

## Imagining Construction S Digital Future Mckinsey Company

This book presents a selection of recent research works that provide best practice solutions, case studies and practical advice on the implementation of sustainable construction techniques. The topics covered include innovations in building sustainability assessment, sustainable construction and materials, service-life prediction, construction 4.0, digitalization of the construction process, and circular economy. Reviewing the current state of knowledge, the book will benefit scientists, students, practitioners, lecturers and other interested parties in a range of scientific and engineering disciplines, e.g. civil, materials and mechanical engineering.

Bauprojekte im Zeit- und Kostenrahmen abzuwickeln stellt für die Öffentliche Hand, aber auch für die Privatwirtschaft zunehmend eine Herausforderung dar. Building Information Modeling und Lean Construction erweisen sich dabei in der Kombination als relevante Methoden der Projektabwicklung, die die Risiken der Zeit- und Kostenverfehlung drastisch minimieren können. Die Pilotprojekte des BMVI und der Initiativen des Mittelstand 4.0-Kompetenzzentrums Planen und Bauen zeigen anschaulich, wie BIM bei Großprojekten angewandt werden kann. Doch wie sieht die Anwendung bei kleinen und mittleren Projekten aus und ist die Umsetzung auch für die mittelständischen Beteiligten der Wertschöpfungskette Bau zu schaffen? Antworten geben die Autoren am Best Practice Beispiel des Bauprojektes „Hallenbad Werdohl“, indem sämtliche Prozesse der Abwicklung dokumentiert und anschaulich berichtet werden. Dabei werden auch aktuelle Themen wie Vergaberecht, die aktuelle Situation der Bäderlandschaft in Deutschland sowie die Einbindung der Bauausführenden berührt. Außerdem skizzieren die Autoren eine erfolgreiche Herangehensweise für den Auftraggeber und beschreiben einen Überblick und Ausblick auf mögliche BIM-Anwendungen sowie den pragmatischen, realistischen Einsatz von LEAN Construction. „Die praktische Anwendung von BIM und LEAN, wie sie hier anschaulich am Beispiel eines öffentlichen Gebäudes dargestellt wird, ermutigt zur Nachahmung.“ (Ina Scharrenbach, Ministerin für Heimat, Kommunales, Bau und Gleichstellung des Landes Nordrhein-Westfalen, im Vorwort der Veröffentlichung)

Fabricate 2020 is the fourth title in the FABRICATE series on the theme of digital fabrication and published in conjunction with a triennial conference (London, April 2020). The book features cutting-edge built projects and work-in-progress from both academia and practice. It brings together pioneers in design and making from across the fields of architecture, construction, engineering, manufacturing, materials technology and computation. Fabricate 2020 includes 32 illustrated articles punctuated by four conversations between world-leading experts from design to engineering, discussing themes such as drawing-to-production, behavioural composites, robotic assembly, and digital craft.

As seen in Time, USA TODAY, The Atlantic, The Wall Street Journal, and on CBS This Morning, BBC, PBS, CNN, and

NPR, iGen is crucial reading to understand how the children, teens, and young adults born in the mid-1990s and later are vastly different from their Millennial predecessors, and from any other generation. With generational divides wider than ever, parents, educators, and employers have an urgent need to understand today's rising generation of teens and young adults. Born in the mid-1990s up to the mid-2000s, iGen is the first generation to spend their entire adolescence in the age of the smartphone. With social media and texting replacing other activities, iGen spends less time with their friends in person—perhaps contributing to their unprecedented levels of anxiety, depression, and loneliness. But technology is not the only thing that makes iGen distinct from every generation before them; they are also different in how they spend their time, how they behave, and in their attitudes toward religion, sexuality, and politics. They socialize in completely new ways, reject once sacred social taboos, and want different things from their lives and careers. More than previous generations, they are obsessed with safety, focused on tolerance, and have no patience for inequality. With the first members of iGen just graduating from college, we all need to understand them: friends and family need to look out for them; businesses must figure out how to recruit them and sell to them; colleges and universities must know how to educate and guide them. And members of iGen also need to understand themselves as they communicate with their elders and explain their views to their older peers. Because where iGen goes, so goes our nation—and the world.

