Contents

Preface xi
Acknowledgments xiii
Editors xv
Contributors xvii

PART I Executive Summary

1 Executive Summary: Handbook of Military Industrial Engineering ........................................ 1-1
Adedeji B. Badiru

PART II Modeling and Optimization

2 Optimizing a Physical Security Configuration Using a Highly Detailed Simulation Model ........................................ 2-1
Tom Marechal, Alice E. Smith, Volkan Ustun, Jeffrey S. Smith, and Erjen Lefeber

3 A Time-Window Constrained Scheduling of Target Illuminators in Naval Battle-group Antiair Warfare ........................................ 3-1
Youngho Lee and Hanif D. Sherali

4 Multiple Criteria Optimization Models for Supplier Selection ........................................ 4-1
A. Ravi Ravindran and Vijay Wadhwa

5 Probabilistic Modeling for UAV Path Planning in the Presence of Threat Zones ........................................ 5-1
Barbara Pfeiffer, Rajan Batta, Kathrin Klamroth, and Rakesh Nagi

6 Modeling the End-to-End Military Transportation Problem ........................................ 6-1
James T. Moore, J. Wesley Barnes, and Raymond R. Hill

7 New Advances in Solving the Weapon-Target Assignment Problem ........................................ 7-1
Ravindra K. Ahuja, Arvind Kumar, Krishna C. Jha, and James B. Orlin
Optimization Model for Military Budget Allocation and Capital Rationing
Adedeji B. Badiru and Charles H. Aikens

An Overview of Meta-Heuristics and Their Use in Military Modeling
Raymond R. Hill and Edward A. Pohl

PART III  Reliability and Maintenance

Recent Advances in Optimal Reliability Allocation
Way Kuo and Rui Wan

Lower Confidence Bounds for System Reliability from Binary Failure Data Using Bootstrapping
Lawrence M. Leemis

Assessing the Reliability of a Contingency Logistics Network
Marlin U. Thomas

Computing Small-Fleet Aircraft Availabilities Including Redundancy and Spares
Jeffery K. Cochran and Theodore P. Lewis

High Velocity Maintenance: The Role of Industrial Engineering in USAF Maintenance, Repair, and Overhaul
Doug Keene, Frank Dement, and Gary O'Neill

Beyond Authorized versus Assigned: Aircraft Maintenance Personnel Capacity
Jeremy A. Howe, Benjamin A. Thoele, Scotty A. Pendley, Anthony F. Antoline, and Roger D. Golden

PART IV  Contingency Planning and Logistics

Joint and Multinational Campaign Planning: A Project/Program Management Approach
Richard F. Deckro, James T. Moore, Michael L. Fredley, Jack A. Jackson, Michael J. Artelli, and John C. Van Hove

Mobilizing Marine Corps Officers

The Deployment Scheduling Analysis Tool (DSAT)
Thom J. Hodgson, Barbra Melendez, Kristin A. Thoney, and Tim E. Trainor

The Deployment Analysis Network Tool Extended (DANTE)
Thom J. Hodgson, W. Owen Spivey, Tim E. Trainor, and Michael K. Williams

Reserve Manufacturing Capacity for Augmenting Contingency Logistics Requirements
Marlin U. Thomas and Mark A. Lawley
Contents

21 Inventory Models for Contingency Operations..............................................................21-1
  Marlin U. Thomas

22 Planning the Ground Force for Operations in the Post-Cold War Era:
  A Systems Analysis Approach..................................................................................22-1
  W. Peter Cherry, Reiner K. Huber, and Thom J. Hodgson

PART V  Supply Chain and Decision Making

23 Supply Chain Management......................................................................................23-1
  Douglas M. Lambert

24 Hierarchical Dynamic Decision Making..............................................................24-1
  Adedeji B. Badiru

PART VI  Human Factors and Ergonomics

25 Human Factors in Military Systems.......................................................................25-1
  Misty Blue and Raymond R. Hill

26 Digital Warfighter Modeling for Military Applications.........................................26-1
  Karim Abdel-Malek, Jingzhou (James) Yang, Timothy Marler, and Jasbir Arora

PART VII  Management and Process Improvement

27 Achieving Strategic Aims: Moving Toward a Process-Based
  Government Enterprise..........................................................................................27-1
  George R. Freeman

28 The Military Performance Team.............................................................................28-1
  Jesse W. Brogan

29 How to Initiate Performance Management Within the US Army.........................29-1
  Jesse W. Brogan

30 Critical Resource Diagramming and Work-Rate Analysis....................................30-1
  Adedeji B. Badiru

31 Innovative Techniques and Practical Software Tools for Addressing
  Military Analytical Problems ..................................................................................31-1
  Bobbie L. Foote and Simon R. Goerger

32 Countering Forgetting Through Training and Deployment...............................32-1
  Mohamad Y. Jaber, Hemant V. Kher, and Darwin J. Davis

33 Half-Life Theory of Learning Curves......................................................................33-1
  Adedeji B. Badiru and Anota O. Ijaduola

34 Readiness for Organizational Change: The Systematic
  Development of a Scale .........................................................................................34-1
  Daniel T. Holt, Achilles A. Armenakis, Hubert S. Feild, and Stanley G. Harris

Appendix A....................................................................................................................Appendix A-1

Index.............................................................................................................................Index-1