Table of Contents

Chapter 1 An Introduction to EIS 1
An EIS Defined 3
A Typical EIS Screen 4
The Emergence of EIS 6
The Application Versus the Technology 8
Why EIS? 8
MIS, DSS and EIS: Déjà Vu 10
What An EIS Is Not 12
Three Perspectives on EIS 13
The EIS Acronym 13
Current Trends 14
Another Perspective: When Will EIS Deliver? 14
Questions 18
References 18

Chapter 2 An EIS Development Framework 19
The Structural Perspective 21
Pressures to Develop the EIS 21
The Executive Sponsor 22
The Operating Sponsor 22
The EIS Staff 23
Functional Area Personnel 23
Data 24
EIS Software and Vendors 25
Consultants 26
The Development Process 26
The Proposal 27
The Prototype 28
The Initial Version 28
Iterative and Evolutionary Development 28

EIS Evolution 28
EIS Spread 28
The Dialog 29
The Action Language 29
The Presentation Language 30
The Knowledge Base 31
What EIS Professionals Worry About 31
Another Perspective: Software at the Hands of Executives 32
Questions 35
References 38

Chapter 3 Understanding Executives, Their Work, and Information Needs 39
Who Are Executives? 40
Personal Characteristics of Executives 41
What Executives Do 42
The Nature of Executive Work 42
Executive Tasks 43
Executive Roles 44
Executive Decision Making 47
Executive Information: What They Need Is Not Always What They Get 47
Types of Executive Information 49
Sources of Executive Information 50
Executives' Mental Models 51
EIS and Executive Work 52
Another Perspective: User Expectations—The Ceo's Perspective 53
Questions 58
References 58

Chapter 4 Gaining Executive Commitment 60
The Executive Sponsor 61
Cultivating an Executive Sponsor 62
The Executive Sponsor's Role 62
Expanding the Executive Base of Support 63
The Operating Sponsor 63
Required Skills 63
The Operating Sponsor's Role 65
Winning Over the Tough Ones 65
Touting the Benefits 68
Retaining Executive Commitment 70
Questions 70
References 71

Chapter 5 Assembling the EIS Staff 73
Special Considerations for Staff Selection 75
EIS Staff Roles and Tasks: Development Phase 75
EIS Manager 77

Information Analyst 78
Technical Specialist 79
Data Suppliers 80
External Assistance 83
The EIS Staff Structure 84
Influences on Structure 84
Administrative or Management Oriented 87
IS Oriented 87
Transition From the Development Phase to the Maintenance Phase 87
Maintenance Considerations 87
EIS Staff Responsibilities 88
EIS Staff Roles and Tasks: Maintenance Phase 88
EIS Manager 89
Information Analyst 90
Technical Specialist 91
Data Suppliers 91
External Assistance 92
A Study of EIS Staffs 92
Structure Alternatives 93
Physical Location 93
EIS Staff Size 94
Contact Time 95
Support Staff Rewards and Hazards 96
Exposure 96
Understanding Information Usage 96
Developing Trust 97
Career Paths 98
Questions 103
References 103

Chapter 6 Determining the Need **104**
A Study of EIS Need 106
Initial Objectives 107
Identifying Objectives 107
Expanding the Objectives 110
Demands of the Initial Version 110
Selecting the Objectives 110
Refining the Objectives 111
Developmental Impacts 111
Operational Experience 112
Influences on Operational Objectives 112
New Organizational Goals 112
Personnel Changes 113
Technology 113
System Efficiency and Effectiveness 113
Constantly Changing Objectives 114