Imagining, forecasting and predicting the future is an inextricable and increasingly important part of the present. States, organizations and individuals almost continuously have to make decisions about future actions, financial investments or technological innovation, without much knowledge of what will exactly happen in the future. Science and technology play a crucial role in this collective attempt to make sense of the future. Technological developments such as nanotechnology, robotics or solar energy largely shape how we dream and think about the future, while economic forecasts, gene tests or climate change projections help us to make images of what may possibly occur in the future. This book provides one of the first interdisciplinary assessments of how scientific and technological imaginations matter in the formation of human, ecological and societal futures. Rooted in different disciplines such as sociology, philosophy, and science and technology studies, it explores how various actors such as scientists, companies or states imagine the future to be and act upon that imagination. Bringing together case studies from different regions around the globe, including the electrification of German car infrastructure, or genetically modified crops in India, *Imagined Futures in Science, Technology and Society* shows how science and technology create novel forms of imagination, thereby opening horizons toward alternative futures. By developing central aspects of the current debate on how scientific imagination and future-making interact, this timely volume provides a fresh look at the complex interrelationships between science, technology and society. This book will be of interest to postgraduate students interested in Science and Technology Studies, History and Philosophy of

Science, Sociology, Cultural Studies, Anthropology, Political Sciences, Future Studies and Literary Sciences.

This book focuses on theory, practice and applications in the broad areas of advanced computing techniques and intelligent engineering. This book includes 74 scholarly articles which were accepted for presentation from 294 submissions in the 5th ICACIE during 25-27 June 2020 at Université des Mascareignes (UdM), Mauritius, in collaboration with Rama Devi Women's University, Bhubaneswar, India, and S'O'A Deemed to be University, Bhubaneswar, India. This book brings together academicians, industry persons, research scholars and students to share and disseminate their knowledge and scientific research work related to advanced computing and intelligent engineering. It helps to provide a platform to the young researchers to find the practical challenges encountered in these areas of research and the solutions adopted. The book helps to disseminate the knowledge about some innovative and active research directions in the field of advanced computing techniques and intelligent engineering, along with some current issues and applications of related topics.

eWork and eBusiness in Architecture, Engineering and Construction 2021 collects the papers presented at the 13th European Conference on Product and Process Modelling (ECPMM 2021, Moscow, 5-7 May 2021). The contributions cover a wide spectrum of thematic areas that hold great promise towards the advancement of research and technological development targeted at the digitalization of the AEC/FM (Architecture, Engineering, Construction and Facilities Management) domains. High quality contributions are devoted to critically important problems that arise, including: Information and Knowledge Management Semantic Web and Linked Data Communication and Collaboration Technologies Software Interoperability BIM Servers and Product Lifecycle Management Systems Digital Twins and Cyber-Physical Systems Sensors and Internet of Things Big Data Artificial and Augmented Intelligence in AEC Construction Management 5D/nD Modelling and Planning Building Performance Simulation Contract, Cost and Risk Management Safety and Quality Sustainable Buildings and Urban Environments Smart Buildings and Cities BIM Standardization, Implementation and Adoption Regulatory and Legal Aspects BIM Education and Training Industrialized Production, Smart Products and Services Over the past quarter century, the biennial ECPMM conference series, as the oldest BIM conference, has provided researchers and practitioners with a unique platform to present and discuss the latest developments regarding emerging BIM technologies and complementary issues for their adoption in the AEC/FM industry.

How should we train? What should we learn? What is our value? Disruptive technologies have increased speculation about what it means to be an architect. Innovations simultaneously offer great promise and potential risk to design practice. This volume identifies the game-changing trends driven by technology, and the opportunities they provide for

architecture, urbanism and design. It advocates for an approach of intelligent control that transforms practice with specialist knowledge of technological models and systems. It features new developments in automation, generative design, augmented reality, videogame urbanism, artificial intelligence and robotics, as well as lived experiences within a continually shifting landscape. Showcasing evolving research, it discusses the cultural, social, environmental and political implications of various technological trajectories. In doing so it speculates upon future urban, spatial, aesthetic and formal possibilities within architecture. The future is already here. Now is the time to act. Features: Austrian Institute of Technology AiT - City Intelligence Lab CiT, Bryden Wood, Mollie Claypool, Soomeen Hahm, Hawkins\Brown, LASSA Architects, The Living, Danil Nagy, Odico Construction Robotics, Stefana Parascho, Luke Caspar Pearson, SHoP Architects, Kostas Terzidis, Mette Ramsgaard Thomsen and Sandra Youkhana.

