Bim Based Sustainability Analysis An Evaluation Of

BIM for Design FirmsBIM for Building Owners and DevelopersGower Federal ServiceEmerging Solar Energy MaterialsCivil, Structural and Environmental EngineeringBIM DesignBIM and Urban Land AdministrationSustainability in Energy and Buildings 2018Draft Environmental Statement, Boise District Agricultural DevelopmentBuilding Information ModelingBIM in Small-Scale Sustainable DesignProduct Lifecycle Management for SocietyIntegrated Building Information ModellingBuilding Information ModelingSustainable Building and Structures: Building a Sustainable TomorrowTunnels and Underground Cities. Engineering and Innovation Meet Archaeology, Architecture and ArtHandbook of Green Building Design and ConstructionGuide to Sustainable Procurement in ConstructioneWork and eBusiness in Architecture, Engineering and ConstructionThermal Analysis and Design of Passive Solar BuildingsGreen BIMMetric HandbookBuilding Information Modelling (BIM) in Design, Construction and Operations IIIBIM HandbookGreen Planning for Cities and CommunitiesEncyclopedia of Sustainable TechnologiesBeyond BIMSustainable Buildings and InfrastructureBuilding Information Modelling (BIM) in Design, Construction and OperationsA BIM-Based Study on the Sunlight Simulation in Order to Calculate Solar Energy for Sustainable Buildings with Solar PanelsFrontiers of Green Building, Materials and Civil Engineering IIIApplication of BIM in Sustainability AnalysisAdvances in Building Information ModelingBIM and Construction ManagementDigital Transformation of the Design, Construction and Management Processes of the Built EnvironmentBuilding Information Modelling, Building Performance, Design and Smart ConstructionBIM for Design CoordinationDesigning Sustainable Technologies, Products and PoliciesState of the Art Virtual Reality and Augmented Reality KnowhowBIM-Based Collaborative Building Process Management

BIM for Design Firms

BIM for Building Owners and Developers

"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.

Gower Federal Service

State-of-the-Art Virtual Reality and Augmented Reality Knowhow is a compilation of recent advancements in digital technologies embracing a wide arena of disciplines. Amazingly, this book presents less business cases of these emerging technologies, but rather showcases the scientific use of VR/AR in healthcare, building industry and education. VR and AR are known to be resource intensive, namely, in terms of hardware and wearables - this is covered in a chapter on head-mounted display (HMD). The research work presented in this book is of excellent standard presented in a very pragmatic way; readers will appreciate the depth and breadth of the methodologies and discussions about the findings. We hope it serves as a springboard for future research and development in VR/AR and stands as a lighthouse for the scientific community.

Emerging Solar Energy Materials

This book contains selected papers from SEB-18, the Tenth International Conference on Sustainability in Energy and Buildings, which was organised by KES International and Griffith University and held in Gold Coast, Australia in June 2018. SEB-18 invited contributions on a range of topics related to sustainable buildings and renewable energy, and explored innovative topics regarding intelligent buildings and cities. Applicable areas included the sustainable design and of buildings, neighbourhoods and cities (built and natural environment); optimisation and modelling techniques; smart energy

systems for smart cities; green information communications technology; and a broad range of solar, wind, wave and other renewable energy topics. The aim of the conference was to bring together researchers and government and industry professionals to discuss the future of energy in buildings, neighbourhoods and cities from a theoretical, practical, implementation and simulation perspective. In addition, SEB-18 offered an exciting opportunity to present, interact, and learn about the latest research in Sustainability in Energy and Buildings.

Civil, Structural and Environmental Engineering

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 Design

Beyond BIM explores the vast and under-explored design potential undertaken by information modeling. Through a series of investigations grounded in the analysis of built work, interviews with leading practitioners, and speculative projects, the author catalogs the practical advantages and theoretical implications of exploiting BIM as a primary tool for design innovation. Organized by information type, such as geographic data, local code, or materials, each chapter suggests a realm of knowledge that can be harvested and imported into BIM to give meaningful specificity to architectural form and space. While highly sustainable, the work documented and envisioned in this book moves well beyond ‘normalization,’ to reveal inventive takes on contemporary practice. Beyond BIM serves as a primary resource for professional architects from practice, researchers and designers engaged in information related spatial design processes, as well as students and faculties of architecture schools in search of BIM design inspiration. Likewise, those highly attuned to computation and unconventional ways of creating form and space, particularly built outcomes that utilize BIM, will find this book meaningful and essential.

