

Bim Project Execution Plan Facilities Management

A revolutionary, collaborative approach to design and construction project delivery Integrated Project Delivery is the first book-length discussion of IPD, the emergent project delivery method that draws on each stakeholder's unique knowledge to address problems before they occur. Written by authors with over a decade of research and practical experience, this book provides a primer on IPD for architects, designers, and students interested in this revolutionary approach to design and construction. With a focus on IPD in everyday operation, coverage includes a detailed explanation and analysis of IPD guidelines, and case studies that show how real companies are applying these guidelines on real-world projects. End-of-chapter questions help readers quickly review what they've learned, and the online forum allows them to share their insights and ideas with others who either have or are in the process of implementing IPD themselves. Integrated Project Delivery brings together the owners, architect, engineers, and contractors early in the development stage to ensure that problems are caught early, and to address them in a collaborative way. This book describes the parameters of this new, more efficient approach, with expert insight on real-world implementation. Compare traditional procurement with IPD Understand IPD guidelines, and how they're implemented Examine case studies that illustrate everyday applications Communicate with other IPD adherents in the online forum The IPD approach revolutionizes not only the workflow, but the relationships between the stakeholders – the atmosphere turns collaborative, and the team works together toward a shared goal instead of viewing one another as obstructions to progress. Integrated Project Delivery provides a deep exploration of this approach, with practical guidance and expert insight. 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. The Veterans Health Administration (VHA) is America's largest integrated health care system, providing care at 1,243 health care facilities, including 172 medical centers and 1,063 outpatient sites of care of varying complexity, serving 9 million enrolled Veterans each year. In addition, VHA has opened outpatient clinics and established telemedicine and other services to accommodate a diverse veteran population and continues to cultivate ongoing medical research and innovation. Facilities specific to VHA fulfill clinical, operational, research laboratory, and administrative functions. Each site is designed to serve a geographical location with specific health care needs. VHA's building inventory has sites of different ages, and often there is a mix of building size and age at each site or campus. At the request of the VHA, this study presents a comprehensive resource planning and staffing methodology guidebook for VHA Facility Management Programs by reviewing the tasks of VHA building facilities staff and recommending actions for the VHA to meet the mission goals of delivering patient care, research, and effective operations.

The implementation of effective decision making protocols is crucial in any organizational environment in modern society. Emerging advancements in technology and analytics have optimized uses and applications of decision making systems. Decision Management: Concepts, Methodologies, Tools, and Applications is a compendium of the latest academic material on the control, support, usage, and strategies for implementing efficient decision making systems across a variety of industries and fields. Featuring comprehensive coverage on numerous perspectives, such as data visualization, pattern analysis, and predictive analytics, this multi-volume book is an essential reference source for researchers, academics, professionals, managers, students, and practitioners interested in the maintenance and optimization of decision management processes.

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.

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.

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.

The ultimate guide to Revit Architecture just got even better Mastering Autodesk Revit 2017 for Architecture is the bestselling guide for Revit Architecture users of all levels, with focused discussions, detailed exercises, and compelling real-world examples. This new edition has been completely revamped based on reader and Revit Architecture instructor feedback to be more useful, more complete, and more approachable than ever. Organized by real-world workflow, practical tutorials guide you through each phase of a project to help you understand BIM concepts and quickly start accomplishing vital Revit Architecture tasks. From templates, work-sharing, and project management, to modeling, documentation, annotation, and complex structures, this book provides full coverage of essential Revit Architecture tools and processes. The companion website features before-and-after tutorials, additional advanced content, and an hour of video instruction to help you quickly master crucial techniques. Learn up-to-date Revit Architecture workflows and processes Master modeling, massing, and other visualization techniques Work with complex structural elements and advanced detailing Prepare for Autodesk certification exams Building information modeling pairs the visual design representation with a parametric database that stores all geometry, spatial relationships, materials, and other data generated by the design process. Design changes instantly update all documentation, and it's this efficiency that makes BIM the new permanent paradigm. Whether you're studying for a certification exam or navigating the switch from CAD, Mastering Autodesk Revit 2017 for Architecture is your number-one guide to getting up and running quickly.

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 Portugal Arquitectos, Bearth & Deplazes, Durbach Block Jagers, 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.