Zentrale Themen des Stahlbau-Kalender 2019 sind Verbindungen im Stahlbau sowie Digitales Planen und Bauen. Verbindungen sind ein Innovationstreiber im Stahlbau. Die richtige Auswahl und Detailausbildung kann die Wirtschaftlichkeit von Stahlkonstruktionen erhöhen. Das Buch stellt anwendungsbereites Wissen mit zahlreichen Beispielen zur Verfügung. Auf die Methoden und Vorgehensweisen zur Bemessung und konstruktiven Durchbildung verschiedener Verbindungsarten wird in sechs Beiträgen ausführlich eingegangen. Die Verwendung vorgefertigter Zugstabsysteme bei filigranen Stahl-Glas-Konstruktionen für Fassaden, Dachtragwerke oder Fußgängerbrücken hat in den letzten Jahren zugenommen. Besonders wichtig für die Praxis sind z. B. die neuen Entwicklungen bei vorgespannten geschraubten Verbindungen. Auch Setzbolzen und Metallschrauben weisen eine breite Anwendungspalette im Stahlbau und Metalleichtbau auf. Gussknoten ermöglichen aufgrund der freien Formbarkeit den optimalen Einsatz von Hohlprofilen, auch bei geometrisch komplizierten Tragstrukturen. Mit tragenden Klebverbindungen werden neuartige Konstruktionen und Mischbauweisen im konstruktiven Ingenieurbau hervorgebracht. Damit einher geht das Erfordernis des werkstoffgerechten Konstruierens als Voraussetzung für dauerhafte und wirtschaftliche Tragwerke. Was digitales Planen und Bauen konkret für den Stahlbau und die Werkstattfertigung bedeutet, wird in drei praxisbezogenen Beiträgen dargestellt. Der Stahlbau-Kalender dokumentiert und kommentiert verlässlich den aktuellen Stand des deutschen Stahlbau-Regelwerkes. Das Buch ist ein Wegweiser für die richtige Berechnung und Konstruktion im gesamten Stahlbau mit neuen Themen in jeder Ausgabe. Herausragende Autoren aus der Industrie, aus Ingenieurbüros und aus der Forschung vermitteln Grundlagen und geben praktische Hinweise.

Sustainable Futures in the Built Environment provides an insight on both construction and development issues and examine how we can transition to a sustainable future by 2050 bringing together leading research and practice at building, neighbourhood and city levels. Coverage includes the 'hard end' of the built environment (across the scales of

buildings, communities and cities), and the 'softer' end in terms of how professional practice will need to adapt to these trends. Invaluable source for researchers and postgraduate students as well as built environment professionals.

Providing a coherent and multidisciplinary approach to digitalization, this Modern Guide aims to systematize how the digitalization process affects infrastructure-based industries, including telecommunications, transport, energy, water and postal services.

Tall wood buildings have been at the foreground of innovative building practice in urban contexts for a number of years. From London to Stockholm, from Vancouver to Melbourne timber buildings of up to 20 storeys have been built, are under construction or being considered. This dynamic trend was enabled by developments in the material itself, prefabrication and more flexibility in fire regulations. The low CO2 footprint of wood - often regionally sourced - is another strong argument in its favour. This publication explains the typical construction types such as panel systems, frame and hybrid systems. An international selection of 13 case studies is documented in detail with many specially prepared construction drawings, demonstrating the range of the technology.

Construction Digitalisation A Capability Maturity Model for Construction Organisations Routledge

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.

It is a commonly held assumption among cultural, social, and political psychologists that imagining the future of societies we live in has the potential to change how we think and act in the world. However little research has been devoted to whether this effect exists in collective imaginations, of social groups, communities and nations, for instance. This book explores the part that imagination and creativity play in the construction of collective futures, and the diversity of outlets in

which these are presented, from fiction and cultural symbols to science and technology. The authors discuss this effect in social phenomena such as in intergroup conflict and social change, and focus on several cases studies to illustrate how the imagination of collective futures can guide social and political action. This book brings together theoretical and empirical contributions from cultural, social, and political psychology to offer insight into our constant (re)imagination of the societies in which we live.