BIM and Urban Land Administration

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.

Sustainability in Energy and Buildings 2018

This book addresses key issues across the field of sustainable urban planning, and provides a unique reference tool for planners, engineers, architects, public administrators, and other experts. The evolution of cities and communities is giving rise to pressing energy and environmental problems that demand concrete solutions. In this context, urban planning is inevitably a complex activity that requires a sound analytical interpretation of ongoing developments, multidisciplinary analysis of the available tools and technologies, appropriate political management, and the ability to monitor progress objectively in order to verify the effectiveness of the policies implemented. This book is exceptional in both the breadth of its coverage and its focus on the interactions between different elements. Individual sections focus on strategies and tools for green planning, energy efficiency and sustainability in city planning, sustainable mobility, rating systems, and the smart city approach to improving urban-scale sustainability. The authors draw on their extensive practical experience to provide operational content supplementing the theoretical and methodological elements covered in the text, and each section features informative case studies.

Draft Environmental Statement, Boise District Agricultural Development

This open access book focuses on the development of methods, interoperable and integrated ICT tools, and survey techniques for optimal management of the building process. The construction sector is facing an increasing demand for major innovations in terms of digital dematerialization and technologies such as the Internet of Things, big data, advanced manufacturing, robotics, 3D printing, blockchain technologies and artificial intelligence. The demand for simplification and transparency in information management and for the rationalization and optimization of very fragmented and splintered processes is a key driver for digitization. The book describes the contribution of the ABC Department of the Polytechnic University of Milan (Politecnico di Milano) to R&D activities regarding methods and ICT tools for the interoperable management of the different phases of the building process, including design, construction, and management. Informative case studies complement the theoretical discussion. The book will be of interest to all stakeholders in the building process - owners, designers, constructors, and faculty managers - as well as the research sector.

Building Information Modeling

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.

BIM in Small-Scale Sustainable Design

A tactical guide to successful Virtual Design and Construction project coordination, featuring case studies from leading VDC firms. Virtual Design Coordination (VDC) employs information-rich Building Information Modeling (BIM) to enable specialty designers and contractors to create a single, coordinated set of designs that can prevent cost overruns, avoid schedule delays, and identify issues in the field. Although BIM-based design coordination is widely used in the commercial construction industry, there remains a need for a standardized practice. BIM for Design Coordination formalizes industry best practices and provides structured guidelines to the process. Helping readers gain the benefits of BIM-based design coordination, this practical guide covers areas such as setting up a project for success, model quality impacts on design coordination, carrying out a successful VDC session, and more. Specific guidelines for various project stakeholders are laid out in detail, while real-world examples of project design coordination workflows and templates for BIM Project Execution Plans (PxPs) are provided throughout the text. Written by a leading expert and educator in the field, this book: Provides a formal set of BIM-based design coordination guidelines that emphasize construction-stage coordination Features real-life case studies that illustrate how leading firms approach design coordination Covers BIM-based design coordination in other industries, such as infrastructure and industrial sectors Presents guidelines for all project stakeholders, including

subcontractors, architects, engineers, fabricators, and owners Includes chapters on teaching BIM-based design coordination and the future of the field BIM for Design Coordination: A Virtual Design and Construction Guide for Designers, General Contractors, and MEP Subcontractors is a much-needed resource for general contractors and members of VDC teams, as well as academics, students, and professionals new to BIM-based design coordination.