A systematic Building Information Modeling (BIM) framework features cutting-edge use cases and competencies for students and professionals pursuing BIM careers. Developing BIM Talent: A Guide to the BIM Body of Knowledge with Metrics, KSAs, and Learning Outcomes leads readers through the process of implementing a state-of-the-art BIM training and education program. Authored by a team of celebrated and highly qualified scholars and practitioners, this exciting new BIM education and workforce development guide offers a roadmap that navigates readers through the comprehensive BIM metrics and KSAs detailed in the BIM Body of Knowledge sponsored by the Academic Interoperability Coalition (AiC). Developing BIM Talent offers: A solid foundation and guidelines for educators and practitioners for starting or enhancing a BIM curriculum or training program Templates, expert interviews, and case studies that provide in-depth knowledge and lessons learned that can facilitate process changes and strategic action plans Strategies for standardizing emerging BIM job tasks, descriptions, and methods for benchmarking performance This guide to contemporary and comprehensive metrics of BIM competency is an essential resource for corporate trainers and instructors teaching BIM, human resources professionals charged with recruiting BIM talent, as well as leadership interested in credentialing and BIM certification programs.

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.

This practical guide to cost studies of buildings has been updated and revised throughout for the 6th edition. New developments in RICS New Rules of Measurement (NRM) are incorporated throughout the book, in addition to new material on e-business, the internet, social media, building information modelling, sustainability, building resilience and carbon estimating. This trusted and easy to use guide to the cost management role: Focuses on the importance of costs of constructing projects during the different phases of the construction process Features learning outcomes and self-assessment questions for each chapter Addresses the requirements of international readers From introductory data on the construction industry and the history of construction economics, to recommended methods for cost analysis and post-contract cost control, *Cost Studies of Buildings* is an ideal companion for anyone learning about cost management.

Asset management is becoming increasingly important to an organization's strategy, given its effects on cost, production, and quality. No matter the sector, important decisions are made based on techniques and theories that are thought to optimize results; asset management models and techniques could help maximize effectiveness while reducing risk. *Optimum Decision Making in Asset Management* posits that effective decision making can be augmented by asset management based on mathematical techniques and models. Resolving the problems associated with minimizing uncertainty, this publication outlines a myriad of methodologies, procedures, case studies, and management tools that can help any organization achieve world-class maintenance. This book is ideal for managers, manufacturing engineers, programmers, academics, and advanced management students.

This book is designed to help practitioners and students in a wide range of construction project management professions to understand what building information modelling (BIM) and big data could mean for them and how they should prepare to work successfully on BIM-compliant projects and maintain their competencies in this essential and expanding area. In this book, the state-of-the-art information technologies that support high-profile BIM implementation are introduced, and case studies show how BIM has integrated core quantity surveying and cost management responsibilities and how big data can enable informed decision-making for cost control and cost planning. The authors' combined professional and academic experience demonstrates, with practical examples, the importance of using BIM and particularly the fusion of BIM and big data, to sharpen competitiveness in global and domestic markets. This book is a highly valuable guide for people in a wide range of construction project management and quantity surveying roles. In addition, implications for project management, facilities management, contract administration, and dispute resolution are also explored through the case studies, making this book essential reading for built environment and engineering professionals.

This book is the essential guide to the pedagogical and industry-inspired considerations that must shape how BIM is taught and learned. It will help academics and professional educators to develop programmes that meet the competences required by professional bodies and prepare both graduates and existing practitioners to advance the industry towards higher efficiency and quality. To date, systematic efforts to integrate pedagogical considerations into the way BIM is learned and taught remain non-existent. This book lays the foundation for forming a benchmark around which such an effort is made. It offers principles, best practices, and expected outcomes necessary to BIM curriculum and teaching development for construction-related programs across universities and professional training programmes. The aim of the book is to: Highlight BIM skill requirements, threshold concepts, and dimensions for practice; Showcase and introduce tried-and-tested practices and lessons learned in developing BIM-related curricula from leading educators; Recognise and introduce the baseline requirements for BIM education from a pedagogical perspective; Explore the challenges, as well as remedial solutions, pertaining to BIM education at tertiary education; Form a comprehensive point of reference, covering the essential concepts of BIM, for students; Promote and integrate pedagogical consideration into BIM education. This book is essential reading for anyone involved in BIM education, digital construction, architecture, and engineering, and for professionals looking for guidance on what the industry expects when it comes to BIM competency.

