

Contents

Preface.....	xi
Authors	xvii
Acknowledgements	xix
1. Systems Thinking and Incident Causation.....	1
Practitioner Summary	1
1.1 Introduction	1
1.2 Introduction to Systems Thinking.....	2
1.3 Systems Thinking Applied.....	4
1.4 Systems Thinking Models	6
1.5 Implications for Incident and Reporting Systems.....	13
References	14
2. Systems Thinking and Incident Analysis.....	17
Practitioner Summary	17
2.1 Introduction to Incident Analysis.....	17
2.2 Accimap.....	18
2.3 CAST.....	20
2.4 HFACS.....	22
2.5 Accimap, CAST, and HFACS Applied.....	24
2.6 Summary and Conclusions	36
References	37
3. A Process Model for Developing an Incident Reporting System.....	39
Practitioner Summary	39
3.1 Introduction	39
3.2 Overview of the Process Model	40
3.3 The Development Sequence	40
3.4 Stage 1: Understand the Context.....	42
3.5 Stage 2: The Accident Analysis Method	44
3.6 Stage 3: Data Collection Protocol.....	45
3.7 Stage 4: Learning from Incidents Process	51
3.8 Stage 5: Software Tools and Training Materials.....	53
3.9 Stage 6: Implementating-Evaluating Data Quality	56
3.10 Criteria for Designing and Evaluating Incident Reporting Systems	57
3.11 Next Steps.....	59
References	59

4. Understanding the Context	63
Practitioner Summary	63
Practical Challenges.....	63
4.1 Introduction.....	64
4.2 The Context for This Case Study.....	64
4.3 Injury and Incident Data Collection in Australia Prior to UPLOADS.....	66
4.4 State of Knowledge in the LOA Domain	68
4.5 Summary and Next Steps	71
References	73
5. Identifying the Needs and Priorities of End Users	77
Practitioner Summary	77
Practical Challenges.....	77
5.1 Introduction.....	78
5.2 Step-by-Step Guide	78
5.3 Summary and Next Steps.....	89
Further Reading	90
References	90
6. Adapting Accimap for Use in an Incident Reporting System	93
Practitioner Summary	93
Practical Challenges.....	93
6.1 Introduction.....	93
6.2 Tasks Involved in Adapting Accimap.....	94
6.3 Adapting the Levels on the Accimap Framework	94
6.4 Developing a Contributory Factor Classification Scheme	97
6.5 Summary and Next Steps.....	107
Further Reading	110
References	110
Appendix: Literature Review References.....	112
7. Evaluating Reliability and Validity	115
Practitioner Summary	115
Practical Challenges.....	115
7.1 Introduction.....	115
7.2 What Is Reliability and Validity?.....	116
7.3 Step-by-Step Guide to Evaluating Reliability and Validity	117
7.4 Evaluating the UPLOADS Classification Scheme	124
7.5 Conclusions and Next Steps.....	131
Further Reading	132
References	132

8. Designing a Prototype Incident Reporting System	135
Practitioner Summary	135
Practical Challenges.....	135
8.1 Introduction	136
8.2 Design Requirements	136
8.3 Prototype Data Collection Protocol.....	138
8.4 Prototype Learning from Incidents Process	142
8.5 Prototype Software Tool	144
8.6 Prototype Training Material.....	145
8.7 Summary and Next Steps	148
References	149
9. Evaluating Usability	151
Practitioner Summary	151
Practical Challenges.....	151
9.1 Introduction	151
9.2 What Is Usability?	152
9.3 Step-by-Step Guide to Evaluating Usability.....	152
9.4 Evaluating the Usability of the UPLOADS Prototype.....	156
9.5 Summary and Next Steps	159
References	162
10. Evaluating Data Quality	163
Practitioner Summary	163
Practical Challenges.....	163
10.1 Introduction	163
10.2 What Is Data Quality?	164
10.3 Step-by-Step Guide to Undertaking an Implementation Trial ...	165
10.4 Evaluating the Data Quality of the UPLOADS Prototype.....	168
10.5 Summary and Next Steps	176
Further Reading	176
References	176
11. Outputs from the Development Process – UPLOADS	177
Practitioner Summary	177
11.1 Introduction	177
11.2 Accident Analysis Method	178
11.3 Data Collection Protocol	180
11.4 The Process for Learning from Incidents	186
11.5 Supporting Software Tools	188
11.6 Training Materials.....	191
11.7 Summary	193
References	193

12. Analyzing Incident Data	195
Practitioner Summary	195
Practical Challenges.....	195
12.1 Introduction.....	195
12.2 Step-by-Step Guide to Analyzing Incident Data	196
12.3 Analysis of Data Collected via UPLOADS.....	200
12.4 Implications for Understanding and Preventing Incidents	211
12.5 Summary and Next Steps	212
Further Reading	213
References	213
13. Designing Incident Prevention Strategies	215
Practitioner Summary	215
Practical Challenges.....	215
13.1 Introduction.....	215
13.2 Step-by-Step Guide to Designing Incident Prevention Strategies....	216
13.3 UPLOADS Incident Prevention Strategy Design Process	221
13.4 Summary and Conclusions	230
References	230
14. Lessons Learned, Future Research Directions, and the Incident Reporting Systems of Tomorrow	231
Practitioner Summary	231
14.1 Introduction.....	231
14.2 Key Findings and Lessons Learned	232
14.3 Further Research on Incident Reporting Systems.....	235
14.4 Incident Reporting in 2050.....	237
14.5 Summary	239
14.6 Conclusions.....	240
References	240
Appendix A: UPLOADS Contributory Factor Classification Scheme	243
Appendix B: Examples of Coding Tasks for Reliability and Validity Assessments	253
Appendix C: UPLOADS Incident Report Form	257
Appendix D: Training Manual: The UPLOADS Approach to Accident Analysis	263
Index	281