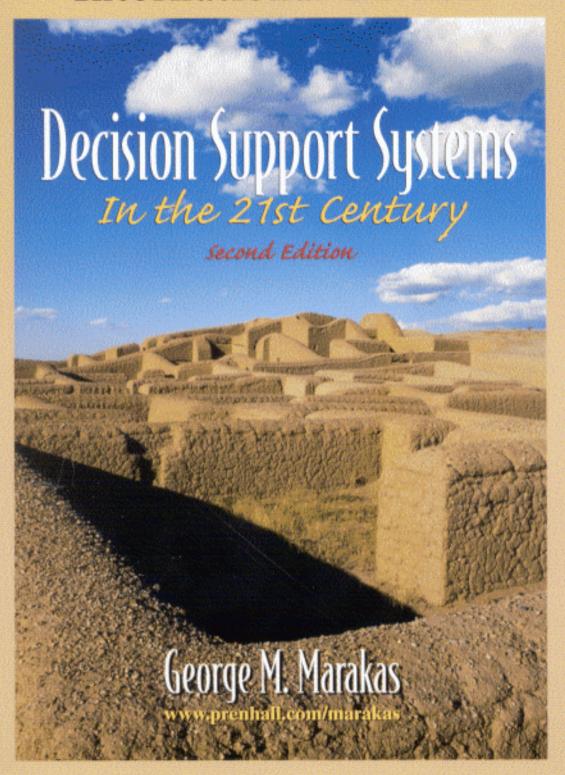
International Edition



CONTENTS

CHAPTER 1 Introduction to Decision Support Systems 1
1-1: DSS Defined 3
1-2: History of Decision Support Systems 6
1-3: Ingredients of a DSS 8
1-4: Data and Model Management 10
1-5: DSS Knowledge Base 16
1-6: User Interfaces 19
. 1-7: The DSS User 22
1-8: Categories and Classes of DSSs 24
1-9: Chapter Summary 29
CHAPTER 2 Decisions and Decision Makers 32
2-1: Decision Makers: Who Are They? 35
2-2: Decision Styles 41
2-3: Decision Effectiveness 45
2-4: How Can a DSS Help? 49
2-5: Why Are Decisions So Hard? 50
2-6: A Typology of Decisions 53
2-7: Decision Theory and Simon's Model of Problem Solving 56
2-8: Rational Decision Making 59
2-9: Bounded Rationality 60
2-10: The Process of Choice 63
2-11: Cognitive Processes 65
2-12: Biases and Heuristics in Decision Making 69
2-13: Effectiveness and Efficiency 78
2-14: Chapter Summary 79
CHAPTER 3 Decisions in the Organization 85
3-1: Understanding the Organization 88
3-2: Organizational Culture 91

3-3: Power and Politics 94
3-4: Supporting Organizational Decision Making 97
3-5: Chapter Summary 98
CHAPTER 4 Modeling Decision Processes 101
4-1: Defining the Problem and Its Structure 103
4-2: Decision Models 113
4-3: Types of Probability 120
4-4: Techniques for Forecasting Probabilities 124
4-5: Calibration and Sensitivity 129
4-6: Chapter Summary 132
CHAPTER 5 Group Decision Support and Groupware Technologies 139
5-1: Group Decision Making 141
5-2: The Problem with Groups 147
5-3: MDM Support Technologies 151
5-4: Managing MDM Activities 165
5-5: The Virtual Workplace 168
5-6: Chapter Summary 169
CHAPTER 6 Executive Information Systems 172
6-1: What Exactly Is an EIS? 174
6-2: Some EIS History 177
6-3: Why Are Top Executives So Different? 177
6-4: EIS Components 184
6-5: Making the EIS Work 187
6-6: The Future of Executive Decision Making and the EIS 193
6-7: Chapter Summary 196
CHAPTER 7 Expert Systems and Artificial Intelligence 204
7-1: The Concept of Expertise 207
7-2: The Intelligence of Artificial Intelligence 209
7-3: The Concepts and Structure of Expert Systems 218
7-4: Designing and Building Expert Systems 222
7-5: Evaluating the Benefits of Expert Systems 225
7-6: Chapter Summary 228
CHAPTER 8 Knowledge Engineering and Acquisition 236
8-1: The Concept of Knowledge 239
8-2: Knowledge Acquisition for Expert Systems 243
8-3: Validating and Verifying the Knowledge Base 253
8-4: Chapter Summary 255

