

Building Information Modelling Bim

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Building Information Modelling, Building Performance, Design and Smart Construction
Mohammad Dastbaz 2017-03-31 This book charts the path toward high performance sustainable buildings and the smart dwellings of the future. The volume clearly explains the principles and practices of high performance design, the uses of building information modelling (BIM), and the materials and methods of smart construction. Power Systems, Architecture, Material Science, Civil Engineering and Information Systems are all given consideration, as interdisciplinary endeavours are at the heart of this green building revolution.

Building Information Modeling Raymond Issa 2015-06

The Impact of Building Information Modelling Ray Crotty 2013-03-01 Construction projects involve a complex set of relationships, between parties with different professional backgrounds trying to achieve a very complex goal. Under these difficult circumstances, the quality of information on which projects are based should be of the highest possible standard. The line-based, two dimensional drawings on which conventional construction is based render this all but impossible. This is the source of some major shortcomings in the construction industry, and this book focuses on the two most fundamental of these: the failure to deliver projects predictably: to the required quality, on time and within budget; and the failure of most firms in the industry to make a survivable level of profit. By transforming the quality of information used in building, BIM aims to transform construction completely. After describing and explaining these problems, the way in which BIM promises to provide solutions is examined in detail. A discussion of the theory and practice of BIM is also provided, followed by a review of various recent surveys of BIM usage in the US, UK and selected European economies. The way in which other industries, including retail and manufacturing, have been transformed by information are explored and compared with current developments in the deployment of BIM in construction. Five case studies from the UK show how BIM is being implemented, and the effects it is having on architects and contractors. This book is perfect for any construction professional interested in improving the efficiency of their business, as well as undergraduate and postgraduate students wishing to understand

the importance of BIM.

BIM for Smart and Sustainable Urban Space Hassane Jarar Oulidi 2022-02-02
Advances in Building Information Modeling Salih Ofluoglu 2020-03-11 This book constitutes the refereed proceedings of the First Eurasian BIM Forum, EBF 2019, held in Istanbul, Turkey, in May 2019. The 16 full papers were carefully reviewed and selected from 44 submissions. The papers cover such topics as ?BIM adoption and implementation; BIM for project management; BIM for sustainability and performative design; BIM and facility management and infrastructural issues.

Building Information Modelling (BIM) in Design, Construction and Operations III P. De Wilde 2019-12-10 Originating from the 2019 International Conference on Building Information Modelling this book presents latest findings in the field. This volume presents research from a panel of experts from industry, practice and academia touching on key topics, the development of innovative solutions, and the identification future trends.

BIM Handbook Rafael Sacks 2018-07-03 Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The BIM Handbook, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

Product Lifecycle Management for a Global Market Shuichi Fukuda 2014-12-17 This book constitutes the refereed post-proceedings of the 11th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2014, held in Yokohama, Japan, in July 2014. The 51 full papers presented were carefully reviewed and selected from 77 submissions. They are organized in the following topical sections: BIM operations, maintenance, and renovation; BIM concepts and lifecycle management; design and education; naval engineering and shipbuilding; aeronautical and automotive engineering; industry and consumer products; interoperability, integration, configuration, systems engineering; change management and maturity; knowledge engineering; knowledge management; service and manufacturing; and new PLM.
Framework for Macro Building Information Modelling (BIM) Adoption in Nigeria Mansur Hamma-Adama 2020

