Table of Contents

Foreword ........................................................................................................................................... xxvi
Preface ............................................................................................................................................... xxxi
Acknowledgment .......................................................................................................................... xxxviii

Section 1
Introduction

Chapter 1
Modelling Concepts for BIM............................................................................................................. 1
  Sander van Nederveen, Delft University of Technology, The Netherlands
  Reza Beheshti, Delft University of Technology, The Netherlands
  Wim Gielingh, Delft University of Technology, The Netherlands

Chapter 2
A Review of Building Information Modeling Tools from an Architectural Design Perspective........ 19
  Olcay Çetiner, Yildiz Technical University, Turkey

Section 2
Adoption

Chapter 3
Delivering BIM to the UK Market .................................................................................................... 30
  Mark Bew, Scott Wilson Group, UK
  Jason Underwood, University of Salford, UK

Chapter 4
Building Information Modelling Maturity Matrix ........................................................................... 65
  Bilal Succar, ChangeAgents AEC, Australia
Section 3
Standards

Chapter 5
Product Modelling in the Building and Construction Industry: A History and Perspectives .......... 104
Edwin Dado, The Netherlands Defence Academy, The Netherlands
Reza Beheshti, Delft University of Technology, The Netherlands
Martinus van de Ruitenbeek, Delft University of Technology, The Netherlands

Chapter 6
The US National Building Information Modeling Standard......................................................... 138
Patrick C. Suermann, University of Florida, USA
Raja R.A. Issa, University of Florida, USA

Section 4
Applications

Chapter 7
A CAD-Based Interface Management System using Building Information Modeling in Construction........................................................................................................... 155
Yu-Cheng Lin, National Taipei University of Technology, Taiwan

Chapter 8
A Comparative Analysis of 2D Computer-Aided Estimating (CAE) and BIM Estimating Procedures.................................................................................................................. 170
Oluwole Alfred Olatunji, University of Newcastle, Australia
William David Sher, University of Newcastle, Australia

Chapter 9
Automated Building Process Monitoring ................................................................................... 190
Danijel Rebolj, University of Maribor, Slovenia
Nenad Ćuš Babič, University of Maribor, Slovenia
Peter Podbreznik, University of Maribor, Slovenia

Chapter 10
Extracting Fire Engineering Simulation Data from the IFC Building Information Model .......... 212
Michael Spearpoint, University of Canterbury, New Zealand

Chapter 11
The Applications of Building Information Modelling in Facilities Management ...................... 239
Oluwole Alfred Olatunji, University of Newcastle, Australia
William David Sher, University of Newcastle, Australia
Chapter 12
Developing Context Sensitive BIM Based Applications .......................................................... 254
  *Timo Hartmann, Twente University, The Netherlands*

Chapter 13
Towards the Development of a Project Decision Support Framework for Adoption
of an Integrated Building Information Model using a Model Server ........................................ 270
  *Kerry London, Deakin University, Australia*
  *Vishal Singh, University of Newcastle, Australia*
  *Ning Gu, University of Newcastle, Australia*
  *Claudelle Taylor, Nexus Point Solutions, Australia*
  *Ljiljana Brankovic, University of Newcastle, Australia*

Section 5
Green Building

Chapter 14
The Idealization of an Integrated BIM, Lean, and Green Model (BLG) .................................. 302
  *José L. Fernández-Solís, Texas A&M University, USA*
  *Iván Mutis, Texas A&M University, USA*

Chapter 15
A BIM Based Application to Support Cost Feasible ‘Green Building’ Concept Decisions ........ 335
  *Goh Bee Hua, National University of Singapore, Singapore*

Section 6
Spatial Applications

Chapter 16
Integrating BIM with Urban Spatial Applications: A VEPS Perspective .............................. 363
  *Yonghui Song, University of Salford, UK*
  *Jürgen Bogdahn, HFT Stuttgart – University of Applied Sciences, Germany*
  *Andy Hamilton, University of Salford, UK*
  *Hongxia Wang, University of Salford, UK*

Chapter 17
BIM Integration with Geospatial Information within the Urban Built Environment ................ 382
  *Hongxia Wang, University of Salford, UK*
  *Andy Hamilton, University of Salford, UK*
Chapter 18
Query Support for BIMs using Semantic and Spatial Conditions .................................................. 405
   André Borrmann, Technische Universität München, Germany
   Ernst Rank, Technische Universität München, Germany

Chapter 19
Basic Topological Notions and their Relation to BIM................................................................. 451
   Norbert Paul, Technische Universität München, Germany

Chapter 20
Geospatial Views for RESTful BIM ......................................................................................... 473
   Umit Isikdag, Beykent University, Turkey
   Jason Underwood, University of Salford, UK
   Murat Kuruoglu, Istanbul Technical University, Turkey
   Alias Abdul-Rahman, Universiti Teknologi Malaysia, Malaysia

Chapter 21
BIM and Geospatial Information Systems................................................................................ 483
   Ewan Peters, Ove Arup & Partners Ltd, UK

Section 7
State of the Art

Chapter 22
BIM Adoption: Expectations across Disciplines ....................................................................... 501
   Ning Gu, University of Newcastle, Australia
   Vishal Singh, University of Newcastle, Australia
   Claudelle Taylor, Nexuspoint Solutions, Australia
   Kerry London, Deakin University, Australia
   Ljiljana Brankovic, University of Newcastle, Australia

Chapter 23
Building Information Modeling in the Australian Architecture Engineering and Construction
   Industry ........................................................................................................................................... 521
   Alex Gerrard, University of South Australia, Australia & Rider Levett Bucknall, Australia
   Jian Zuo, University of South Australia, Australia
   George Zillante, University of South Australia, Australia
   Martin Skitmore, Queensland University of Technology, Australia
Section 8
Education and Training

Chapter 24
Removing Barriers to BIM Adoption: Clients and Code Checking to Drive Changes ................. 546
   James Harty, Copenhagen School of Design and Technology, Denmark
   Richard Laing, The Robert Gordon University, UK

Chapter 25
Design and Evaluation of an Integrated Design Practice Course in the Curriculum
of Architecture ......................................................................................................................... 561
   Ali Murat Tanyer, Middle East Technical University, Turkey

Section 9
Case Studies

Chapter 26
The Role of BIM in the Architectural Design Process: Learning from Practitioners’ Stories........... 587
   Anita Moum, SINTEF Building and Infrastructure / Norwegian University of Science and
   Technology (NTNU), Norway

Chapter 27
Lean Enabled Structural Information Modeling ............................................................................ 619
   Baris Lostuvali, HerreroBoldt, USA
   Jay Love, Degenkolb Engineers, USA
   Robert Hazleton, The Herrick Corporation, USA

Chapter 28
Building Lifecycle Information Management Case Studies ....................................................... 638
   Martin Riese, Gehry Technologies, Hong Kong

Compilation of References ....................................................................................................... 651

About the Contributors ............................................................................................................ 699

Index ....................................................................................................................................... 709