The construction industry is amidst a digital transformation that is focused on addressing well-documented issues and calls for significant improvements and changes through increased productivity, whole-life value, client focus, reduction of waste, and being more sustainable. The key aspect to driving change and transformation is the education and upskilling of the required workforce towards developing the required capacities. Various approaches can be taken to embed digital construction within education and through collaborative efforts in order to drive change and facilitate improvements. *The Handbook of Research on Driving Transformational Change in the Digital Built Environment* focuses on current developments in practice and education towards facilitating transformation in the built environment. This book provides insight, from a practice perspective, in relation to the client's understanding, digitally enabled collaboration, interoperability and open standards, and maturity/capability. Covering topics that include digital transformation and construction, digitally enabled infrastructure, building information modelling, collaborative digital education, and the digital built environment, this book is an ideal reference source for engineers, professionals, and researchers in the field of digital transformation as well as doctoral scholars, doctoral researchers, professionals, and academicians.

Apply lean principles to your next architectural project and improve your bottom line with the help of this practical volume *Lean Architecture: Excellence in Project Delivery* shows

readers a path to consistently achieve excellence in project delivery via the application of lean concepts and process management. Authors Michael Czap and Gregory Buchanan challenge readers to reexamine their approach to architectural practice and projects by presenting a unique and compelling alternative. Lean Architecture details the crucial metrics and implementation strategies that combine to improve the efficiency and profitability of projects taken on by firms of all sizes. Readers of the book will learn to: Maximize the use of their resources to deliver superior results in less time Minimize waste, cost, and inefficiency in their firm's operations Move between radically different project scales while retaining efficient and effective processes Lean Architecture is perfect for firm leaders, project managers, and project architects who seek to improve their ability to deliver better results while reducing their cost base.

Based on best practices and proven research, The Facility Management Handbook has long been the go-to resource for professionals in the field. Extensively updated for the realities of today's workplace, the third edition provides readers with the tools and guidance they need to wipe out inefficiency and create a productive facility that integrates people, place, and process. Covering a broad range of topics from space planning and maintenance to benchmarking and outsourcing, readers will gain practical insight into how they can:

- design, construct and maintain facilities using sustainable practices
- provide a safe, attractive work environment that supports productivity
- ensure that facility plans match organizational needs
- plan and control capital expenditures
- address critical security and emergency preparedness issues

Complete with case studies and indispensable information on sustainability and post-9/11 security concerns, this is still the ultimate resource for facility managers.

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.

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.

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.

With the UK government's 2016 BIM threshold approaching, support for small organisations on interpreting, filtering and applying BIM protocols and standards is urgently required. Many small UK construction industry supply chain firms are uncertain about what Level 2 BIM involves and are unsure about taking first steps towards having BIM capability. As digitisation, increasingly impacts on work practices, *Getting to Grips with BIM* offers an insight into an industry in change supplemented by practical guidance on managing the transition towards more widespread and integrated use of digital tools to manage the design, construction and whole life use of buildings.

Computer Integrated Construction Elsevier

This volume constitutes the refereed proceedings of the 18th International Conference on Software Process Improvement and Capability Determination, SPICE 2018, held in Tessaloniki, Greece, in October 2018. The 26 full papers presented were carefully reviewed and selected from 40 submissions. The papers are organized in the following topical sections: SPI systematic literature reviews; SPI and assessment; SPI methods and reference models; SPI education and management issues; SPI knowledge and change processes; SPI compliance and configuration; SPI and agile; industry short papers.

The guide that explores how procurement and contracts can create an integrated team while improving value, economy, quality and client satisfaction *Collaborative Construction Procurement and Improved Value* provides an important guide for project managers, lawyers, designers, constructors and operators, showing step by step how proven collaborative models and processes can move from the margins to the mainstream. It covers all stages of the project lifecycle and offers new ways to embed learning from one project to the next. *Collaborative Construction Procurement and Improved Value* explores how strategic thinking, intelligent team selection, contract integration and the use of digital technology can enhance the value of construction projects and programmes of work. With 50 UK case studies, plus chapters from specialists in 6 other jurisdictions, it describes in detail the legal and procedural route maps for successful collaborative teams. *Collaborative Construction Procurement and Improved Value: Examines the ways to create an effective contract that will spell success throughout the procurement process* Contains helpful case studies from real-world projects and programmes Explores the benefits of the collaborative construction process and how to overcome common obstacles Bridges the gaps between contract law, collaborative working and project management Includes the first analysis of the NEC4 Alliance Contract, the FAC-1 Framework Alliance Contract and the TAC-1 Term Alliance Contract

This book contains the results of the latest research on energy-related topics in transportation, economics, and management. The book is composed of select research proceedings of the EMMFT 2019 conference, and covers such issues as energy efficiency in the transport sector, infrastructure, mobile equipment, rail transportation safety and reliability assessment methods, communication and signal, traction power supply, operation organization, and modeling unique transport scenarios. This book also gathers cutting-edge studies on the relationship between energy innovations and economic growth, the impacts of globalization and energy policies of countries on economics and environmental quality, and design and analysis of energy management systems. This book is of considerable interest to engineers, scientists, graduate students, and researchers in the field of transportation engineering, as well as to professionals working in the energy industries. It is also of use to employees and investors concerned with energy management, including utilities and industry professionals, and regulators.