*Builders of the Vision* traces the intellectual history and contemporary practices of Computer-Aided Design (CAD) and Numerical Control since the years following World War II until today. Drawing from primary archival and ethnographic sources, it identifies and documents the crucial ideas shaping digital design technologies since the first numerical control and CAD systems were developed under US Air Force research contracts at MIT between 1949 and 1970: the cybernetic theorization of design as a human-machine endeavor; the vision of computers as "perfect slaves" taking care of the drudgery of physical labor; the techno-social utopias of computers as vehicles of democracy and social change; the entrepreneurial urge towards design and construction integration; and the managerial ideologies enabling today's transnational geographies of practice. Examining the contrasting, and often conflicting, sensibilities that converge into CAD and BIM discourses - globalism, utopianism, entrepreneurialism, and architects' desires for aesthetic liberation - *Builders of the Vision* shows that software systems and numerically controlled machines are not merely "instruments," or "tools," but rather versatile metaphors reconfiguring conceptions of design, materiality, work, and what it means to be creative. Crucially, by revealing software systems as socio-technical infrastructures that mediate the production of our built environments, author Daniel Cardoso Llach builds a strong case for the fields of architecture, media, and science and technology studies to critically engage with both the politics and the poetics of technology in design. *Builders of the Vision* will be essential reading for scholars and practitioners across disciplines interested in the increasingly complex socio-technical systems that go into imagining and building of our artifacts, buildings, and cities.

Die Gebäudetechnik steht vor einem bedeutenden Paradigmenwechsel. Getrieben durch die Integrale Planung und verknüpft mit der Methodik des Building Information Modelings (BIM) sowie den neuen Möglichkeiten der Digitalisierung (Stichwort: Internet of Things; IoT), tritt die ganzheitliche Betrachtung von digital unterstützten Prozessen in den Fokus und erfordert von Fachplanern eine neue Handlungsmaxime. Vor diesem Hintergrund beleuchtet dieses Fachbuch die konzeptionellen und rechtlichen Rahmenbedingungen, innerhalb derer sich dieser Paradigmenwechsel vollziehen wird. Danach gilt es zukünftig mehr denn je, die teils konkurrierenden Schutzziele wie Energieeffizienz oder Erhalt der Trinkwassergüte mit zeitgemäßen Komfortansprüchen bei zu vertretenden Kosten in Einklang zu bringen. Aufbauend auf den aktuellsten wissenschaftlichen und technischen Erkenntnissen werden dafür planerische und technologische Lösungswege aufgezeigt, wie sie heute schon praxisgerecht bei der Planung und in

einem bedarfsgerechten und hocheffizienten Anlagenbetrieb umgesetzt werden können.

This book gathers the latest advances, innovations, and applications in the field of information technology in civil and building engineering, presented at the 18th International Conference on Computing in Civil and Building Engineering (ICCCBE), São Paulo, Brazil, August 18-20, 2020. It covers highly diverse topics such as BIM, construction information modeling, knowledge management, GIS, GPS, laser scanning, sensors, monitoring, VR/AR, computer-aided construction, product and process modeling, big data and IoT, cooperative design, mobile computing, simulation, structural health monitoring, computer-aided structural control and analysis, ICT in geotechnical engineering, computational mechanics, asset management, maintenance, urban planning, facility management, and smart cities. Written by leading researchers and engineers, and selected by means of a rigorous international peer-review process, the contributions highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaborations.

Construction Project Management: An Integrated Approach is a management approach to leading projects and the effective choice and use of project management tools and techniques. It seeks to push the boundaries of project management to take on board future needs and user issues. Integration of the construction project, meaning closer relations between the project team, the supply chain and the client, is long overdue; however, despite some signs of growth in this area, the industry nonetheless remains fragmented in its approach. The role of the project manager is to integrate diverse interests and unify objectives to achieve a common goal. This has now broadened to include a responsibility, on the parts of both client and team, to ensure that construction addresses current and future societal needs. From an economic perspective, a great deal of waste is connected with conflict, thus a holistic approach that increases the efficiency and effectiveness of the task at hand will inject energy into project management. This third edition now takes on board the impact of technology in building information modelling and other digitised technologies such as artificial intelligence. Together, they open up avenues for more direct and incisive action to test creative design, manufacture directly and communicate spontaneously and intuitively. In time, such technologies will change the role of project managers but will never take away their responsibility to be passionate about construction and to integrate the team. A new chapter has been added that considers future societal needs. This edition is also reordered to make the project life cycle and process chapters clearer. This book combines best practice in construction with the theories underpinning project management and presents a wealth of practical case studies – many new. It focuses on all construction disciplines that may manage projects. The book is of unique value to students in the later years of undergraduate courses and those on specialist postgraduate courses in project management and also for practitioners in all disciplines and clients who have experienced the frustration caused by the fragmentation of construction projects.