Building Information Modeling Nawari O. Nawari 2015-04-21 BIM for Structural

Engineering and Architecture Building Information Modeling: Framework for Structural Design outlines one of the most promising new developments in architecture, engineering, and construction (AEC). Building information modeling (BIM) is an information management and analysis technology that is changing the role of computation in the architectural and engineering industries. The innovative process constructs a database assembling all of the objects needed to build a specific structure. Instead of using a computer to produce a series of drawings that together describe the building, BIM creates a single illustration representing the building as a whole. This book highlights the BIM technology and explains how it is redefining the structural analysis and design of building structures. BIM as a Framework Enabler This book introduces a new framework—the structure and architecture synergy framework (SAS framework)—that helps develop and enhance the understanding of the fundamental principles of architectural analysis using BIM tools. Based upon three main components: the structural melody, structural poetry, and structural analysis, along with the BIM tools as the frame enabler, this new framework allows users to explore structural design as an art while also factoring in the principles of engineering. The framework stresses the influence structure can play in form generation and in defining spatial order and composition. By highlighting the interplay between architecture and structure, the book emphasizes the conceptual behaviors of structural systems and their aesthetic implications and enables readers to thoroughly understand the art and science of whole structural system concepts. Presents the use of BIM technology as part of a design process or framework that can lead to a more comprehensive, intelligent, and integrated building design Places special emphasis on the application of BIM technology for exploring the intimate relationship between structural engineering and architectural design Includes a discussion of current and emerging trends in structural engineering practice and the role of the structural engineer in building design using new BIM technologies Building Information Modeling: Framework for Structural Design provides a thorough understanding of architectural structures and introduces a new framework that revolutionizes the way building structures are designed and constructed.

Building Information Systems in the Construction Industry A. Galiano Garrigos 2018-01-24 The selected papers in this book deal with Building Information Modelling (BIM) in Design, Construction and Operations. Application of BIM throughout the construction industry is progressing at an accelerated rate, with the development of new software tools. BIM has the potential to alter the way in which different specialities interact before, during and after the construction project. BIM carries the data set for a particular asset through its full life cycle which has important consequences for operations and maintenance as well as for infrastructure planning. BIM emergence has been the result of advanced surveying techniques, powerful computer systems, better visualisation tools and new communication infrastructures. The papers included in this book demonstrate the interdisciplinary character of BIM, bringing together contributions from experts in industry, practice and academia.

Green BIM Eddy Krygiel 2008-04-28 Meet the challenge of integrating Building Information Modeling and sustainability with this in-depth guide, which pairs these two revolutionary movements to create environmentally friendly design through a streamlined process. Written by an award-winning team that has gone beyond theory to lead the implementation of Green BIM projects, this comprehensive reference features

practical strategies, techniques, and real-world expertise so that you can create sustainable BIM projects, no matter what their scale.

Heritage Building Information Modelling for Implementing UNESCO Procedures Ahmad Hamed Baik 2020-06-30 The main aim of this book is to develop and explore the value of new innovative digital content to help satisfy UNESCO's World Heritage nomination file requirements. Through a detailed exploration of two BIM case studies from Jeddah, Saudi Arabia, the book uniquely connects the use of Heritage BIM to the documentation methods used by UNESCO and demonstrates how this provides a contribution to both countries with heritage sites and UNESCO as an organisation. The research and practical examples in the book seek to address both the lack of a comprehensive method of submitting a nomination file to UNESCO and the lack of authentic engineering information in countries where extensive heritage sites exist. It looks at answering the following questions: How can Heritage Building Information Modelling (HBIM) be used to better maintain, protect, and record the updated information of historical buildings? How can HBIM provide innovation in creating the missing information for the assignment of UNESCO's World Heritage status? What additional value can a sustainable update of HBIM data provide for such sites? How can HBIM improve the cultural value of heritage buildings in the short, medium, and long term, as well as provide a better future for historical buildings? This book will be useful reading for researchers and practitioners in the areas of heritage conservation, archaeology, World Heritage nomination, HBIM, digital technology and engineering, remote sensing, laser scanning, and architectural technology.

Proceedings of the 23rd International Symposium on Advancement of Construction Management and Real Estate Fenjie Long 2021-02-02 This book presents the proceedings of CRIOCM2018, 23rd International Symposium on Advancement of Construction Management and Real Estate, sharing the latest developments in real estate and construction management around the globe. The conference was organized by the Chinese Research Institute of Construction Management (CRIOCM) working in close collaboration with Guizhou Institute of Technology (GIT). Written by international academics and professionals, the proceedings discuss the latest achievements, research findings and advances in frontier disciplines in the field of construction management and real estate. Covering a wide range of topics, including New-type urbanization, land development and land use, urban planning and infrastructure construction, housing market and housing policy, real estate finance and investment, new theories and practices on construction project management, smart city, BIM technologies and applications, construction management in big data era, green architecture and eco-city, rural rejuvenation and eco-civilization, other topics related to construction management and real estate, the discussions provide valuable insights into the advancement of construction management and real estate in the new era. The book is an outstanding reference resource for academics and professionals alike.