CHAPTER 9 Machines That Can Learn 258	
9-1: Fuzzy Logic and Linguistic Ambiguity 261	
9-2: Artificial Neural Networks 266	
9-3: Genetic Algorithms and Genetically Evolved Networks 274	
9-4: Applications of Machines That Learn 282	
9-5: Chapter Summary 285	
CHAPTER 10 The Data Warehouse 292	
10-1: Stores, Warehouses, and Marts 295	
10-2: The Data Warehouse Architecture 303	
10-3: Data Have Data—The Metadata 307	
10-4: Interviewing the Data—Metadata Extraction 310	
10-5: Implementing the Data Warehouse 312	
10-6: Data Warehouse Technologies 315	
10-7: The Future of Data Warehousing 316	
10-8: Chapter Summary 320	
CHAPTER 11 Data Mining and Data Visualization 323	
11-1: A Picture Is Worth a Thousand Words 326	
11-2: Online Analytical Processing 329	
11-3: Techniques Used to Mine the Data 333	
11-4: Market Basket Analysis: The King of DM Algorithms 340	
11-5: Current Limitations and Challenges to Data Mining 350	
11-6: Data Visualization: "Seeing" the Data 351	
11-7: Siftware Technologies 358	
11-8: Chapter Summary 364	
Appendix 375	
CHAPTER 12 Designing and Building the Data Warehouse 381	
12-1: The Enterprise Model Approach to Data Warehouse Design 383	
12-2: The Data Warehouse Project Plan 386	
12-3: Specifying the Analysis and Design Tools 406	
12-4: Warehouse Architecture Specification and Development 4	1
12-5: Data Warehouse Project Success Factors 416	
12-6: Chapter Summary 417	
CHAPTER 13 The Systems Perspective of a DSS 421	
13-1: What Is a System? 424	
13-2: DSS in the Context of Information Systems 429	
13-3: Information Quality Issues in DSS Design 432	

13-4: Defining the DSS Information System Architecture	439
13-5: The Role of the Internet in DSS Development and Use	442
13-6: Chapter Summary 445	
CHAPTER 14 Designing and Building Decision Support Systems	448
14-1: Strategies for DSS Analysis and Design 450	
14-2: The DSS Developer 461	
14-3: Tools for DSS Development 465	
14-4: DSS User Interface Issues 469	
14-5: Chapter Summary 471	
CHAPTER 15 Implementing and Integrating Decision Support Systems 476	
15-1: DSS Implementation 478	
15-2: System Evaluation 483	
15-3: The Importance of Integration 494	
15-4: Chapter Summary 497	
CHAPTER 16 Creative Decision Making and Problem Solving	501
16-1: What Is Creativity? 504	
16-2: Creativity Defined 505	
16-3: The Occurrence of Creativity 506	
16-4: Creative Problem-Solving Techniques 515	
16-5: Creativity and the Role of Technology 524	
16-6: Chapter Summary 525	
CHAPTER 17 Intelligent Software Agents, Bots, Delegation, and Agency 528	
17-1: A World of Delegation and Agency 530	
17-2: What Is an Intelligent Software Agent? 536	
17-3: Classification of Intelligent Software Agents 543	
17-4: Intelligent Software Agents in E-Business 551	
17-5: Designing and Deploying Intelligent Software Agents 557	
17-6: The Future of Intelligent Software Agents 568	
17-7: Chapter Summary 570	
CHAPTER 18 Decision Support in the Twenty-First Century	573
18-1: Where We Are and Where We Have Been 574	
18-2: The Future of Decision Support Systems 576	
18-3: The Future of Expert and Artificial Intelligence Systems 578	

581

18-4: The Future of Executive Information Systems 18-5: The Future of Intelligent Software Agents and Delegation 582

18-6: Some Final Thoughts on the Future of DSS **Technologies** 587

18-7: Chapter Summary 590

Appendix A Decision Style Inventory III **591**

References 595

603 **Index**