situation  39
Main Research Questions  40
Brief Summary of Outcome 41
Test 2: Assessment Test 41
The Situation 41
Main Test Objectives 41
Brief Summary of Test Outcome 42
Test 3: Verification Test 42
The Situation 42
Test Objectives 43
Brief Summary of Test Outcome 43

Chapter 4 Skills for Test Moderators 45
Who Should Moderate? 45
Human Factors Specialist 46
Marketing Specialist 46
Technical Communicator 47
Rotating Team Members 47
External Consultant 47
Characteristics of a Good Test Moderator 48
Grounding in the Basics of User-Centered Design 48
Quick Learner 48
Instant Rapport with Participants 49
Excellent Memory 49
Good Listener 49
Comfortable with Ambiguity 50
Flexibility 50
Long Attention Span 51
Empathic “People Person” 51
“Big Picture” Thinker 51
Good Communicator 52
Good Organizer and Coordinator 52
Getting the Most out of Your Participants 52
Choose the Right Format 53
Sit-By Sessions versus Observing from Elsewhere 53
“Think-Aloud” Advantages and Disadvantages 54
Retrospective Review 54
Give Participants Time to Work through Hindrances 55
Offer Appropriate Encouragement 55
Troubleshooting Typical Moderating Problems 56
Leading Rather than Enabling 57
Too Involved with the Act of Data Collection 57
Acting Too Knowledgeable 57
Too Rigid with the Test Plan 58
Not Relating Well to Each Participant 58
Jumping to Conclusions 58
How to Improve Your Session-Moderating Skills 58
Learn the Basic Principles of Human Factors/Ergonomics 59
Learn from Watching Others 59
Watch Yourself on Tape 59
Work with a Mentor 59
Practice Moderating Sessions 60
Learn to Meditate 60
Practice "Bare Attention" 61

Part Two The Process for Conducting a Test 65

Chapter 5 Develop the Test Plan 65
Why Create a Test Plan? 65
It Serves as a Blueprint for the Test 66
It Serves as the Main Communication Vehicle 66
It Defines or Implies Required Resources 66
It Provides a Focal Point for the Test and a Milestone 66
The Parts of a Test Plan 67
Review the Purpose and Goals of the Test 67
When Not to Test 68
Good Reasons to Test 69
Communicate Research Questions 69
Summarize Participant Characteristics 72
Describe the Method 73
Independent Groups Design or Between Subjects Design 75
Within-Subjects Design 75
Testing Multiple Product Versions 76
Testing Multiple User Groups 77
List the Tasks 79
Parts of a Task for the Test Plan 79
Tips for Developing the Task List 82
Example Task: Navigation Tab on a Web Site 83
Ways to Prioritize Tasks 85
Describe the Test Environment, Equipment, and Logistics 87
Explain What the Moderator Will Do 87
List the Data You Will Collect 88
Sample Performance Measures 88
Qualitative Data 90
Sample Preference Measures 90
Describe How the Results Will Be Reported 90
Sample Test Plan 91
Chapter 6  Set Up a Testing Environment
Decide on a Location and Space  94
  In a Lab or at the User’s Site?  94
Test in Multiple Geographic Locations?  96
Arranging Sessions at a User’s Site  98
Minimalist Portable Test Lab  100
Setting up a Permanent or Fixed Test Lab  101
  Simple Single-Room Setup  101
  Modified Single-Room Setup  103
  Large Single-Room Setup  105
Electronic Observation Room Setup  107
Classic Testing Laboratory Setup  108
Recommended Testing Environment: Minimalist Portable Lab  110
Gather and Check Equipment, Artifacts, and Tools  111
  Basic Equipment, Tools, and Props  111
Gathering Biometric Data  112
Identify Co-Researchers, Assistants, and Observers  112
  Data Gatherer/Note Taker  112
  Timekeeper  113
  Product/Technical Expert(s)  113
Additional Testing Roles  113
Test Observers  113