Achieving Construction Productivity Gains by Adopting Building Information Modelling (BIM). 2015

BIM Handbook Rafael Sacks 2018-08-14 Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way

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Understanding BIM Jonathan Ingram 2020-06-15 Understanding BIM presents the story of Building Information Modelling, an ever evolving and disruptive technology that has transformed the methodologies of the global construction industry. Written by the 2016 Prince Philip Gold Medal winner, Jonathan Ingram, it provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages its effective use can provide to a project team. Ingram, who pioneered the system heralding the BIM revolution, provides unrivalled access to case material and relevance to the current generation of BIM masters. With hundreds of colour images and illustrations showing the breadth and power of BIM, the book covers: The history of BIM What BIM is in technical and practical terms How it changes the day to day working environment Why we need BIM and what problems it can solve Where BIM is headed, particularly with regards to AI, AR, VR and voice recognition International case studies from a range of disciplines including: architecture, construction management, and retail Professionals and students in any field where the inter-disciplinary aspects of BIM are in operation will benefit from Ingram's insights. This book is an authoritative account of and reference on BIM for anyone wanting to understand its history, theory, application and potential future developments.

BIM for Heritage Sofia Antonopoulou 2017 This guidance on Building Information Modelling for heritage (Historic BIM) offers guidance for owners, end-users and professionals in the fields of heritage and construction. By raising awareness of the potential advantages of a BIM approach, this guidance will help users successfully implement BIM in heritage projects. Historic BIM is, by definition, a multi-disciplinary process that requires the input and collaboration of professionals with very different skillsets. It is also a fast-developing field in terms of research, official guidance, standards and professional practice. This publication addresses the issues surrounding the production and use of BIM for history buildings, and provides information about guidance and standards available elsewhere for managing a building's entire life cycle effectively.

Heritage Building Information Modelling Yusuf Arayici 2017-02-10 Building Information Modelling (BIM) is being debated, tested and implemented wherever you look across the built environment sector. This book is about Heritage Building Information Modelling

(HBIM), which necessarily differs from the commonplace applications of BIM to new construction. Where BIM is being used, the focus is still very much on design and construction. However, its use as an operational and management tool for existing buildings, particularly heritage buildings, is lagging behind. The first of its kind, this book aims to clearly define the scope for HBIM and present cutting-edge research findings alongside international case studies, before outlining challenges for the future of HBIM research and practice. After an extensive introduction to HBIM, the core themes of the book are arranged into four parts: Restoration philosophies in practice Data capture and visualisation for maintenance and repair Building performance Stakeholder engagement This book will be a key reference for built environment practitioners, researchers, academics and students engaged in BIM, HBIM, building energy modelling, building surveying, facilities management and heritage conservation more widely.

ANALYSIS OF BUILDING INFO MODE Dan Zhang 2017-01-26 This dissertation, "An Analysis of Building Information Modelling (BIM) Implementation From a Planned Behavior Perspective" by Dan, Zhang, ??, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: Lack of accurate building information and communication between project teams have been identified as two major problems for the construction industry, which led to inefficient building operations. In recent years, Building Information Modelling (BIM) emerges as an attractive solution to resolve these problems. However, the implementation of BIM in practice has encountered obstacles. The adoption rate of BIM varies and BIM fails to meet the core expectation of reinforcing the inter-disciplinary collaboration. Although research has been conducted to explore both technical and non-technical issues that need consideration, few studies stressed the significance of individual professionals during the implementation process. This study aims to complement this insufficiency by investigating individual professionals' positive role in facilitating successful BIM implementation. The study presented in this dissertation follows a mix-method approach. To identify an appropriate research perspective and explore the research context in Hong Kong construction industry, the researcher firstly conducted an exploratory case study and a more comprehensive literature review. Explicit research questions are then developed from the perspective of change management. Two models from Information system(IS)and organizational development literature were integrated to serve as theoretical framework. A tentative research model is then developed by incorporating key variables identified from the exploratory case study into this theoretical framework. In the following questionnaire survey, a total of 125 completed questionnaire were collected through email and online survey system. Partial Least Squares-Structural Equation Modeling (PLS-SEM) technique is adopted to test the hypothesized relationships between variables in the tentative research model. Findings from the exploratory study suggest that BIM is widely accepted by professionals as a technology initiative and the BIM implementation involves both technological and organizational changes. It is also found that individual professionals' reactions were largely influenced by the unique processes and contexts BIM is implemented. These reactions will in turn re-shape the implementation