Big Digital Humanities has its origins in a series of seminal articles Patrik Svensson published in the Digital Humanities Quarterly between 2009 and 2012. As these articles were coming out, enthusiasm around Digital Humanities was acquiring a great deal of momentum and significant disagreement about what did or didn't "count" as Digital Humanities work. Svensson's articles

provided a widely sought after omnibus of Digital Humanities history, practice, and theory. They were informative and knowledgeable and tended to foreground reportage and explanation rather than utopianism or territorial contentiousness. In revising his original work for book publication, Svensson has responded to both subsequent feedback and new developments. Svensson's own unique perspective and special stake in the Digital Humanities conversation comes from his role as director of the HUMlab at Umeå University. HUMlab is a unique collaborative space and Digital Humanities center, which officially opened its doors in 2000. According to its own official description, the HUMlab is an open, creative studio environment where "students, researchers, artists, entrepreneurs and international guests come together to engage in dialogue, experiment with technology, take on challenges and move scholarship forward." It is this last element "moving scholarship forward" that Svensson argues is the real opportunity in what he terms the "big digital humanities," or digital humanities as practiced in collaborative spaces like the HUMlab, and he is uniquely positioned to take an account of this evolving dimension of Digital Humanities practice.

This book explores construction digitalisation, particularly in developing countries. The book conceptualises a digitalisation capability maturity model that will enable construction organisations to self-assess and benchmark their digital capabilities in their quest for digital transformation. Digitalisation offers a significant solution to the age-long problems of the construction industry. Research shows that when construction organisations transform from a traditional service delivery approach to a more digitalised approach, significant improvement in project delivery and better competitive advantage for these organisations will be attained. The attainment of these benefits is evident in developed countries where the digitalisation of construction activities continues apace. Unfortunately, the story is not the same for construction organisations in developing economies. While some organisations might be willing to be digitally transformed, most have no clue how to go about it. To this end, this book provides guidelines for construction organisations seeking to transform their entities digitally. Its content is a valuable read for construction company owners as it provides a model which they can use in the digitalisation of their activities. Also, regulatory bodies in the construction industry can adopt the capabilities identified in the book as essential prerequisites for their members. Furthermore, the book serves as excellent theoretical background reading for management researchers seeking to expand their knowledge on the digitalisation of the construction industry and other associated industries.

Visit the Book site for more information Many large organizations are having to cede their market dominance to new disruptive players. Well-oiled organizations are hitting roadblocks due to unanticipated problems that are slowing down operations. VUCA is affecting organizations like never before - impacting schedules, delaying deliverables, and causing cost overruns. Managing projects has become a nightmare with the uncertainties and ambiguities of business, delaying integration of allied activities, making the project a non-starter even before it gets off the ground. In this VUCA world, it is imperative to confront the volatile, embrace the unknown, conquer the complex, and understand the ambiguous to be able to predict what lies ahead. This book helps managers master the art of dealing with VUCA by providing relatable experiences from the armed forces and advocating the use of RACE methodology. The book suggests disruptive tools and methods, and advises managers on the leadership traits

needed for successfully completing projects by cutting losses and preventing chaos. It is a must-read for all managers involved in operations, supply chain, logistics, and production and manufacturing portfolios. Ex-army personnel who are starting a second career in the corporate/private sector will also greatly benefit from reading this book.