Chapter 7  Find and Select Participants
Characterize Users  115
  Visualize the Test Participant  116
  Differentiate between Purchaser and End User  116
Look for Information about Users  117
  Requirements and Specification Documents  117
  Structured Analyses or Marketing Studies  118
Product Manager (R&D)  118
Product Manager (Marketing)  118
  Competitive Benchmarking and Analysis Group  119
Define the Criteria for Each User Group  119
Define Expertise  119
Specify Requirements and Classifiers for Selection  121
Document the User Profile  122
Divide the User Profile into Distinct Categories  124
Consider a Matrix Test Design  125
Determine the Number of Participants to Test  125
Write the Screening Questionnaire  126
Review the Profile to Understand Users' Backgrounds 127
Identify Specific Selection Criteria 127
Formulate Screening Questions 128
Organize the Questions in a Specific Order 129
Develop a Format for Easy Flow through the Questionnaire 130
Test the Questionnaire on Colleagues and Revise It 131
Consider Creating an "Answer Sheet" 131
Find Sources of Participants 131
Internal Participants 132
Qualified Friends and Family 134
Web Site Sign-Up 134
Existing Customers from In-House Lists 135
Existing Customers through Sales Representatives 136
User Groups or Clubs, Churches, or Other Community Groups 136
Societies and Associations 137
Referrals from Personal Networks, Coworkers, and Other Participants 137
Craigslist 138
College Campuses 139
Market Research Firms or Recruiting Specialists 140
Employment Agencies 141
Newspaper Advertisements 142
Screen and Select Participants 143
Screening Considerations 143
Use the Questionnaire or Open-Ended Interview Questions? 143
Complete the Screener Always, or Only When Fully Qualified? 144
Conduct Screening Interviews 145
Inform the Potential Participant Who You Are 145
Explain Why You are Calling and How You Got the Contact Information 145
Go through the Questions in the Questionnaire 145
As You Eliminate or Accept People, Mark Them Off on Your List 146
Include a Few Least Competent Users in Every Testing Sample 146
Beware of Inadvertently Testing Only the "Best" People 147
Expect to Make Tradeoffs 148
Schedule and Confirm Participants 148
<table>
<thead>
<tr>
<th>Chapter 8</th>
<th><strong>Prepare Test Materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Guidelines for Observers</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Orientation Script</strong></td>
</tr>
<tr>
<td></td>
<td>Keep the Tone of the Script Professional, but Friendly</td>
</tr>
<tr>
<td></td>
<td>Keep the Speech Short</td>
</tr>
<tr>
<td></td>
<td>Plan to Read the Script to Each Participant Verbatim</td>
</tr>
<tr>
<td></td>
<td>Write the Orientation Script Out</td>
</tr>
<tr>
<td></td>
<td>Make Introductions</td>
</tr>
<tr>
<td></td>
<td>Offer Refreshments</td>
</tr>
<tr>
<td></td>
<td>Explain Why the Participant Is Here</td>
</tr>
<tr>
<td></td>
<td>Describe the Testing Setup</td>
</tr>
<tr>
<td></td>
<td>Explain What Is Expected of the Participant</td>
</tr>
<tr>
<td></td>
<td>Assure the Participant That He or She Is Not Being Tested</td>
</tr>
<tr>
<td></td>
<td>Explain Any Unusual Requirements</td>
</tr>
<tr>
<td></td>
<td>Mention That It Is Okay to Ask Questions at Any Time</td>
</tr>
<tr>
<td></td>
<td>Ask for Any Questions</td>
</tr>
<tr>
<td></td>
<td>Refer to Any Forms That Need Be Completed and Pass Them Out</td>
</tr>
<tr>
<td></td>
<td><strong>Background Questionnaire</strong></td>
</tr>
<tr>
<td></td>
<td>Focus on Characteristics That May Influence Performance</td>
</tr>
<tr>
<td></td>
<td>Make the Questionnaire Easy to Fill Out and Compile</td>
</tr>
<tr>
<td></td>
<td>Test the Questionnaire</td>
</tr>
<tr>
<td></td>
<td>Decide How to Administer the Questionnaire</td>
</tr>
<tr>
<td></td>
<td><strong>Data Collection Tools</strong></td>
</tr>
<tr>
<td></td>
<td>Review the Research Question(s) Outlined in Your Test Plan</td>
</tr>
<tr>
<td></td>
<td>Decide What Type of Information to Collect</td>
</tr>
<tr>
<td></td>
<td>Select a Data Collection Method</td>
</tr>
<tr>
<td></td>
<td>Fully Automated Data Loggers</td>
</tr>
<tr>
<td></td>
<td>Online Data Collection</td>
</tr>
<tr>
<td></td>
<td>User-Generated Data Collection</td>
</tr>
<tr>
<td></td>
<td>Manual Data Collection</td>
</tr>
<tr>
<td></td>
<td>Other Data Collection Methods</td>
</tr>
<tr>
<td></td>
<td><strong>Nondisclosures, Consent Forms, and Recording Waivers</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Pre-Test Questionnaires and Interviews</strong></td>
</tr>
<tr>
<td></td>
<td>Discover Attitudes and First Impressions</td>
</tr>
<tr>
<td></td>
<td>Learn about Whether Participants Value the Product</td>
</tr>
<tr>
<td></td>
<td>Qualify Participants for Inclusion into One Test Group or Another</td>
</tr>
</tbody>
</table>
Establish the Participant's Prerequisite Knowledge Prior to Using the Product 181
Prototypes or Products to Test 181
Task Scenarios 182
  Provide Realistic Scenarios, Complete with Motivations to Perform 183
  Sequence the Task Scenarios in Order 183
  Match the Task Scenarios to the Experience of the Participants 184
  Avoid Using Jargon and Cues 184
  Try to Provide a Substantial Amount of Work in Each Scenario 185
  Give Participants the Tasks to Do 185
    Reading Task Scenarios to the Participants 185
    Letting the Participants Read Task Scenarios Themselves 186
Optional Training Materials 187
  Ensure Minimum Expertise 187
  Get a View of the User after Experiencing the Product 188
  You Want to Test Features for Advanced Users 189
What Are the Benefits of Prerequisite Training? 190
  You Can Conduct a More Comprehensive, Challenging Usability Test 190
  You Can Test Functionality That Might Otherwise Get Overlooked During a Test 190
  Developing the Training Forces You to Understand How Someone Learns to Use Your Product 191
Some Common Questions about Prerequisite Training 191
Post-Test Questionnaire 192
  Use the Research Questions(s) from the Test Plan as the Basis for Your Content 193
  Develop Questionnaires That Will Be Distributed Either during or after a Session 193
  Ask Questions Related to That Which You Cannot Directly Observe 193
  Develop the Basic Areas and Topics You Want to Cover 195
  Design the Questions and Responses for Simplicity and Brevity 196
  Use the Pilot Test to Refine the Questionnaire 196
Common Question Formats 197
  Likert Scales 197
  Semantic Differentials 197
  Fill-In Questions 198
Chapter 9  Conduct the Test Sessions  201