processes and contexts and thus mediate the impact of BIM implementation on project performance. The results from the survey confirm the significant role of four influential factors (i.e. individual job impact, frequency of change communication, quality of change communication and participation) in shaping individual professionals' positive beliefs and attitude toward BIM. Accordingly, three useful strategies are recommended to better manage the individual professionals' positive change beliefs toward BIM and thus create positive change atmosphere for further BIM implementation in Hong Kong. The study has contribution to both knowledge and practice. Firstly, this study contributes to the knowledge by (1) extending the understanding of BIM from a change perspective; (2) providing rich information of BIM implementation in practice especially in the context of Hong Kong; and (3) complementing the insufficiency of BIM research at the micro-level (i.e. the individual level). Secondly, this study contributes to the practice by (1) recommending three useful strategies to create positive change atmosphere for BIM implementation at the primary stage; and

Building Information Modeling For Dummies Stefan Mordue 2015-10-02 Everything you need to make the most of building information modeling If you're looking to get involved in the world of BIM, but don't quite know where to start, Building Information Modeling For Dummies is your one-stop guide to collaborative building using one coherent system of computer models rather than as separate sets of drawings. Inside, you'll find an easy-to-follow introduction to BIM and hands-on guidance for understanding drivers for change, the benefits of BIM, requirements you need to get started, and where BIM is headed. The future of BIM is bright—it provides the industry with an increased understanding of predictability, improved efficiency, integration and coordination, less waste, and better value and quality. Additionally, the use of BIM goes beyond the planning and design phase of the project, extending throughout the building life cycle and supporting processes, including cost management, construction management, project management, and facility operation. Now heavily adopted in the U.S., Hong Kong, India, Singapore, France, Canada, and countless other countries, BIM is set to become a mandatory practice in building work in the UK, and this friendly guide gives you everything you need to make sense of it—fast. Demonstrates how BIM saves time and waste on site Shows you how the information generated from BIM leads to fewer errors on site Explains how BIM is based on data sets that describe objects virtually, mimicking the way they'll be handled physically in the real world Helps you grasp how the integration of BIM allows every stage of the life cycle to work together without data or process conflict Written by a team of well-known experts, this friendly, hands-on guide gets you up and running with BIM fast.

Airport Building Information Modelling Ozan Koseoglu 2019-08-28 This book details how Building Information Modelling is being successfully deployed in the planning, design, construction and future operation of the Istanbul New Airport, a mega-scale construction project incorporating a varying mix of infrastructures including terminals, runways, passenger gates, car parks, railways and roads. The book demonstrates how Airport Building Information Modelling (ABIM) is being used to:

- facilitate collaboration, cooperation and integrated project delivery
- manage subcontractors and eliminate cost over-runs
- reduce waste on site and enhance overall quality
- connect people in a virtual environment to encourage collaborative working
- provide clients with an effective interface for lifecycle management including: design development, construction documentation, construction phases and BIM and Big Data Integration for

future facilities management The book presents a best practice BIM project, demonstrating concurrent engineering, lean processes, collaborative design and construction, and effective construction management. Moreover, the book provides a visionary exemplar for the further use of BIM technologies in civil engineering projects including highways, railways and others on the way towards the Smart City vision. It is essential reading for all Built Environment and Engineering stakeholders.

Industry Foundation Classes (IFC) for Data Sharing in the Construction and Facility Management Industries British Standards Institute Staff 1913-08-31 Facility management, Management, Service industries, Organizations, Business facilities, Administrative facilities, Construction works, Buildings, Consumer-supplier relations, Analysis, Measurement, Performance, Contracts, Service contracts, Documents Handbook of Research on Building Information Modeling and Construction Informatics: Concepts and Technologies Underwood, Jason 2009-12-31 In recent years, building information modeling has become a very active research area of construction informatics with investigation of ICT use within construction industry processes and organizations. The Handbook of Research on Building Information Modeling and Construction Informatics: Concepts and Technologies addresses the problems related to information integration and interoperability throughout the lifecycle of a building, from feasibility and conceptual design through to demolition and recycling stages. Containing research from leading international experts, this Handbook of Research provides comprehensive coverage and definitions of the most important issues, concepts, trends, and technologies within the field.