Leadership, Ethics, and Project Execution provides a masterclass in the project and people management skills that set apart the most accomplished design and construction professionals. This textbook for graduate and advanced undergraduate students distils the insights gleaned over the authors' decades of experience in academia and industry into actionable principles for success in a notoriously demanding field. Combining real life case studies with original research, *Leadership, Ethics, and Project Execution* points the way from the classroom to the jobsite. Interactive exercises allow readers to take the role of junior project managers and other emerging professionals and reason through the ethical dilemmas surrounding building projects from the initial bid to completion. Chapters on stakeholder alignment, productivity, and project success ensure that aspiring leaders' business decisions are as economically sound as they are ethically correct. From its accessible, conversational tone to the lifetime's worth of construction wisdom it shares, *Leadership, Ethics, and Project Execution* offers an extended mentoring session with three giants of the building industry.

This book describes concepts, methods and practical techniques for managing projects to develop constructed facilities in the fields of oil & gas, power, infrastructure, architecture and the commercial building industries. It is addressed to a broad range of professionals willing to improve their management skills and designed to help newcomers to the engineering and construction industry understand how to apply project management to field practice. Also, it makes project management disciplines accessible to experts in technical areas of engineering and construction. In education, this text is suitable for undergraduate and graduate classes in architecture, engineering and construction management, as well as for specialist and professional courses in project management.

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 facility managers - as well as the research sector.

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 life cycle 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.

The construction professional has to be a "jack of all trades, and master of all." This text covers a wide range of subjects, reflecting the breadth of knowledge needed to understand the dynamics of this large and complex industry. This edition introduces extended coverage in the scheduling area to address more advanced and practice oriented procedures such as Start to Start, Finish to Finish, and similar relationship between activities in a network schedule.

Provides guidance for all skill levels to learn how to perform tasks using Autodesk Revit for Architecture.

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 best-selling Revit guide, now more complete than ever with all-new coverage on the 2020 release Mastering Autodesk Revit 2020 is packed with focused discussions, detailed exercises, and real-world examples to help you get up to speed quickly on the latest version of Autodesk Revit. Organized according to how you learn and implement the software, this book provides expert guidance for all skill levels. Hands-on tutorials allow you to dive right in and start accomplishing vital tasks, while compelling examples illustrate how Revit for Architecture is used in every project. Available online downloads include before-and-after tutorial files and additional advanced content to help you quickly master this powerful software. From basic interface topics to advanced visualization techniques and documentation, this invaluable guide is your ideal companion through the Revit workflow. Whether you're preparing for Autodesk certification exams or just want to become more productive with the architectural design software, practical exercises and expert instruction will get you where you need to be. Understand key BIM and Revit concepts and master the Revit interface Delve into templates, work-sharing, and managing Revit projects Master modeling and massing, the Family Editor, and visualization techniques Explore documentation, including annotation, detailing, and complex structures BIM software has become a mandatory asset in today's architecture field; automated documentation updates reduce errors while saving time and money, and Autodesk's Revit is the industry leader in the BIM software space.

A practical look at extending the value of BuildingInformation Modeling (BIM) into facility management—from theworld's largest international association for professional facilitymanagers Building owners and facility managers are discovering thatBuilding Information Modeling (BIM) models of buildings are deepreservoirs of information that can provide valuable spatial andmechanical details on every aspect of a property. When usedappropriately, this data can improve performance and save time,effort, and money in running and maintaining the building duringits life cycle. It can also provide information for futuremodifications. For instance, a BIM could reveal everything from themanufacturer of a light fixture to its energy usage to maintenanceinstructions. BIM for Facility Managers explains how BIM can be linkedto facility management (FM) systems to achieve very significantlife-cycle advantages. It presents guidelines for using BIM in FMthat have been developed by public and private owners such as theGSA. There is an extensive discussion of the legal and contractualissues involved in BIM/FM integration. It describes how COBie canbe used to name, capture, and communicate FM-related data todownstream systems. There is also extensive discussion ofcommercial software tools that can be used to facilitate thisintegration. This book features six in-depth case studies that illustrate howBIM has been successfully integrated with facility management inreal-life projects at: Texas A&M Health Science Center USC School of Cinematic Arts MathWork's new campus Xavier University State of Wisconsin Facilities University of Chicago Library renovation BIM for Facility Managers is an indispensable resourcefor facility managers, building owners, and developers alike.