Product Lifecycle Management for Society

A sleeker, more comprehensive approach to construction projects BIM and Construction Management, Second Edition is a complete integration guide, featuring practical advice, project tested methods and workflows, and tutorials for implementing Building Information Modeling and technology in construction. Updated to align with the latest software editions from Autodesk, Trimble and Bentley, this book provides a common sense approach to leveraging BIM to provide significant value throughout a project's life cycle. This book outlines a results-focused approach which shows you how to incorporate BIM and other technologies into all phases of construction management, such as: Project planning: Set up the BIM project to succeed right from the start by using the right contracts, the right processes and the right technology Marketing: How to exceed customer expectations and market your brand of BIM to win. Pre-construction: Take a practical approach to engineer out risks in your project by using the model early to virtually build and analyze your project, prior to physical construction. Construction: Leverage the model throughout construction to build safer and with better quality. Field work: Learn how mobile technologies have disrupted the way we work in the field to optimize efficiencies and access information faster. Closeout: Deliver a better product to your customer that goes beyond the physical structure and better prepares them for future operations. Additionally, the book provides a look at technology trends in construction and a thoughtful perspective into potential use cases going forward. BIM and Construction Management, Second Edition builds on what has changed in the construction landscape and highlights a new way of delivering BIM-enabled projects. Aligning to industry trends such as Lean, integrated delivery methods, mobile platforms and cloud-based collaboration this book illustrates how using BIM and technology efficiently can create value.

Integrated Building Information Modelling

Rapid urbanization has created an unprecedented pressure on the use of land in cities around the world, resulting in physical and legal complexities. This book explains the theoretical basis and practicality of connecting urban land administration practices with the 3D digital data environment of Building Information Modelling (BIM). The main focus is to adopt a BIM-based paradigm for enhancing communication and management of complex ownership rights in multi-story buildings, which are prevalent in urban built environments. This book first elaborates on a range of data elements required for managing legal information in current land administration practices pertaining to subdivision of legal interests within

multi-story building developments. It then explains how an open data model in the BIM domain – Industry Foundation Classes (IFC) – can be extended with legal data elements to lay the foundation for adopting BIM in urban land administration. The book also highlights benefits and barriers of implementing BIM-enabled urban land administration. Features Explains the theoretical basis and practicality of connecting urban land administration practices with the 3D digital data environment of BIM. Highlights the existing challenges associated with current practice of urban land administration for multi-story buildings. Introduces the potential of 3D digital environment of BIM for the purpose of mapping and registering legal interests. Describes how BIM-based data models can be extended for recording, managing, and representing legal ownership of properties over a building's lifecycle. Includes models of multi-story buildings as case studies to demonstrate the feasibility of extended BIM-based data models.

Building Information Modeling

"An essential reference resource for any architect or architect student, the Metric Handbook is the major handbook for planning and design data. For each building type, the book gives basic design requirements, principal dimensional data and details of relevant building regulations. The book also contains information on broader aspects of design applicable to all building types, such as materials, acoustics and lighting, and data on human dimensions and space requirements. Significantly updated, the new edition of this work focuses on sustainable design practice to make projects competitive within a green market. As well as a full revision, including additional new building types and the latest updates to regulation and practice, the book features an improved new layout with color images and text to make it easier to find vital information quickly. Metric Handbook is a tried and tested, authoritative reference for solving everyday planning problems - it is a must have for every design office desk and drawing board"-

Sustainable Building and Structures: Building a Sustainable Tomorrow

The book reports on the great improvements in the information and knowledge management due to the digitalization of the building sector. By summarizing several research projects addressing the implementation of BIM in different stages of the building process, and the definition of standards at Italian, European and international levels for managing information relying on the implementation of BIM-based processes, it showcases the efforts, especially within the Italian building sector, to build a standardized structure of information and develop tools for collecting, sharing and exchanging information between stakeholders involved in different stages of the building process, so as to enhance the storage, traceability, usability and re-usability of information management. Further, it presents an enhanced use of information that relies on the adoption of the standardized structure of information, and proposes dedicated applications for automating the process of information fruition. Lastly, it features a digital platform for different stakeholders in the building sector, such as

manufacturers, producers and construction companies.