BIM Design Richard Garber 2014-08-11 Building information modelling (BIM) is revolutionising building design and construction. For architects, BIM has the potential to optimise their creativity while reducing risk in the design and construction process, thus giving them a more significant role in the building process. This book demonstrates how innovative firms are using BIM technologies to move design away from the utilitarian problems of construction, engaging them in a stunning new future in the built environment. Whereas recent books about BIM have tended to favour case-study analyses or instruction on the use of specific software, BIM Design highlights how day-to-day design operations are shaped by the increasingly generative and collaborative aspects of these new tools. BIM strategies are described as operations that can enhance design rather than simply make it more efficient. Thus this book focuses on the specific creative uses of information modelling at the operational level, including the creative development of parametric geometries and generative design, the evaluation of environmental performance and the simulation and scheduling of construction/fabrication operations. This book also engages BIM's pragmatic efficiencies such as the conflict checking of building systems and the creation of bills of quantities for costing; and in so doing it demonstrates how BIM can make such activities collaborative. Throughout, projects are used to illustrate the creative application of BIM at a variety of scales. These buildings showcase work by firms executing projects all over the world: SHoP Architects and Construction (New York), Morphosis (Los Angeles), Populous (London), GRO Architects (New York), Reiser + Umemoto (New York), Gensler (Shanghai) and UNStudio (Amsterdam).

BIM for Landscape Landscape Institute 2016-05-05 BIM (Building Information Modelling) is transforming working practices across the built environment sector, as clients, professionals, contractors and manufacturers throughout the supply chain grasp

the opportunities that BIM presents. The first book ever to focus on the implementation of BIM processes in landscape and external works, BIM for Landscape will help landscape professionals understand what BIM means for them. This book is intended to equip landscape practitioners and practices to meet the challenges and reap the rewards of working in a BIM environment - and to help professionals in related fields to understand how BIM processes can be brought into landscape projects. BIM offers significant benefits to the landscape profession, and heralds a new chapter in interdisciplinary relationships. BIM for Landscape shows how BIM can enhance collaboration with other professionals and clients, streamline information processes, improve decision-making and deliver well-designed landscape projects that are right first time, on schedule and on budget. This book looks at the organisational, technological and professional practice implications of BIM adoption. It discusses in detail the standards, structures and information processes that form BIM Level 2-compliant workflows, highlighting the role of the landscape professional within the new ways of working that BIM entails. It also looks in depth at the digital tools used in BIM projects, emphasising the 'information' in Building Information Modelling, and the possibilities that data-rich models offer in landscape design, maintenance and management. BIM for Landscape will be an essential companion to the landscape professional at any stage of their BIM journey.

BIM Handbook Chuck Eastman 2011-03-25 "The BIM Handbook is an extensively researched and meticulously written book, showing evidence of years of work rather than something that has been quickly put together in the course of a few months. It brings together most of the current information about BIM, its history, as well as its potential future in one convenient place, and can serve as a handy reference book on BIM for anyone who is involved in the design, construction, and operation of buildings and needs to know about the technologies that support it. The need for such a book is indisputable, and it is terrific that Chuck Eastman and his team were able to step up to the plate and make it happen. Thanks to their efforts, anyone in the AEC industry looking for a deeper understanding of BIM now knows exactly where to look for it."
—AECbytes book review, August 28, 2008

(www.aecbytes.com/review/2008/BIMHandbook.html) DISCOVER BIM: A BETTER WAY TO BUILD BETTER BUILDINGS Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The BIM Handbook, Second Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Completely updated material covering the current practice and technology in this fast-moving field Expanded coverage of lean construction and its use of BIM, with special focus on Integrated Project Delivery throughout the book New insight on the ways BIM facilitates sustainable building New information on interoperability schemas and collaboration tools Six new case studies Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Second Edition guides readers to successful implementations, helping them to avoid needless frustration and costs

and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.