The use of renewable energies and energy saving and efficiency are needs of global society and universities. Universities have a large responsibility and social impact, as they are an example and engine of social change. Universities, in the European context, must be at the forefront of ESA processes, seeking to be at the same level as, and preferably higher than, the rest of society, seeking a goal of 20% renewable energy for 2020 and, in the longer term, greater energy efficiency based on a diverse use of renewable energy and studying the feasibility of other energy processes (cogeneration, trigeneration, etc.). The application of renewable energies and energy efficiency allow universities to make significant savings in their costs and contribute to sustainable development and the fight against climate change.

Actions in pursuit of these goals in addition to the objective of energy saving should promote research and form an example for the university community. This book aims to advance the contribution of energy saving and the use of renewable energies in order to achieve more sustainable universities.

The contributions in this volume portray, in terms of the current state of the art, research on computer-aided construction in the building industry. A complete overview is given within the areas of computer-aided design, product modelling in construction, and robot-oriented design and construction together with a summary of the commercial developments in computerized systems within those areas. The papers will be essential reading for all those interested in future automation in relation to the building construction industry with the accent on design and engineering.

The BIM Manager's Handbook: Guidance for Professionals in Architecture, Engineering, and Construction Building Information Modelling (BIM) is a design and construction software that manages not just graphics, but also information—information that enables the automatic generation of drawings and reports, design analysis, schedule simulation, facilities management, and cost analysis—ultimately enabling any building team to make better-informed decisions. This allows a range of professionals—architects, engineers, construction managers, surveyors, cost estimators, project managers, and facility managers—to share this information throughout a building's lifecycle. BIM is now recognized worldwide for the efficiencies it delivers in terms of working collaboratively, communication, processes, cost savings, and a property's lifecycle management. With the widespread adoption of BIM, BIM Managers have become a much-needed new breed of professionals in architectural, engineering, and construction practice. Their role is often misunderstood and ill-defined, and such are the day-to-day deliverables that they are likely to face. The BIM Manager's Handbook provides an in-depth account of the breadth of activities that any BIM Manager or staff member, who is actively engaged in the delivery of project, is required to undertake. Providing prereleases of the final work, The BIM Manager's Handbook ePart series isolates significant topics around BIM management. In the sixth and final ePart, BIM is taken to the next level by outlining what is required to truly excel as a BIM Manager. It highlights how BIM Managers acquire the necessary communication skills to maximize an efficient information flow between the BIM Manager and others. It illustrates how BIM Managers tie their activities to cutting-edge BIM research and development globally. Lastly, this ePart lays out how to promote BIM excellence both within an organization and beyond.

"The BIM Handbook presents the technology and processes behind BIM and how architects, engineers, contractors and sub-contractors, construction and facility owners (AECO) can take advantage of the new technology and work process. Unlike CAD, BIM is a major paradigm shift in the documentation, work processes and exchange of project information. It facilitates collaboration and further automation, in both design and construction. AEC professionals need a handbook to guide them through the various BIM technologies and related processes. The collaborative nature of BIM requires professionals to view BIM from various industry perspectives and understand how BIM supports multiple project participants. The BIM Handbook reviews BIM processes and tools from multiple perspectives: the owner, architects and engineers, contractors, subcontractors and fabricators"--

The Autodesk-endorsed guide to real-world Revit Architecture mastery Mastering Autodesk Revit Architecture 2016 provides focused discussions, detailed exercises, and compelling, real-world examples to help you get the most out of the Revit Architecture 2016 software. Information is organized to reflect the way you learn and implement Revit, featuring real-world workflows, in-depth explanations, and practical tutorials that help you understand Revit and BIM concepts so you can quickly start accomplishing vital tasks. The thorough coverage makes this book an ideal study guide for those preparing for Autodesk's certification exam. The companion website features before-and-after tutorials, additional advanced content, and video on crucial techniques to help you quickly master important tasks. This comprehensive guide walks you through the software to help you begin designing quickly. Understand basic BIM concepts and the Revit interface Explore templates, work-sharing, and project management workflows Learn modeling, massing, and visualization techniques for other industries Work with complex structures, annotation, detailing, and much more To master what is quickly becoming an essential industry tool, Mastering Revit Architecture 2016 is your ultimate practical companion.

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