Tunnels and Underground Cities. Engineering and Innovation Meet Archaeology, Architecture and Art

Handbook of Green Building Design and Construction

This book provides the fundamental understanding of the functioning of solar cellsand the materials for the effective utilization of energy resources. The main objective of writing this book is to create a comprehensive and easy-to-understand source of information on the advances in the rapidly growing research on solar cells. Emerging Solar Energy Materials comprises 12 chapters written by the experts in the solar cell field and is organized with the intention to provide a big picture of the latest progress in the solar cell field and at the same time give an in-depth discussion on fundamentals of solar cells for interested audiences. In this book, each part opens with a new author's essay highlighting their work for contribution toward solar energy. Critical, cutting-edge subjects are addressed, including: Photovoltaic device technology and energy applications; Functional solar energy materials; New concept in solar energy; Perovskite solar cells; Dye-sensitized solar cells; Organic solar cells; Thin-film solar cells. The book is written for a large and broad readership including researchers and university graduate students from diverse backgrounds such as chemistry, physics, materials science, and photovoltaic device technology. The book includes enough information on the basics to be used as a textbook undergraduate coursework in engineering and the sciences.

Guide to Sustainable Procurement in Construction

This book constitutes the refereed proceedings of the 10th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2013, held in Nantes, France, in July 2013. The 63 full papers presented together with 2 keynote talks were carefully reviewed and selected from 91 submissions. They are organized in the following topical sections: PLM for sustainability, traceability and performance; PLM infrastructure and implementation processes; capture and reuse of product and process information; PLM and knowledge management; enterprise system integration; PLM and influence of/from social networks; PLM maturity and improvement concepts; PLM and collaborative product development; PLM virtual and simulation environments; and building information modeling.

eWork and eBusiness in Architecture, Engineering and Construction

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.

Thermal Analysis and Design of Passive Solar Buildings

"Any architect doing small or medium scaled projects who is alsovested in sustainable design but is not yet doing BIM will enjoythis book's overall focus."-Architosh.com This work is the leading guide to architectural design within abuilding information modeling (BIM) workflow, giving thepractitioner a clear procedure when designing climate-loaddominated buildings. The book incorporates new information relatedto BIM, integrated practice, and sustainable design, as wellinformation on how designers can incorporate the latesttechnological tools. Each chapter addresses specific topics, suchas natural ventilation for cooling, passive solar heating,rainwater harvesting and building hydrology, optimizing materialuse and reducing construction waste, and collaborating withconsultants or other building professionals such as engineers andenergy modelers.

Green BIM

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.

Metric Handbook

Tunnels and Underground Cities: Engineering and Innovation meet Archaeology, Architecture and Art. Volume 7: Long and Deep Tunnels contains the contributions presented in the eponymous Technical Session during the World Tunnel Congress 2019 (Naples, Italy, 3-9 May 2019). The use of underground space is continuing to grow, due to global urbanization, public demand for efficient transportation, and energy saving, production and distribution. The growing need for space at ground level, along with its continuous value increase and the challenges of energy saving and achieving sustainable development objectives, demand greater and better use of the underground space to ensure that it supports sustainable, resilient and more liveable cities. The contributions cover a wide range of topics, from studying tunnels in squeezing ground conditions,

via case studies on the Brenner Base Tunnel, the second Gotthard Tunnel, CERN (HL-LHCand the Dubai Strategic Sewerage Tunnel, to TBM steering difficulties. The book is a valuable reference text for tunnelling specialists, owners, engineers, archaeologists, architects, artists and others involved in underground planning, design and building around the world, and for academics who are interested in underground constructions and geotechnics.

Building Information Modelling (BIM) in Design, Construction and Operations III

Passive solar design techniques are becoming increasingly important in building design. This design reference book takes the building engineer or physicist step-by-step through the thermal analysis and design of passive solar buildings. In particular it emphasises two important topics: the maximum utilization of available solar energy and thermal storage, and the sizing of an appropriate auxiliary heating/cooling system in conjunction with good thermal control. Thermal Analysis and Design of Passive Solar Buildings is an important contribution towards the optimization of buildings as systems that act as natural filters between the indoor and outdoor environments, while maximizing the utilization of solar energy. As such it will be an essential source of information to engineers, architects, HVAC engineers and building physicists.

