

# Contents

<b>Acknowledgments</b>	<b>xv</b>
<b>Introduction</b>	<b>xvii</b>
<b>Chapter 1: Introducing the Project: The SmartCA Application</b>	<b>1</b>
<b>The Problem</b>	<b>1</b>
<b>The Design</b>	<b>4</b>
Reliability and Availability	4
Scalability	5
Maintainability	5
Rich Client Application Functionality	5
Offline Capable	5
Web Access	5
Intelligent Installation and Auto-Update Functionality	5
Additional Client Device Support	5
<b>The Solution</b>	<b>6</b>
Fulfilling the Reliability, Availability, Scalability, Offline Capable, and Additional Client Device Support Requirements	6
Fulfilling the Maintainability Requirement	7
Fulfilling the Rich Client Application Functionality Requirement	9
Fulfilling the Web Access Requirement	11
Fulfilling the Intelligent Installation and Auto-Update Functionality Requirement	11
<b>Summary</b>	<b>11</b>
<b>Chapter 2: Designing the Layered Architecture</b>	<b>13</b>
<b>The Problem</b>	<b>13</b>
<b>The Design</b>	<b>13</b>
Designing the Visual Studio Solution	13
Designing the Architectural Layers	14
<b>The Solution</b>	<b>18</b>
Implementing the Visual Studio Solution	19
Implementing the Architectural Layers	19
<b>Summary</b>	<b>53</b>

# Contents

---

## **Chapter 3: Managing Projects** **55**

---

<b>The Problem</b>	<b>55</b>
<b>The Design</b>	<b>55</b>
Designing the Domain Model	56
Defining the Project Aggregate	56
Defining the Aggregate Boundaries	57
Designing the Repositories	58
Writing the Unit Tests	60
<b>The Solution</b>	<b>65</b>
The Project Class	65
The Repository Implementations	77
The Service Class Implementations	90
The Project Information ViewModel Implementation	92
The Project Information View Implementation	102
<b>Summary</b>	<b>107</b>

## **Chapter 4: Companies and Contacts** **109**

---

<b>The Problem</b>	<b>109</b>
<b>The Design</b>	<b>109</b>
Designing the Domain Model	110
Defining the Company and Contact Aggregates	110
Defining the Aggregate Boundaries	111
Designing the Repositories	112
Writing the Unit Tests	114
<b>The Solution</b>	<b>119</b>
The Company Class	119
The Contact Class	121
The ProjectContact Class	123
The Repository Implementations	124
The Service Class Implementations	134
The Company ViewModel	137
The Company View	144
The Project Contact View Model	148
The Project Contact View	154
<b>Summary</b>	<b>156</b>

## **Chapter 5: Submittal Transmittals** **157**

---

<b>The Problem</b>	<b>157</b>
<b>The Design</b>	<b>158</b>
Designing the Domain Model	158
Defining the Submittal Aggregate	159

---

Defining the Aggregate Boundaries	159
Designing the Repository	160
Writing the Unit Tests	161
<b>The Solution</b>	<b>164</b>
The Submittal Repository Implementation	178
The Submittal Service Implementation	187
The Submittal View Model	188
The Submittal View	192
<b>Summary</b>	<b>197</b>
<b>Chapter 6: Requests for Information</b>	<b>199</b>
<hr/>	
<b>The Problem</b>	<b>199</b>
<b>The Design</b>	<b>200</b>
Designing the Domain Model	200
Defining the RFI Aggregate	201
Defining the Aggregate Boundaries	202
Designing the Repository	203
Writing the Unit Tests	204
<b>The Solution</b>	<b>207</b>
The RFI Repository Implementation	213
The RFI Service Implementation	223
The RFI ViewModel Classes	224
The RFI View	231
<b>Summary</b>	<b>232</b>
<b>Chapter 7: Proposal Requests</b>	<b>233</b>
<hr/>	
<b>The Problem</b>	<b>233</b>
<b>The Design</b>	<b>234</b>
Designing the Domain Model	234
Designing the Proposal Request Aggregate	235
Defining the Aggregate Boundaries	236
Designing the Repository	237
Writing the Unit Tests	239
<b>The Solution</b>	<b>242</b>
The Proposal Request Class Private Fields and Constructors	242
The ProposalRequest Properties	245
The Validate Method	248
The Proposal Request Repository Implementation	253
The Proposal Request Service Implementation	257
The Proposal Request View Model Class	258
The Proposal Request View	260
<b>Summary</b>	<b>263</b>

# Contents

---

## **Chapter 8: Change Orders** **265**

---

<b>The Problem</b>	<b>265</b>
<b>The Design</b>	<b>266</b>
Designing the Domain Model	266
Designing the Change Order Aggregate	267
Defining the Aggregate Boundaries	268
Designing the Repository	268
Writing the Unit Tests	271
<b>The Solution</b>	<b>271</b>
The Change Order Repository Implementation	283
The Change Order Service Implementation	288
The Change Order View Model Class	289
The Change Order View	292
<b>Summary</b>	<b>293</b>

## **Chapter 9: Construction Change Directives** **295**

---

<b>The Problem</b>	<b>295</b>
<b>The Design</b>	<b>295</b>
Designing the Domain Model	296
Designing the Construction Change Directive Aggregate	297
Defining the Aggregate Boundaries	298
Designing the Repository	299
Writing the Unit Tests	300
<b>The Solution</b>	<b>300</b>
The Construction Change Directive Class Private Fields and Constructors	300
The Construction Change Directive Repository Implementation	307
The Construction Change Directive Service Implementation	313
The Construction Change Directive ViewModel Class	314
The Construction Change Directive View	324
<b>Summary</b>	<b>325</b>

## **Chapter 10: Synchronizing With the Server** **327**

---

<b>The Problem</b>	<b>327</b>
<b>The Design</b>	<b>327</b>
Redesigning the Unit of Work	328
Designing the Synchronization	330
Writing the Unit Tests	331

---

<b>The Solution</b>	<b>333</b>
Unit of Work Refactoring	333
Synchronizing with the Synchronizer Class	349
<b>Summary</b>	<b>356</b>
<b>Chapter 11: The Client Membership System</b>	<b>357</b>
<hr/>	
<b>The Problem</b>	<b>357</b>
<b>The Design</b>	<b>357</b>
Password Security	358
Designing the Client Membership System	358
<b>The Solution</b>	<b>359</b>
The Client Membership System Domain Model Classes	360
Client Membership System Unit Tests	388
<b>Summary</b>	<b>389</b>
<b>Index</b>	<b>391</b>
<hr/>	