This book is a sequel and extension to the book "Business Process Management Cases", published in its first edition by Springer in 2018. It adds 22 new cases for practitioners and educators to showcase and study Business Process Management (BPM). The BPM cases collection is dedicated to providing a contemporary and comprehensive, industry-agnostic insight into the realities of BPM. In particular it focuses on the lessons that only authentic cases can provide. The experiences documented cover both, the positive impact of deploying BPM as well as the lessons learnt from failed attempts. Each case takes a holistic approach and by doing so, each chapter recognizes that BPM in practice is a multidimensional endeavor covering strategy to operations, systems and infrastructure, governance and culture, models and running processes. This volume also introduces a new device to plan and scope BPM initiatives: the BPM Billboard. The Billboard helps professionals to link BPM projects to the corporate strategy and to build the organizational capabilities to reach such strategic directive. Digital technologies do not just facilitate innovative process designs, but enable entire new strategic options. This book provides a contemporary and comprehensive overview of how to create process-enabled strategies in an opportunity-rich environment. Martin Petry, Hilti CIO This is the first book to present the BPM Billboard – A new management tool to plan and scope BPM initiatives. The Billboard together with the insightful real-world cases offers valuable guidance towards BPM success from a holistic perspective. Gero Decker, Signavio CEO

The 27th EG-ICE International Workshop 2020 brings together international experts working at the interface between advanced computing and modern engineering challenges. Many engineering tasks require open-world resolutions to support multi-actor collaboration, coping with approximate models, providing effective engineer-computer interaction, search in multi-dimensional solution spaces, accommodating uncertainty, including specialist domain knowledge, performing sensor-data interpretation and dealing with incomplete knowledge. While results from computer science provide much initial support for resolution, adaptation is unavoidable and most importantly, feedback from addressing engineering challenges drives fundamental computer-science research. Competence and knowledge transfer goes both ways. Der 27. Internationale EG-ICE Workshop 2020 bringt internationale Experten zusammen, die an der Schnittstelle zwischen fortgeschrittener Datenverarbeitung und modernen technischen Herausforderungen arbeiten. Viele ingenieurwissenschaftliche Aufgaben erfordern Open-World-Resolutionen, um die Zusammenarbeit mehrerer Akteure zu unterstützen, mit approximativen Modellen umzugehen, eine effektive Interaktion zwischen Ingenieur und Computer zu ermöglichen, in mehrdimensionalen Lösungsräumen zu suchen, Unsicherheiten zu berücksichtigen, einschließlich fachspezifischen Domänenwissens, Sensordateninterpretation durchzuführen und mit unvollständigem Wissen umzugehen. Während die Ergebnisse aus der Informatik anfänglich viel Unterstützung für die Lösung bieten, ist eine Anpassung unvermeidlich, und am wichtigsten ist, dass das Feedback aus der Bewältigung technischer Herausforderungen die computerwissenschaftliche Grundlagenforschung vorantreibt. Kompetenz und Wissenstransfer gehen in beide Richtungen.

Creating a Culture of Predictable Outcomes demonstrates the importance of creating cultures in the design and construction industries grounded in sophisticated-caring leadership, high-performing collaborative teams, and master-level decision-making discipline, informed by values, to finally address massive inefficiencies, waste, and unpredictability. Barbara White Bryson offers specific guidance to industry stakeholders to succeed in achieving project-related predictable outcomes by focusing on culture rather than process. This includes selecting the right team members by hiring and firing bravely, valuing psychological safety, leading with values, practicing respect and transparency, fostering empowerment to make decisions at the right level at the right time, and more. This book is a must-read for design and construction professionals who want to finally understand how to set goals and meet those goals for their clients as well as for their teams.

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.

This book is available as open access through the Bloomsbury Open Access programme and is available on [www.bloomsburycollections.com](http://www.bloomsburycollections.com). It is funded by The Swedish Foundation for Humanities and Social Sciences.0Digital self-tracking devices and data have become normal elements of everyday life. Imagining Personal Data examines the implications of the rise of body monitoring and digital self-tracking for how we inhabit, experience and imagine our everyday worlds and futures. Through a focus on how it feels to live in environments where data is emergent, present and characterized by a sense of uncertainty, the authors argue for a new interdisciplinary approach to understanding the implications of self-tracking, which attends

to its past, present and possible future. Building on social science approaches, the book accounts for the concerns of scholars working in design, philosophy and human-computer interaction. It problematizes the body and senses in relation to data and tracking devices, presents an accessible analytical account of the sensory and affective experiences of self-tracking, and questions the status of big data. In doing so it proposes an agenda for future research and design that puts people at its centre

At the beginning of the Fourth Industrial Revolution, the advent of digitalization, innovative technologies and materials, and new construction techniques have begun transforming the way that infrastructure, real estate, and other built assets can be designed, constructed, and operated in order to create a more attractive, energy-efficient, comfortable, affordable, safe, and sustainable built environment. Developments in materials and cutting-edge technologies (such as artificial intelligence, robotics, nanotechnology, 3D printing, and biotechnology) have finally started to move the construction towards a new era. Massive changes are occurring as a result of the possibilities created by big data and the Internet of Things, along with the technological advances that are driving down the cost of sensors, data storage, and computer services.