Guidelines for Moderating Test Sessions  202

Moderate the Session Impartially  202

Be Aware of the Effects of Your Voice and Body Language  203

Treat Each New Participant as an Individual  203

If Appropriate, Use the “Thinking Aloud” Technique  204

Advantages of the “Thinking Aloud” Technique  204

Disadvantages of the “Thinking Aloud” Technique  205

How to Enhance the “Thinking Aloud” Technique  205

Probe and Interact with the Participant as Appropriate  206

Stay Objective, But Keep the Tone Relaxed  209

Don’t “Rescue” Participants When They Struggle  209

If You Make a Mistake, Continue On  210

Ensure That Participants Are Finished Before Going On  210

Assist the Participants Only as a Last Resort  211

When to Assist  211

How to Assist  212

Checklists for Getting Ready  213

Checklist 1: A Week or So Before the Test  214

Take the Test Yourself  214

Conduct a Pilot Test  215

Revise the Product  215

Check Out All the Equipment and the Testing Environment  216

Request a Temporary “Freeze” on Development  216

Checklist 2: One Day Before the Test  216

Check that the Video Equipment is Set Up and Ready  216

Check that the Product, if Software or Hardware, is Working  217

Assemble All Written Test Materials  217

Check on the Status of Your Participants  217

Double-Check the Test Environment and Equipment  217

Checklist 3: The Day of the Test  217

Prepare Yourself Mentally  218

Greet the Participant  219

Have the Participant Fill Out and Sign Any Preliminary Documents  220

Read the Orientation Script and Set the Stage  220
Have the Participant Fill Out Any Pretest Questionnaires 220
Move to the Testing Area and Prepare to Test 220
Start Recordings 221
Set Decorum for Observers in the Room 221
Provide Any Prerequisite Training if Your Test Plan Includes It 223
Either Distribute or Read the Written Task Scenario(s) to the Participant 224
Record Start Time, Observe the Participant, and Collect All Critical Data 224
Have the Participant Complete All Posttest Questionnaires 224
Debrief the Participant 224
Close the Session 224
Organize Data Collection and Observation Sheets 225
Debrief with Observers 225
Provide Adequate Time Between Test Sessions 225
Prepare for the Next Participant 225
When to Intervene 225
When to Deviate from the Test Plan 226
What Not to Say to Participants 227

Chapter 10 Debrief the Participant and Observers 229
Why Review with Participants and Observers? 229
Techniques for Reviewing with Participants 230
Where to Hold the Participant Debriefing Session 231
Basic Debriefing Guidelines 231
Advanced Debriefing Guidelines and Techniques 235
"Replay the Test" Technique 235
The Manual Method 235
The Video Method 236
Audio Record the Debriefing Session 236
Reviewing Alternate Designs 236
"What Did You Remember?" Technique 236
"Devil's Advocate" Technique 238
How to Implement the "Devil's Advocate" Technique 238
Example of the "Devil's Advocate" Technique 239
Reviewing and Reaching Consensus with Observers 241
Why Review with Observers? 241
Between Sessions 241
At the End of the Study 243

Chapter 11 Analyze Data and Observations 245
Compile Data 246
Begin Compiling Data as You Test 247
## Part Three  Advanced Techniques