Managing the Objectives 114
Questions 116
References 116

Chapter 7 Determining the Information Requirements **117**
The Phases of Development 119
The Prototype 119
The Initial Version 119
The Ongoing Version 120
The People Involved 120
A Portfolio of Methods 121
Discussions with Executives 125
EIS Planning Meetings 126
Examinations of Computer-Generated Information 127
Discussions with Support Personnel 127
Volunteered Information 127
Examinations of Other Organizations' EIS 128
Examinations of Non-Computer Generated Information 128
Critical Success Factor Sessions 128
Participation in Strategic Planning Sessions 130
Strategic Business Objectives Method 130
Attendance at Meetings 134
Examination of the Strategic Plan 135
Tracking Executive Activity 135
Software Tracking of EIS Usage 136
Formal Change Requests 136
Why the Methods Are or Are Not Useful 136
Another Perspective: Wayne Burkan on the Executive Interview Questions 137
Questions 140
References 140

Chapter 8 Determining EIS Hardware and Software Requirements **142**
Hardware Issues 144
The Client 144
The Server 146
Software Issues 147
The EIS Product Spectrum 147
Factors that Influence EIS Software Selection 150
Evaluation Process 153
The Western Mining Corporation Experience 154
Questions 158
References 159

Chapter 9 Structuring the Information **160**
Basic Structures 161
Planning 161

Organizational Structure 161
Functional Structure 162
Modular Structure 162
Structural Combinations 163
Final Considerations 164
The Influence of System Objectives on Structure 164
Save Users' Time 164
More Accurate Information 166
More Timely Information 168
System Navigation 170
Subject Menus 170
Sequencing 172
Systems Menu 173
Other Considerations 174
Users 174
Data Suppliers 175
Cultures 176
Individual Preferences 176
Questions 178
References 178

Chapter 10 Designing EIS Screens **179**
Put Someone in Charge 180
The Uniqueness of EIS Screens 180
Two Categories of EIS Screens 181
Types of Information Screens 183
Text 183
Tables 183
Graphs 184
Combinations 185
Determining a Screen's Purpose 185
Considerations in Screen Design 186
Executive Users 186
Executive Preferences 187
Alternative Designs 187
Culture 188
Executive Feedback 188
Executive-Designed Screens 189
System's Features/Constraints 189
Screen Space Limitations 190
Design Tips 190
System Standards 192
Layout Standards 192
Specific Content Standards 193
Additional Considerations 194
Hard Copy Output 194

Large Screen Projection 194
Expanded Use of EIS 195
New Users 195
Summary 195
Questions 196
References 196

Chapter 11 Managing the Data 197
The Data Management Challenge 198
Who Is Responsible 198
Determining the Data Requirements 199
Data Development 199
Sharpening the Focus 199
Understanding the Source 200
Data Integration 201
Links to Other Applications 202
Data Management Issues 202
Integrity 202
Ownership and Sharing 206
Security 207
Storage 208
Data Warehouses 208
The Need for Data Warehouses 209
The Benefits of Data Warehouses 209
Building a Data Warehouse 209
An Example of EIS Data 212
Another Perspective: The "Back-End Wars" and other Developments 213
Questions 216
References 216

Chapter 12 Including Soft Information 217
What is Soft Information 219
A Study of Soft Information
Types of Soft Information, How They are Entered, and How They are Presented 222
The Exclusion of Soft Information 224
Most Popular Soft Information Applications 224
Important Decisions Affected by Soft Information 224
Soft Information and the Value of EIS 225
Future Plans for Including Soft Information 225
Propositions About Soft Information 225
Proposition 1: The nature of executive work requires the use of soft information 226
Proposition 2: The culture of a firm affects the inclusion of soft information in the company's EIS 226

Proposition 3: Executives may be unwilling to share soft information in an EIS 226
Proposition 4: Soft information in an EIS increase executives' awareness of critical issues 227
Proposition 5: Including soft information in the EIS enhances the corporate grapevine 227
Proposition 6: The inclusion of soft information varies with the industry 227
Proposition 7: Soft information about competitors is highly valued 228
Proposition 8: Some soft information may be excluded intentionally from the EIS 228
Proposition 9: The value of soft information depends on its timeliness 229
Proposition 10: Increasing the quantity and variety of soft information in an EIS increases the support staff requirements 229
Proposition 11: The variety and quantity of soft information increases the value of an EIS 229
Proposition 12: Organizations increase the variety and quantity of soft information over time 229
Proposition 13: Identifying the source enhances the value of the soft information in an EIS 230
Proposition 14: The delivery of soft information by the EIS depends on the technology employed 230
Proposition 15: Rumors, gossip, and hearsay are the least likely of soft information to be included in an executive information system; predictions, forecasts, and estimates are the most likely 230
Technology for Handling Soft Information 231
Another Perspective: A Bunch of Softies 231
Questions 234
References 234

