# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td></td>
<td>xxiii</td>
</tr>
<tr>
<td>Preface</td>
<td></td>
<td>xxv</td>
</tr>
<tr>
<td>Acknowledgment</td>
<td></td>
<td>xxx</td>
</tr>
</tbody>
</table>

## Section 1
### Design Methodologies

**Chapter 1**
Trends in Public Design for the Disabled: A Case Study on Public Design for Visually Impaired People ................................................................. 1  
*Kin Wai Michael Siu, The Hong Kong Polytechnic University, Hong Kong*

**Chapter 2**
New Design Paradigm: Shaping and Employment................................................. 18  
*Vladimir M. Sedenkov, Belarusian State University, Belarus*

**Chapter 3**
Interdisciplinary Interaction for the Early Stages of Product and Service Development .................. 39  
*Mirja Kälviäinen, North Karelia University of Applied Sciences, Finland*

**Chapter 4**
Empathic Design Research Strategies: Designing for, with and by People with Disabilities .......... 58  
*Deana McDonagh, University of Illinois at Urbana-Champaign, USA  
Joyce Thomas, University of Illinois at Urbana-Champaign, USA  
Lydia Khuri, University of Illinois at Urbana-Champaign, USA  
Susann Heft Sears, University of Illinois at Urbana-Champaign, USA  
Feniosky Peña-Mora, University of Illinois at Urbana-Champaign, USA*
Chapter 5
Tool and Information Centric Design Process Modeling: Three Case Studies................. 80
William Stuart Miller, Clemson University, USA
Joshua D. Summers, Clemson University, USA

Chapter 6
Embedded RFID Solutions: Challenges for Product Design and Development............. 106
Álvaro M. Sampaio, Polytechnic Institute of Cávado and Ave, Portugal & University of Minho, Portugal
António J. Pontes, University of Minho, Portugal
Ricardo Simões, Polytechnic Institute of Cávado and Ave, Portugal & University of Minho, Portugal

Section 2
Supporting Technologies

Chapter 7
Implementation of Rapid Manufacturing Systems in the Jewellery Industry in Brazil: Some Experiences in Small and Medium-Sized Companies................................................................. 119
Juan Carlos Campos Rúbio, Universidade Federal de Minas Gerais, Brazil
Eduardo Romeiro Filho, Universidade Federal de Minas Gerais, Brazil

Chapter 8
Creative and Visualization Tools in Context of Design.................................................. 139
Mamata N. Rao, National Institute of Design, India

Chapter 9
Virtual Reality Systems for Industrial Design Application.......................................... 159
Alice Pignatel, Politecnico di Milano, Italy
Fausto Brevi, Politecnico di Milano, Italy

Section 3
Organization and Process Management

Chapter 10
Integrating ‘Designerly’ Ways with Engineering Science: A Catalyst for Change within Product Design and Development................................................................. 173
Ian de Vere, Swinburne University of Technology, Australia
Gavin Melles, Swinburne University of Technology, Australia
Chapter 11
Rediscovering Design Education as a Social Constructivist Foundation for Innovative Design Thinking

Johann van der Merwe, Cape Peninsula University of Technology, South Africa

Section 4
Enhancing Creativity and Innovation

Chapter 12
Concept Naming: Exploratory Methods in the Development of Product Design and Brand DNA

John H. Takamura Jr., Arizona State University, USA

Chapter 13
PDD Trends: Research Driven by Laws of Product Evolution

José Manuel Ferreira Gaspar, Instituto Superior Técnico, Portugal
Arlindo Silva, Instituto Superior Técnico, Portugal

Chapter 14
Customer Involved Open Innovation: Innovation of New Products with End Users and Customers

Marcel Weber, Altuition BV, The Netherlands
Simone A.M. Geerts, ABNAMRO, The Netherlands

Chapter 15
Stimulating Creativity and Innovation in and around Organizations: Co-Creation Experiments from Ongoing Research in a Bank

Kirsten Bonde Sørensen, Kolding School of Design, Denmark

Section 5
Social Sciences and Environment

Chapter 16
Research Project “Future of the Present”: The Process and the Importance Signs of Observation into Fashion

Sandra Regina Rech, University of the State of Santa Catarina, Brazil
Gabrielle Stockey Chinchilha, University of the State of Santa Catarina, Brazil
Chapter 17
Design for Desirability: A Collaborative Innovation-Initiative between New Zealand Design Academia and Industry ................................................................. 328
   Mark Goellner, Massey University, New Zealand
   Anders Warell, Lund University, Sweden
   Rodney Adank, Massey University, New Zealand
   Lyn Garrett, Massey University, New Zealand
   Tony Parker, Massey University, New Zealand

Chapter 18
The Influence of Ageing on User Experience ...................................................... 348
   Ana Cristina Medeiros, University of Cambridge, UK
   Nathan Crilly, University of Cambridge, UK
   P. John Clarkson, University of Cambridge, UK

Chapter 19
The Contribution of Ergonomic Analysis in the Product Design for Recycling .......... 365
   Eduardo Romeiro Filho, Federal University of Minas Gerais, Brazil
   Rose Mary Rosa de Lima, Pitagoras Faculty of Belo Horizonte, Brazil

Section 6
   Systems Integration

Chapter 20
Understand Complex Design Problems Using Systems Thinking .......................... 379
   Tao Huang, Columbia College Chicago, USA
   Eric E. Anderson, Independent Consultant, USA

Chapter 21
Integrated Approach to Product and Process Design Based on Life Cycle Engineering .................. 394
   Paulo Peças, Instituto Superior Técnico, Portugal
   Elsa Henriques, Instituto Superior Técnico, Portugal
   Inês Ribeiro, Instituto Superior Técnico, Portugal

Section 7
   Case Studies

Chapter 22
The “Madame Butterfly” Robot: A Case Study in Product Design and Development ............... 419
   Luisa Fontana, FONTANAtelier, Italy
   Davide Fornari, SUPSI - University of Applied Sciences and Arts, Switzerland
Chapter 23
Transformal Role of Product Design in Singapore’s Transition to a Service Economy ................. 431

Peer M. Sathikh, Nanyang Technological University, Singapore

Chapter 24
The Value of Storytelling in Product Design ........................................................................ 447

Rina Bernabei, University of New South Wales, Australia
Kelly Freeman, University of New South Wales, Australia
Jacqueline Power, University of New South Wales, Australia

Chapter 25
Deploying and Adapting an Indoor Positioning System in the Clinical Setting ....................... 461

James Stahl, Massachusetts General Hospital, USA
Julie Holt, Massachusetts General Hospital, USA
Michael Lye, Rhode Island School of Design, USA

Chapter 26
Designing Toys, Gifts and Games: Learning through Knowledge Transfer Partnerships .......... 482

Friedemann Schaber, The University of Northampton, UK
Vicki Thomas, The University of Northampton, UK
Randle Turner, The University of Northampton, UK

Chapter 27
Product Form Evolution ........................................................................................................ 499

Andrew Muir Wood, University of Cambridge, UK
James Moultrie, University of Cambridge, UK
Claudia Eckert, Open University, UK

Compilation of References .................................................................................................. 513

About the Contributors ......................................................................................................... 555

Index ..................................................................................................................................... 568