BIM Handbook

Since 1994, the European Conferences of Product and Process Modelling (www.ecppm.org) have provided a review of research, development and industrial implementation of product and process model technology in the Architecture, Engineering, Construction and Facilities Management (AEC/FM) industry. Product/Building Information Modelling has matured significantly in the last few years and has never been closer to having a permanent impact on the AEC/FM industry as a mainstream technology. In this context the 9th European Conference of Product and Process Modelling provided a forum for leading experts to discuss the latest achievements, emerging trends and future directions in product and process modelling technology in this dynamic and fragmented industry, focusing on integrated project working, value-based life cycle management and intelligent and sustainable buildings and construction. eWork and eBusiness in Architecture, Engineering and Construction 2012 provides a comprehensive overview of topics including BIM in all life-cycle stages, ICT for energy efficiency, smart buildings and environmental performance, energy and building simulation, knowledge and semantic modelling, visualization technologies as well as tools and methods to support innovations in design and construction processes. It further includes the proceedings of the 3rd Workshop on eeBuildings Data Models (Energy Efficiency Vocabularies), which aim to identify ICT Energy Efficiency Vocabularies and Ontologies to foster interoperability of Energy Efficiency Management Systems. eWork and eBusiness in Architecture, Engineering and Construction 2012 will be of interest to academics and professionals working in the interdisciplinary area of information technology in architecture, engineering and construction.

Green Planning for Cities and Communities

Use BIM to develop strategies, expedite projects, improve outcomes, and save money. BIM is far more than an "upgrade" to the latest CAD software. It is a process improvement tool that leverages data to analyze and predict outcomes throughout the different phases of the building life cycle. The time for a building owner to get involved with the BIM process is not at the end of the building project but from the very beginning. BIM for Building Owners and Developers is the only guide that will help you, the owner and client, use BIM to increase transparency and create a more integrated design and construction process, which will result in better quality buildings at lower cost and in a shorter time frame. It will also help you understand what BIM can do for you and what you can expect in terms of process and commitments. You'll discover how BIM can help improve your strategic planning, maximize ROI, support the decision-making processes, and fine-tune GAP analysis. In addition, BIM for Building Owners and Developers can help you: Understand, manage, and take advantage of the BIM paradigm shift Assemble a building as it would be constructed on site to help eliminate many inefficiencies of the construction process Achieve a high level of coordination through better integration of information and process optimization Reduce the overall cost of a project by identifying problems while they still can be corrected inexpensively Make every project easier, faster, and more profitable with BIM for Building Owners and Developers.

Encyclopedia of Sustainable Technologies

Volume is indexed by Thomson Reuters CPCI-S (WoS). Collection of selected, peer reviewed papers from the 2013 2nd Global Conference on Civil, Structural and Environmental Engineering (GCCSEE 2013), September 28-29, 2013, Shenzhen, China. The 625 papers are grouped as follows: Chapter 1: Construction Materials; Chapter 2: Construction Technology; Chapter 3: Structural Engineering; Chapter 4: Geotechnical Engineering; Chapter 5: Bridge Engineering; Chapter 6: Road and Railway Engineering; Chapter 7: Geological Engineering; Chapter 8: Tunnel, Subway and Underground Facilities; Chapter 9: Seismic Engineering; Chapter 10: Fluid Engineering, Coastal Engineering, Hydrology and Water Resource Management; Chapter 11: Mining Engineering and Oil and Gas Well Development; Chapter 12: Heating, Gas Supply, Ventilation and Air Conditioning Works; Chapter 13: Data Processing and Measurement Technologies; Chapter 14: Traffic Engineering; Chapter 15: Disaster Prevention and Mitigation; Chapter 16: Computational Mechanics and Mathematical Model; Chapter 17: Environmental Materials; Chapter 18: Environmental Chemistry and Biology; Chapter 19: Environmental Safety and Health; Chapter 20: Environmental Analysis and Monitoring; Chapter 21: Environmental Restoration and Pollution Control; Chapter 22: Architectural Design and Its Theory; Chapter 23: Advanced Design and Planning Technologies; Chapter 24: Urban Planning and Design, Resource Utilization; Chapter 25: Project Management; Chapter 26: Engineering Management and Engineering Education; Chapter 27: Computer Application and Modeling

Beyond BIM

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.