Implementing Successful Building Information Modeling Erika Epstein 2012 Building Information Modeling (BIM) is the process of generating and managing building data during a building's lifecycle. Today, more and more architectural firms have adopted BIM software and processes because it allows them to produce measurably more work of better quality, in shorter periods of time. Featuring case studies of firms of all sizes, this practical resource shows professionals how to implement BIM in the building industry around the globe. The book explains how BIM allows the data collected to plan, design and build projects to continue to be used and added to during the occupied life of the building. Readers also become knowledgeable about the changing role of architects within the building industry as they embed BIM in their workflow. From interoperability and open standards, knowledge sharing, and gathering data, to the BIM software suite, implementation planning, and project workflow, this authoritative volume provides a thorough understanding of key aspects of BIM that practitioners need to understand.

Building Information Modelling (BIM) in Design, Construction and Operations L. Mahdjoubi 2015-09-09 Building Information Modelling (BIM) in Design, Construction, and Operations contains the proceedings of the first in a planned series of conferences dealing with design coordination, construction, maintenance, operation and decommissioning. The book gives details of how BIM tools and techniques have fundamentally altered the manner in which modern construction teams operate, the processes through which designs are evolved, and the relationships between conceptual, detail, construction and life cycle stages. The papers contributed by experts from industry, practice and academia, debate key topics, develop innovative solutions, and predict future trends. The interdisciplinary nature of the contents and the collaborative practices discussed, so important within the built environment, will appeal to those engaged in design, surveying, visualisation, infrastructure, real estate, construction law, insurance, and facilities management. Topics covered include: BIM in design coordination; BIM in construction operations, BIM in building operation and maintenance; BIM and sustainability; BIM and collaborative working and practices; BIM health and safety and BIM-facilities management integration, among others.

Building Information Modeling André Borrman 2018-09-19 Building Information Modeling (BIM) refers to the consistent and continuous use of digital information throughout the entire lifecycle of a built facility, including its design, construction and operation. In order to exploit BIM methods to their full potential, a fundamental grasp of their key principles and applications is essential. Accordingly, this book combines discussions of theoretical foundations with reports from the industry on currently applied best practices. The book's content is divided into six parts: Part I discusses the technological basics of BIM and addresses computational methods for the geometric and semantic modeling of buildings, as well as methods for process modeling. Next, Part II covers the important aspect of the interoperability of BIM software products and describes in detail the standardized data format Industry Foundation Classes. It presents the different classification systems, discusses the data format CityGML for describing 3D city models and COBie for handing over data to clients, and also provides an overview of BIM programming tools and interfaces. Part III is dedicated to the philosophy, organization and technical implementation of BIM-based collaboration,

and discusses the impact on legal issues including construction contracts. In turn, Part IV covers a wide range of BIM use cases in the different lifecycle phases of a built facility, including the use of BIM for design coordination, structural analysis, energy analysis, code compliance checking, quantity take-off, prefabrication, progress monitoring and operation. In Part V, a number of design and construction companies report on the current state of BIM adoption in connection with actual BIM projects, and discuss the approach pursued for the shift toward BIM, including the hurdles taken. Lastly, Part VI summarizes the book's content and provides an outlook on future developments. The book was written both for professionals using or programming such tools, and for students in Architecture and Construction Engineering programs.

Building information modelling - BIM Ingibjörg Birna Kjartansdóttir 2017

Integrated Building Information Modelling Peng Wu 2017-07-10 Building information modelling (BIM) is a set of interacting policies, processes and technologies that generates a methodology to manage the essential building design and project data in digital format throughout the building's life cycle. BIM, makes explicit, the interdependency that exists between structure, architectural layout and mechanical, electrical and hydraulic services by technologically coupling project organizations together. Integrated Building Information Modelling is a handbook on BIM courses, standards and methods used in different regions (Including UK, Africa and Australia). 13 chapters outline essential information about integrated BIM practices such as the BIM in site layout plan, BIM in construction product management, building life cycle assessment, quantity surveying and BIM in hazardous gas monitoring projects while also presenting information about useful BIM tool and case studies. The book is a useful handbook for engineering management professionals and trainees involved in BIM practice.

Lean Project Delivery and Integrated Practices in Modern Construction Lincoln H.