### Chapter 13  Variations on the Basic Method

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who? Testing with Special Populations</td>
<td>293</td>
</tr>
<tr>
<td>People Who Have Disabilities</td>
<td>293</td>
</tr>
<tr>
<td>Scheduling and Reminding</td>
<td>295</td>
</tr>
<tr>
<td>During the Session</td>
<td>295</td>
</tr>
<tr>
<td>Older Adults</td>
<td>295</td>
</tr>
<tr>
<td>Scheduling and Reminding</td>
<td>296</td>
</tr>
<tr>
<td>During the Session</td>
<td>297</td>
</tr>
<tr>
<td>Children</td>
<td>298</td>
</tr>
<tr>
<td>Scheduling and Reminding</td>
<td>298</td>
</tr>
<tr>
<td>During the Session</td>
<td>299</td>
</tr>
<tr>
<td>What: Prototypes versus Real Products</td>
<td>299</td>
</tr>
<tr>
<td>Paper and Other Low-Fi Prototypes</td>
<td>300</td>
</tr>
<tr>
<td>Clickable or Usable Prototypes</td>
<td>301</td>
</tr>
<tr>
<td>How? Techniques for Monitored Tests</td>
<td>302</td>
</tr>
<tr>
<td>Flexible Scripting</td>
<td>303</td>
</tr>
<tr>
<td>What You Get</td>
<td>303</td>
</tr>
<tr>
<td>How to Use It</td>
<td>303</td>
</tr>
<tr>
<td>Gradual Disclosure or Graduated Prompting</td>
<td>304</td>
</tr>
<tr>
<td>What You Get</td>
<td>304</td>
</tr>
<tr>
<td>How to Use It</td>
<td>305</td>
</tr>
<tr>
<td>Co-Discovery (Two Participants at a Time)</td>
<td>306</td>
</tr>
<tr>
<td>What You Get</td>
<td>306</td>
</tr>
<tr>
<td>How to Use It</td>
<td>307</td>
</tr>
<tr>
<td>Alpha or Beta Testing with Favored Clients</td>
<td>307</td>
</tr>
<tr>
<td>What You Get</td>
<td>307</td>
</tr>
<tr>
<td>How to Use It</td>
<td>308</td>
</tr>
<tr>
<td>Play Tests</td>
<td>308</td>
</tr>
<tr>
<td>What You Get</td>
<td>309</td>
</tr>
<tr>
<td>How to Use It</td>
<td>309</td>
</tr>
<tr>
<td>Where? Testing Outside a Lab</td>
<td>309</td>
</tr>
<tr>
<td>Remote Testing</td>
<td>310</td>
</tr>
<tr>
<td>What You Get</td>
<td>310</td>
</tr>
<tr>
<td>How to Use It</td>
<td>310</td>
</tr>
<tr>
<td>Automated Testing</td>
<td>311</td>
</tr>
<tr>
<td>What You Get</td>
<td>311</td>
</tr>
<tr>
<td>How to Use It</td>
<td>311</td>
</tr>
<tr>
<td>Testing In-Home or On-Site</td>
<td>312</td>
</tr>
<tr>
<td>What You Get</td>
<td>312</td>
</tr>
<tr>
<td>How to Use It</td>
<td>312</td>
</tr>
<tr>
<td>Self-Reporting (Surveys, Diary Studies)</td>
<td>313</td>
</tr>
</tbody>
</table>
What You Get 313
How to Use It 313

Chapter 14 Expanding from Usability Testing to Designing the User Experience 315
Stealth Mode: Establish Value 316
  Choose the First Project Carefully 317
  Begin Your Education 317
  Start Slowly and Conservatively, Get Buy-In 320
  Volunteer Your Services 321
  Create a Strategy and Business Case 321
Build on Successes 322
  Set Up Long-Term Relationships 322
  Sell Yourself and What You Are Doing 323
  Strategize: Choose Your Battles Carefully 323
Formalize Processes and Practices 323
  Establish a Central Residency for User-Centered Design 324
  Add Usability-Related Activities to the Product Life Cycle 325
  Educate Others within Your Organization 325
  Identify and Cultivate Champions 327
  Publicize the Usability Success Stories 327
  Link Usability to Economic Benefits 327
Expand UCD throughout the Organization 328
  Pursue More Formal Educational Opportunities 329
  Standardize Participant Recruitment Policies and Procedures 329
  Align Closely with Market Research and Industrial Design 330
  Evaluate Product Usability in the Field after Product Release 330
  Evaluate the Value of Your Usability Engineering Efforts 330
  Develop Design Standards 331
  Focus Your Efforts Early in the Product Life Cycle 331
  Create User Profiles, Personas, and Scenarios 331

Afterword 333
Index 335