Sustainable Buildings and Infrastructure

Paves the path for the adoption and effective implementation of BIM by design firms, emphasizing the design opportunities that this workflow affords This book expands on BIM (Building Information Modeling), showing its applicability to a range of design-oriented projects. It emphasizes the full impact that a data modeling tool has on design processes, systems, and the high level of collaboration required across the design team. It also explains the quantitative analysis opportunities that BIM affords for sustainable design and for balancing competing design agendas, while highlighting the benefits BIM offers to designing in 3D for construction. The book concludes with a deep look at the possible future of BIM and digitally-enhanced design. Through clear explanation of the processes involved and compelling case studies of design-oriented projects presented with full-color illustrations, BIM for Design Firms: Data Rich Architecture at Small and Medium Scales proves that the power of BIM is far more than an improved documentation and sharing environment. It offers chapters that discuss a broad range of digital design, including problems with BIM, how readers can leverage BIM workflows for complex projects, the way BIM is taught, and more. Helps architects in small and medium design studios realize the cost and efficiency benefits of using BIM Demonstrates how the use of BIM is as relevant and beneficial for a range of projects, from small buildings to large and complex commercial developments Highlights the quantitative analysis opportunities of data-rich BIM models across design disciplines for climate responsiveness, design exploration, visualization, documentation, and error detection Includes full-color case studies of small to medium projects, so that examples are applicable to a range of practice types Features projects by Arca Architects, ARX Protugal Arquitectos, Bearth & Deplazes, Durbach Block Jaggers, Flansburgh Architects, and LEVER Architecture BIM for Design Firms is an excellent book for architects in small and medium-sized studios (including design departments within large firms) as well as for architecture students.

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

A BIM-Based Study on the Sunlight Simulation in Order to Calculate Solar Energy for Sustainable Buildings with Solar Panels

This open access book provides insight into the implementation of Life Cycle approaches along the entire business value chain, supporting environmental, social and economic sustainability related to the development of industrial technologies, products, services and policies; and the development and management of smart agricultural systems, smart mobility systems, urban infrastructures and energy for the built environment. The book is based on papers presented at the 8th International Life Cycle Management Conference that took place from September 3-6, 2017 in Luxembourg, and which was organized by the Luxembourg Institute of Science and Technology (LIST) and the University of Luxembourg in the framework of the LCM Conference Series.

Frontiers of Green Building, Materials and Civil Engineering III

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.

Application of BIM in Sustainability Analysis

Construction is one of the biggest industries in the world, providing necessary facilities for human prosperity ranging from the homes in which we live to the highways we drive, the power plants that provide energy for our daily activities, and the very infrastructure on which human society is built. The construction sector, including the building sector, has among the largest potential of any industry to contribute to the reduction of greenhouse gas emissions. This ambitious and comprehensive textbook covers the concept of embedding sustainability across all construction activities. It is aimed at students taking courses in construction management and the built environment. Written in a lively and engaging style the book sets out the practical requirements of making the transition to a sustainable construction industry by 2020. Case studies are included throughout making the book both a core reference and a practical guide.

Advances in Building Information Modeling

Encyclopedia of Sustainable Technologies provides an authoritative assessment of the sustainable technologies that are currently available or in development. Sustainable technology includes the scientific understanding, development and application of a wide range of technologies and processes and their environmental implications. Systems and lifecycle analyses of energy systems, environmental management, agriculture, manufacturing and digital technologies provide a comprehensive method for understanding the full sustainability of processes. In addition, the development of clean processes through green chemistry and engineering techniques are also described. The book is the first multi-volume reference work to employ both Life Cycle Analysis (LCA) and Triple Bottom Line (TBL) approaches to assessing the wide range of technologies available and their impact upon the world. Both approaches are long established and widely recognized, playing a key role in the organizing principles of this valuable work. Provides readers with a one-stop guide to the most current research in the field Presents a grounding of the fundamentals of the field of sustainable technologies Written by international leaders in the field, offering comprehensive coverage of the field and a consistent, high-quality scientific standard Includes the Life Cycle Analysis and Triple Bottom Line approaches to help users understand and assess sustainable technologies

BIM and Construction Management

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 fi rms 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).

