

visit the website for
this book at
www.palgrave.com

Introducing Systems Development

Steve Skidmore and Malcolm Eva



Contents

Preface	xi
Chapter 1 Introduction	1
<i>Chapter overview</i>	1
1.1 Introduction	1
1.2 Woodland Transport case study	5
1.3 Summary	16
<i>References</i>	16
Part 1 Information systems strategy	17
Chapter 2 Information systems delivery	19
<i>Chapter overview</i>	19
2.1 Introduction	19
2.2 The structure of the Information Systems department	19
2.3 Accounting for information systems delivery	22
2.4 Outsourcing	25
2.5 Information systems delivery at Woodland Transport	28
2.6 Summary	29
<i>Exercises</i>	30
<i>References</i>	30
Chapter 3 Project identification and selection	31
<i>Chapter overview</i>	31
3.1 Introduction	31
3.2 Stages of IS growth	31
3.3 Woodland Transport – maturity	33
3.4 Strategic alignment	34
3.5 Soft Systems Methodology	40
3.6 SSM techniques	44
3.7 Application of Soft Systems at Woodland Transport	49
3.8 Summary	52
<i>Exercises</i>	52
<i>References</i>	55

Chapter 4	Feasibility study	56
	<i>Chapter overview</i>	56
4.1	Introduction	56
4.2	Three types of feasibility	57
4.3	The feasibility report	63
4.4	The feasibility compromise	66
4.5	Summary	67
	<i>Exercises</i>	67
	<i>References</i>	69
Part 2	Defining systems requirements	71
Chapter 5	Fact-gathering techniques	73
	<i>Chapter overview</i>	73
5.1	Introduction	73
5.2	What facts?	73
5.3	Techniques for fact gathering	74
5.4	Fact-finding in a computerised environment	92
5.5	Mapping of techniques to user situations	93
5.5	Communication issues	94
5.6	Summary	95
	<i>Exercises</i>	96
	<i>References</i>	98
Chapter 6	Fact modelling techniques	99
	<i>Chapter overview</i>	99
6.1	Introduction	99
6.2	Use cases	100
6.3	Process mapping	108
6.4	Data flow diagrams	111
6.5	Prototyping	119
6.6	Requirements catalogue	120
6.7	Conclusion	123
	<i>Exercises</i>	123
	<i>References</i>	126

Chapter 7 Class and data models

127

Chapter overview

127

7.1 Introduction

127

7.2 Class models

127

7.3 Data modelling

139

7.4 Summary

147

Exercises

148

References

148

Chapter 8 Logical function models

149

Chapter overview

149

8.1 Introduction

149

8.2 Interaction diagrams

150

8.3 Structured function models

159

8.4 Required system data flow modelling

159

8.5 Elementary process descriptions

162

8.6 Conclusion

171

Exercises

171

References

174

Chapter 9 Logical event models

175

Chapter overview

175

9.1 Introduction

175

9.2 Events and effects

176

9.3 Entity Life Histories

178

9.4 Update Process Models

188

9.5 Statechart diagrams

191

9.6 Summary

194

Exercises

194

Reference

195

Chapter 10 Rapid Application Development (RAD)

196

Chapter overview

196

10.1 Introduction

196

10.2 Systems development life cycle for RAD projects

197

10.3 Prototyping

200

10.4 Prototyping tools

202

10.5 Computer-Aided Software Engineering (CASE)

205

10.6 Requirements gathering

207

10.7 Suitable cases for RAD

208

10.8 Summary

209

Exercises

210

References

211

Part 3 Designing, assuring and implementing requirements

213

Chapter 11 External design	215
<i>Chapter overview</i>	
11.1 Introduction	215
11.2 Output design	215
11.3 Input design	220
11.4 Dialogue structures	224
11.5 Usability checklist (a 25 point approach)	228
11.6 Prototyping the interface	234
11.7 Summary	235
<i>Exercises</i>	235
<i>References</i>	237
Chapter 12 Security and controls	238
<i>Chapter overview</i>	
12.1 Introduction	238
12.2 The source of errors	238
12.3 Class controls	239
12.4 Data controls	240
12.5 Event controls	242
12.6 Workflow: definitions and tests	244
12.7 Systems audit trail	245
12.8 Clerical controls	246
12.9 The Data Protection Act	247
12.10 Computer Misuse Act	252
12.11 Summary	255
<i>Exercises</i>	256
<i>References</i>	258
Chapter 13 Quality assurance and testing	259
<i>Chapter overview</i>	
13.1 Introduction	259
13.2 Quality software	260
13.3 Quality management, assurance and control	261
13.4 Testing in the systems development process	263
13.5 The limitations of testing	264
13.6 Static and dynamic testing	265
13.7 Automated testing	275
13.8 Summary	276
<i>Exercises</i>	277
<i>References</i>	278

Chapter 14 Software package approach	279
<i>Chapter overview</i>	279
14.1 Introduction	279
14.2 Perceived advantages of the software package approach	280
14.3 Perceived disadvantages of the software package approach	282
14.4 High-level evaluation matrix	285
14.5 Functional and non-functional requirements	287
14.6 Product requirements	290
14.7 Supplier requirements	292
14.8 Implementation requirements	296
14.9 Cost and time requirements	298
14.10 Summary	299
<i>Exercises</i>	299
<i>References</i>	299
Chapter 15 Software package selection	300
<i>Chapter overview</i>	300
15.1 Introduction	300
15.2 Identifying suppliers	300
15.3 Invitations To Tender (ITT)	301
15.4 Assessing the responses to the ITT	304
15.5 Second-stage evaluation	309
15.6 Implementation considerations	312
15.7 Managing the long-term relationship	313
15.8 Tailoring software package solutions	314
15.9 Summary	315
<i>Exercises</i>	318
<i>References</i>	319
Chapter 16 Systems implementation	320
<i>Chapter overview</i>	320
16.1 Introduction	320
16.2 File conversion	320
16.3 Preparation of documentation	322
16.4 Training	323
16.5 Implementation strategies	324
16.6 Summary	326
<i>Exercises</i>	326
<i>References</i>	328
Chapter 17 Systems Development	329
<i>References</i>	332
Index	333