Forbes 2020-04-01 Lean Project Delivery and Integrated Practices in Modern Construction is the new and enhanced edition of the pioneering book Modern Construction by Lincoln H. Forbes and Syed M. Ahmed. This book provides a multi-faceted approach for applying lean methodologies to improve design and construction processes. Recognizing the wide diversity in the landscape of projects, and encompassing private and public sector activity, buildings and infrastructure, the book expands upon the detailed coverage of integrated project delivery and new lean tools and techniques to include: Greater emphasis on the importance of creating a lean culture and the initiatives required to transform the industry; Expanded discussions of the foundational writings in lean construction theory; Exploration of the synergies between "lean" and "green" initiatives; Specific procedures for modifying planning and scheduling activities to improve the performance of the project team; Expanded sections on quality, and topics that have become a part of the lean lexicon, such as Choosing by Advantages, "line of balance"/location-based scheduling, virtual design teams, takt time planning and set-based design; Discussion questions for beginners and advanced lean practitioners; and Improved cross-referencing within the text to help the reader navigate the frameworks, techniques and tools to support the application of lean principles. The techniques described here enhance the use of resources, reducing waste, minimizing delays, increasing quality and reducing overall costs. They enable practitioners to improve the quality of the built environment, secure higher levels of customer/owner satisfaction, and simultaneously improve their profitability. This book is

essential reading for all those wanting to be at the forefront of construction management and lean thinking.

Product Lifecycle Management in the Era of Internet of Things Abdelaziz Bouras 2016-04-20 This book constitutes the refereed proceedings of the 12th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2015, held in Doha, Qatar, in October 2015. The 79 revised full papers were carefully reviewed and selected from 130 submissions. The papers are organized in the following topical sections: smart products, assessment approaches, PLM maturity, building information modeling (BIM), languages and ontologies, product service systems, future factory, knowledge creation and management, simulation and virtual environments, sustainability and systems improvement, configuration and engineering change, education studies, cyber-physical and smart systems, design and integration issues, and PLM processes and applications.

Building Information Modeling Karen M. Kensek 2014-04-16 This is a design guide for architects, engineers, and contractors concerning the principles and specific applications of building information modeling (BIM). BIM has the potential to revolutionize the building industry, and yet not all architects and construction professionals fully understand what the benefits of BIM are or even the fundamental concepts behind it. As part of the PocketArchitecture Series it includes two parts: fundamentals and applications, which provide a comprehensive overview of all the necessary and essential issues. It also includes case studies from a range of project sizes that illustrate the key concepts clearly and use a wide range of visual aids.

Building Information Modeling addresses the key role that BIM is playing in shaping the software tools and office processes in the architecture, engineering, and construction professions. Primarily aimed at professionals, it is also useful for faculty who wish to incorporate this information into their courses on digital design, BIM, and professional practice. As a compact summary of key ideas it is ideal for anyone implementing BIM.

The Impact of Building Information Modelling Ray Crotty 2016-04-11 Construction projects involve a complex set of relationships, between parties with different professional backgrounds trying to achieve a very complex goal. Under these difficult circumstances, the quality of information on which projects are based should be of the highest possible standard. The line-based, two dimensional drawings on which conventional construction is based render this all but impossible. This is the source of some major shortcomings in the construction industry, and this book focuses on the two most fundamental of these: the failure to deliver projects predictably: to the required quality, on time and within budget; and the failure of most firms in the industry to make a survivable level of profit. By transforming the quality of information used in building, BIM aims to transform construction completely. After describing and explaining these problems, the way in which BIM promises to provide solutions is examined in detail. A discussion of the theory and practice of BIM is also provided, followed by a review of various recent surveys of BIM usage in the US, UK and selected European economies. The way in which other industries, including retail and manufacturing, have been transformed by information are explored and compared with current developments in the deployment of BIM in construction. Five case studies from the UK show how BIM is being implemented, and the effects it is having on architects and contractors. This book is perfect for any construction professional interested in improving the efficiency of their business, as well as undergraduate and postgraduate students wishing to understand

the importance of BIM.