Chapter 13 Overcoming Political Resistance **235**
Causes of Resistance 237
Why Change? 237
Technology Phobia 237
Fear of Exposure 238
Loss of Control 238
Sources of Resistance 239
User 239
Middle Managers 239
Data Suppliers 240
IS Organization 241
EIS Staff 241
Resistance Management 242

Anticipate, Understand, and Prevent 242
Overcoming Resistance 243
Selling the System 246
Questions 246
References 247

Chapter 14 Managing EIS Spread and Evolution 248
The Theory of Innovation Diffusion 250
Determinants of EIS Spread 251
The Study 251
Management Determinants 252
Information Systems Infrastructure Determinants 253
Resource Determinants 253
Organizational Determinants 254
Information Determinants 254
EIS Technology Determinants 255
Design and Implementation Determinants 256
User-Oriented Determinants 256
EIS Staff Determinants 257
Vision Determinants 257
External Determinants 257
Prior Success Determinants 258
Other Determinants 258
EIS Evolution 258
Evolution of EIS from Custom-Built to Vendor-Supplied 258
Evolution of EIS Inside the Organization 259
Evolution of Information in the EIS 260
Questions 260
References 261

Chapter 15 Including Decision Support Systems 262
A DSS Defined 263
An Alternative View 265
Three Levels of DSS Technology 265
Specific DSS 265
DSS Generator 265
DSS Tools 266
Relationships Among DSS Levels 266
Organizational Roles 267
The Developmental Process 268
Institutional and Ad Hoc DSS 268
Components of a DSS 269
The Dialog 269
The Data 272
The Models 274
Online Analytical Processing 275

OLAP Defined 276
Data Warehouses and Multidimensional Databases 277
End-User Tools 280
Business Objects: A Decision Support Tools 281
DSS in EIS 282
Four Approaches to Including DSS 282
Questions 285
References 285

Chapter 16 Including Artificial Intelligence **286**
Artificial Intelligence: The Early Years 287
The Family of AI Applications 288
Robotics 288
Vision Systems 289
Natural Language Processing 289
Expert Systems 290
Expert System Applications 291
Selecting an Application 292
Who Builds the Expert System 295
Building the System 295
An Expert System For Processing Overdrafts 299
Expert System Success and Failure 303
Other Methods 304
Expert Systems in EIS 304
Software Agents 305
Software Agents in EIS 307
Poor Man's Artificial Intelligence 312
Questions 313
References 314

Chapter 17 Integrating Groupware **316**
What is Groupware 317
TheTime/Place Matrix 318
Group Support Systems 319
A Typical GSS Meeting 322
Gaining Access to a GSS 324
What Has Been Learned 324
GSS in EIS 328
Integrating GSS into EIS 328
Designing an EIS 329
Maintaining an EIS 330
Lotus Notes 330
What Notes Can Do 332
Types of Applications 333
How Companies Use Notes for EIS 334
How Notes for EIS Began 334

How Notes Is Used 334
EIS Capabilities 335
Benefits 338
Limitations 339
The Future of Notes for EIS 339
Questions 340
References 341

Chapter 18 Assessing the Benefits **342**
The Costs and Benefits of an EIS 343
What Benefits Companies Expect and Realize 345
Benefit/Cost Analysis 347
Assessing the Value of Conoco's EIS 349
About Concoco and Its EIS 349
Events Leading to the Evaluation of Conoco's EIS 350
Evaluation of Conoco's EIS 350
Lessons Learned 361
Another Perspective: Vision and Knowledge at Quaker Oats 363
Questions 366
References 366

