## Contents

<table>
<thead>
<tr>
<th>Board of Advisors</th>
<th>vii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>ix</td>
</tr>
<tr>
<td>About the Editors</td>
<td>xi</td>
</tr>
<tr>
<td>List of Contributors</td>
<td>xiii</td>
</tr>
</tbody>
</table>

### Part One Technology-specific Concepts 1

1. Technology: Discourse and Possibility  
   J. C. Spender  
   Technology Evolution  
   Joshua L. Rosenbloom  
   Technology Transition  
   Ashish Sood and Gerard J. Tellis  
   Technology Intelligence  
   Thomas Durand  
   Technology Forecasting  
   Steve Russell  
   Disruptive Technology  
   Erwin Danneels  
   Intellectual Property  
   Clyde D. Stoltenberg  
   Options and the Analysis of Technology Projects  
   Edward Netting  
   Technology and Innovation Management: Financing Technology  
   Patricia Robak

### Part Two Industry Level 67

10. Innovation-driven Industry Life Cycles  
    Susan K. Cohen  
11. Technological Characteristics of Industries  
    Donna Marie De Carolis

### Part Three Innovation 87

12. Competitive Dynamics in High-technology Industries  
    Ram Mudambi and Tim Swift  
13. Types of Innovation  
    Rosanna Garcia  
14. Sources of Innovation  
    Jenny Darroch and Morgan P. Miles  
15. Innovation Models  
    Allan N. Afiyah and Kwaku O. Prakah Asante  
16. Diffusion of Innovation  
    C. Anthony Di Benedetto  
17. Consumer Adoption of Technological Innovations  
    Paschalina (Lilia) Ziamou

### Part Four Firm Level 119

18. Open Innovation  
    Mariann Jelinek  
19. Technology Strategy  
    Steven W. Floyd and Carole Wolf  
20. Absorptive Capacity and Technological Innovation  
    Shaker A. Zahra, Bárbara Larraneta, and J. Luis Galán  
    William J. Miller  
22. Dual Career Ladders in Organizations  
    Christy H. Weer and Jeffrey H. Greenhaus  
23. Human Resources in R&D  
    George P. Farris and Yi-Yu Chen
PART ONE  CORPORATE INNOVATION STRATEGIES  3
24 The Stage-Gate® Product Innovation System: From Idea to Launch  157
Robert G. Cooper
25 Learning and Experience  169
Paul Otke and Robert McCowan
26 New-product Development Innovation and Commercialization Processes  175
Abbie Griffin
27 Service Innovation  181
John E. Ettlie, Iliana Payano Mejia, and Jessica M. Walker
28 Process Innovation in Operations  191
John E. Ettlie and Shalini Khazanchi
29 Organizing for Innovation  199
Marzam Jelinek
30 The Concept of Corporate Entrepreneurship  207
Jeffrey G. Covin and Donald F. Kuratko
31 Intellectual Property Strategy at the Firm Level  215
Marzam Jelinek

PART FIVE  PROJECT LEVEL CONCEPTS  223
32 Innovation Teams  225
Gloria Barczak
33 Understanding Customer Needs  231
Abbie Griffin
34 The Front End of Innovation in Large Established Firms  233
Peter A. Koen and Heidi M. J. Bertels
35 Project Management under High Uncertainty  241
Svenja C. Sommer and Christoph H. Loch
36 Evaluating Innovation Projects  251
Mark P. Rice and Frederic C. Hamilton
37 Managing Project–Organization Coupling in Breakthrough Innovation  257
Trudy Heller
38 Promotors and Champions of Innovation: Barriers to Innovation and Innovator Roles  263
Soren Salamo and Hans Georg Gemünden

PART SIX  NATIONAL INNOVATION SYSTEMS  269
39 Innovation at the National Level  271
V. K. Narayanan, Gina C. O’Connor, Lois Peters, and Mark Tribbitt
40 Australia’s National Innovation System  279
Don Scott-Kennie and Judy Matthews
41 Evolution of China’s National Innovation System and Its Challenges in Technological Development  293
Mei-Chih Hu and John A. Mathews
42 The National Innovation System in Taiwan  309
Tai-Jung Lu and Jeng-Wen Wann
43 The National Innovation System in Singapore  327
Winston Koh and Phillip Phan
44 The Indian Innovation System  341
Rishikesha Krishnan
45 Japan’s National Innovation System  351
Chihiro Watanabe and Kayano Fukuda
46 The National Innovation System of the Russian Federation  367
Julian Cooper
47 The National Innovation System in Germany  375
Matthew Allen
48 The National Innovation System in Finland  391
Raimo Loorio and Liisa Vähikangas
49 The Dutch Innovation System: Raising the Lowland?  403
Patrick van der Duijn
50 The National Innovation System of Italy  419
Daniele Virgilioto
51 The National Innovation System of Ireland  431
James A. Cunningham and William Golden
52 The U.S. National Innovation System  445
Kenneth L. Simons and Judith Walls
53 Cooperative R&D Agreements (CRADAs)  469
Paul Otke
54 University Licensing  471
Paul Otke

PART SEVEN  EMERGING TECHNOLOGIES  473
55 What Are Emerging Technologies?  475
V. K. Narayanan and Gina C. O’Connor
56 Biotechnology: The Technology of the 21st Century  479
Shreefal Mehta
57 The Continuing Economic Potential of Nanotechnology  491
Lois Peters
58 Emerging Web Technologies  505
Murugan Ananderajan, Bay Ariasoe, Chittibabu Govindaraju, and Malsha Zaman

GLOSSARY  513

INDEX  525