Building Information Modeling Dana K. Smith 2012-04-23 The optimal approach to design, build, operate, and maintain buildings With this strategic guide to building information modeling (BIM), you'll learn how to implement this new technology as part of a comprehensive systems approach to the design, construction, management, operation, maintenance, and use of buildings. The authors, among the leading experts and pioneers in BIM, show you how BIM supports more streamlined, integrated, and efficient business processes throughout the lifecycle of buildings, from their initial conception through their eventual retirement or reuse. The result is better quality buildings, lower construction and operating costs, shorter project turnaround times, and a higher quality of building information to support better business decisions. Moreover, they set forth a plan for incorporating BIM into every organization's existing workflows, enabling you to take full advantage of all the benefits that BIM offers. Everything you need to implement a BIM approach is set forth in detail, including: The business case for BIM, demonstrating how it can improve collaboration, facilitate better design and construction, optimize workflow, and help reduce risk Guidance for meeting the challenges of BIM such as an entrenched business culture, the proliferation of BIM tools, and the uneven rates of BIM adoption The "big picture" view showing how your organization can work with business partners and fit into the building life cycle in a BIM-enabled industry Throughout the book, sample documents and figures help you better understand the principles of BIM and how it works in practice. In addition, first-hand accounts show you exactly how adopters of BIM have gained a competitive edge. Architects, engineers, constructors, building owners, and facility managers can turn to this book to realize the full potential of BIM and radically improve the way buildings are designed, built, operated, and maintained.

From Building Information Modelling to Mixed Reality Cecilia Bolognesi 2020-07-14 This book reports on the latest advances in using BIM modelling to achieve the semantic enrichment of objects, allowing them to be used both as multidimensional databases – as comprehensive sources of information for finalizing various types of documentation in the building industry – and as modelling tools for the construction of virtual environments. Having advanced to a new stage of development, BIM modelling is now being applied in a range of increasingly complex contexts, and for various new purposes. This book examines the role that virtual reality and related technologies such as AI and IoT can play in preserving and disseminating our cultural heritage and built environment.

Building Information Modelling (BIM) in Design, Construction and Operations IV J. Casares 2021-12-29 Containing papers presented at the 4th International Conference on Building Information Modelling (BIM) in Design, Construction and Operations, this volume brings together the research of experts from industry, practice and academia. It describes innovative solutions and predictions for future trends across key BIM-related topics. The modern construction industry and built environment disciplines have been transformed through the development of new and innovative BIM tools and techniques. These have fundamentally altered the manner in which construction teams operate; the processes through which designs are evolved; and the relationships between conceptual, detail, construction and life cycle stages. BIM is essentially value-creating collaboration throughout the entire life-cycle of an asset, underpinned by the data attached to them. BIM has far and reaching consequences on both building

procurement and infrastructure. This recent emergence constitutes one of the most exciting developments in the field of the Built Environment. These advances have offered project teams multi-sensory collaborative tools and opportunities for new communication structures. The included papers cover such topics as: BIM in design coordination; BIM in construction operations; BIM in building operation and maintenance; BIM and sustainability; BIM and collaborative working and practices; BIM-Facilities management integration; BIM-GIS integration; BIM and automation in construction; BIM and health and safety; BIM standards; BIM and interoperability; BIM and life cycle project management; BIM and cultural heritage; BIM and robotics; BIM in risk analysis and management; BIM in building cost control; BIM and building representation; Virtual design and construction (VDC); BIM in the execution phase; BIM for infrastructure development; Digital twins.

Building Information Modelling (BIM) in Design, Construction and Operations II A.

Galiano-Garrigos 2017-08-09 The papers presented at Building Information Modelling 2017 (BIM) are from a range of forums, including plenary papers, workshops, seminars, and panel sessions. The conference was attended by experts from industry, practice and academia, sharing their work on key topics, the development of innovative solutions, and the identification future trends. The volume gives details of how BIM tools and techniques have fundamentally altered the manner in which modern construction teams operate, the processes through which designs are evolved, and the relationships between conceptual, detail, construction and life cycle stages. BIM is essentially value-creating collaboration throughout the entire life-cycle of an asset, underpinned by the statistics attached to them and has far and reaching consequences on both building procurement and infrastructure. BIM 2017 papers cover topics such as: BIM in design coordination, Construction operations; Building operation and maintenance; BIM and sustainability; Collaborative working and practices; Facilities management integration and GIS integration; Automation in construction; Health and safety; BIM and interoperability; Life cycle project management; Cultural heritage; BIM and Robotics; Risk analysis and management and Emergency analysis, planning and management