Chapter 19 The Keys to EIS Success **368**
Anecdotal Wisdom about the Keys to EIS Success 369
Additional Insights into the Keys to EIS Success 370
Phase One: The Interviews 370
Phase Two: The Survey 371
Keys to Successful Development of the Initial Version 371
Executive Involvement Keys 374
Executive/EIS Staff Relationship Keys 376
EIS Staff Keys 377
Keys to Successfully Maintaining the Ongoing System 379
Information Quality Keys 383
Impact on Executive Work Keys 383
EIS Function Keys 384
Ease of Use Keys 385
Information Delivery Keys 385
A Concluding Perspective 387
Questions 387
References 388

Chapter 20 Public Sector EIS **389**
Private vs. Public Systems 391
Systems Cost and Risk 391
Data 392
Decision Making 392
EIS—State of the Art 392

EIS Issues 393
Level of Detail 393
Analytical Capacity 394
Ease of Use 395
Data Problems 395
The OGS System 396
The Case Environment 396
System Development 397
The Data Cube 398
Working with the System 402
Analytical Features 402
Expansion to Planning Activities 403
Conclusion 404
Questions 405
References 405

Chapter 21 Future Directions for EIS **406**
Assumptions 407
Executives More Comfortable with Technology 407
Increased Responsibilities for Executives 407
More Diverse Information Requirements 408
Increased Urgency for Executive Decisions 408
Future Directions 409
Universal Application 409
Technology Advances 409
Executive Intelligence Systems 415
Future Challenges 417
Executive Education 417
Data Security 417
Data Analysis Revisited 417
The Human Factor 418
Questions 419
References 419

Appendix A Birth of an EIS At the World Bank **420**
Background on the World Bank 420
The Motivation for Building an EIS 421
The Initial Exploration 421
The EIS Team 422
Preliminary Work 423
The Proposal 424
Software Solution 425
The EIS Project Staff 427
The System's Architecture 427
The System's Content and Functionality 428
Interface Design 431

Testing the System 431
Implementing the System 431
Putting the System into Operation 432
System Evolution 432
Epilogue 433

Appendix B MPS Executive Information System Framework 434

Appendix C Management and Personnel Services Executive Information System Project Proposal 437
Table of Contents 438
Executive Summary 439
The Initial Investigation 439
The Findings 439
System Overview 439
Resources and Estimated Costs for Implementation 440
System Evolution 440
Introduction 440
Business Purpose 440
The Potential of an EIS 441
Anticipated Benefits 441
System Overview 444
5.1. Users 444
5.2. Interface 444
5.3. Capabilities 447
Information Requirements Summary 447
6.1. President's Concerns 448
6.2. MPS and Departmental Objectives 448
6.3. Major Projects 448
6.4 Targeted Services 448
6.5. Board Schedule and Other Deliverables 449
6.6. Key Performance Indicators (KPIs) 449
6.7. Budget Information 449
6.8. Bank Information 450
6.9. Personnel Profile 450
6.10. HQ Construction 450
6.11. Mangement Succession 450
6.12. Mangement Issues 450
6.13. MPS Calendar 451
6.14. Organization Chart 451
Resource Requirements and Costs 451
7.1. Hardware 451
7.2. Software 451
7.3. Personnel 451
7.4. Cost Summary 452
Timetable for Development 453

System Evolution 454
9.1. Users 454
9.2. Information Contents 454
9.3. Capabilities 454
9.4. Resource Requirements 455
9.5. System Success 455

Appendix D MPS EIS Software Selection 456
Introduction 456
Software Selection 456
What We are Expecting 457
Data Sources 457
Navigation 457
Annex 1: MPS EIS Prototype Specifications 457
Annex 2: EIS Evaluation, Criteria and Features 460
Annex 3: Memorandum 462

Name Index 463
Organization Index 467
Subject Index 469