Digital Transformation of the Design, Construction and Management Processes of the Built Environment

Collection of selected, peer reviewed papers from the Second International Conference on Green Building, Materials and Civil Engineering (GBMCE 2013), August 21-23, 2013, Taiwan. Volume is indexed by Thomson Reuters CPCI-S (WoS). The 401 papers are grouped as follows: Chapter 1: Architecture and Landscape Design, Residential, Regional and Urban Planning, Sustainable City and Ecological Planning; Chapter 2: Environmental Energy, Protection, Technologies and Engineering, Emission Control; Chapter 3: Outdoor, Indoor Engineering and Design, HVAC Technologies; Chapter 4: Materials Engineering and Technologies, Materials in Industrial Processes; Chapter 5: Building Materials and Technologies; Chapter 6: Green Building and Engineering; Chapter 7: Energy Saving Building and Technologies, Photovoltaic and Solar Energy Applications, Energy Control; Chapter 8: Civil Engineering Technologies; Chapter 9: Construction Dynamics, Stability and Strength, Geotechnical and Seismic Engineering; Chapter 10: Modelling and Simulation Technologies; Chapter 11: Project Management and Marketing, Assessment and Safety.

Building Information Modelling, Building Performance, Design and Smart Construction

Sustainable Buildings and Structures: Building a Sustainable Tomorrow collects the contributions presented at the 2nd International Conference on Sustainable Buildings and Structures (Suzhou, China, 25-27 October 2019). The papers aim at sharing the state-of-the-art on sustainable approaches to engineering design and construction, and cover a wide range of topics: Sustainable Construction Materials Sustainable Design in Built Environment Green and Low Carbon Buildings Smart Construction and Construction Management Sustainable Buildings and Structures: Building a Sustainable Tomorrow will be of interest to academics, professionals, industry representatives and local government officials involved in civil engineering, architecture, urban planning, structural engineering, construction management and other relate fields.

BIM for Design Coordination

With the construction industry moving rapidly toward building information modeling (BIM), pursuit of sustainability in buildings will require the use of renewable energy analysis tools in the early stages of building design, as well as establishment of BIM-compliant practices. Planning for sunlight is essential to obtain sustainable benefits from the sun in and around buildings, which process requires understanding and making allowances in building attributes that affect how sunlight can be used. This chapter presents a model for simulation of sunlight's effect on building design under BIM technology while calculating the potential energy capacity of roof- and façade-mounted photovoltaic solar panels. For this purpose, it is suggested in the study to use statistical construction data as well as 3D digital models obtained from BIM

software (Revit and THSWARE) to measure the useful sunlight duration and derivable energy of representative sample of buildings. By measuring the solar energy absorbed by the building facades, the electricity converted from solar energy and collateral savings can be calculated. Taking the cost of solar panels and feasibility of the project into consideration, this study shows using solar panels of a certain quality contributes greatly to social, economic, and environmental benefits.

Designing Sustainable Technologies, Products and Policies

Packed with conceptual sketches and photos, real world case studies and green construction details, Handbook of Green Building Design and Construction provides a wealth of practical guidelines and essential insights that will facilitate the design of green buildings. Written in an easy to understand style, the Handbook draws on over 35 years of personal experience across the world, offering vital information and penetrating insights into two major building rating systems such as LEED and BREEAM both used extensively in the United States, Europe, Asia and the Middle East. Develop a project schedule that allows for systems testing and commissioning. Create contract plans and specifications to ensure building performance A step-by-step approach for integrating technologies into the different stages of design and execution.

State of the Art Virtual Reality and Augmented Reality Knowhow

BIM-Based Collaborative Building Process Management

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.