*Construction 4.0: Advanced Technology, Tools and Materials for the Digital Transformation of the Construction Industry* presents a thorough review of developments in materials, emerging trends, cutting-edge technologies, and strategies in the fields of smart building design, construction, and operation, providing the reader with a comprehensive guideline on how to exploit the new possibilities offered by the digital revolution. It will be an essential reference resource for academic researchers, material scientists, and civil engineers, undergraduate and graduate students, and other professionals working in the fields of smart eco-efficient construction and cutting-edge technologies applied to construction. Features discussions on how nanomaterials, bio-based materials, and recycled materials are applied in the construction of buildings Analyzes the lifecycle of materials, buildings and design and construction operations Covers new methodologies and construction processes Provides case studies on cutting-edge digital technology such as AI and machine learning Examines all aspects of sustainability, including end-of-life of buildings

Many of the books on construction risk management concentrate on theoretical approaches to the accurate assessment of the overall risks of taking on a new project. Less attention is paid to the typical risks to which the operational level of a project is exposed and how operational managers should approach those risks during project implementation. This book identifies precisely where the major EPC/Design-Build risks occur within an operational framework and shows how best to deal with those risks. The book attempts to offer practical advice, approaches and tools for dealing with risks to which the various operational departments are exposed.

Written by experienced and innovative projects lawyer Arent van Wassenauer, this book explains what the critical success factors are for construction projects to be completed on time, within everyone's budget, to the right quality, with all stakeholders satisfied and without disputes. In so doing, van Wassenauer discusses how such projects could be structured, tendered for, executed and completed, and what legal and non-legal mechanisms are available to achieve success in construction projects. Using examples of real projects, *A Practical Guide to Successful Construction Projects* provides tools for those in leading and managerial positions

within the construction industry to change – where necessary – their usual operational methods into methods which are aimed at achieving project success.

Accounting for Construction follows on from Measuring Construction, edited by the same team. It extends the coverage of some of the material in the first volume and expands the range of related topics to include, inter alia, shadow economies, accounting for informal construction and the treatment of the built environment sector in national accounts. Taken together, the two volumes collate a range of topics that are only addressed, if addressed at all, in occasional academic papers and the publications of bodies such as national statistical offices and the World Bank. Accounting for Construction presents international examples from the UK, Australia and New Zealand and from both academic and professional contributors. This book is essential reading for all researchers and professionals interested in construction economics, construction management, and anyone interested in how the construction industry affects the global economy in ways previously under-represented in the literature.

London is one of the world's leading cities. It is home to an extraordinary concentration and diversity of people, industries, politics, religions and ideas, and plays an important role in our highly globalised and tightly networked modern world. What does the future hold for London? Investigating any aspect of the city's future reveals a complex picture of interrelations and dependencies. The London 2062 Programme from University College London brings a new, cross-disciplinary and highly collaborative approach to investigating this complexity. The programme crosses departmental boundaries within the university, and promotes active collaboration between leading academics and those who shape London through policy and practice. This book approaches the question of London's future by considering the city in terms of Connections, Things, Power and Dreams.

Afin de répondre à la demande croissante de logements et aux enjeux de la transition environnementale, le secteur du bâtiment n'a pas d'autre choix que de s'industrialiser. Dans cette optique, la construction hors-site présente d'immenses atouts. Réduction des délais, accroissement de la qualité et de la sécurité, niveau d'efficacité énergétique élevé, sans compter la possibilité de construire de manière réversible, ce mode de construction consistant à assembler des éléments préfabriqués par des méthodes industrielles possède un potentiel considérable mais reste sous-utilisé en France. Cet ouvrage, fruit de la vision croisée d'entrepreneurs hors-site et d'un acteur de la formation, permet à tous les acteurs de la chaîne de la construction d'appréhender les enjeux, les concepts, les technologies et les impacts des méthodes industrielles appliquées au bâtiment et à la ville.

This book gathers peer-reviewed contributions presented at the 2nd RILEM International Conference on Concrete and Digital Fabrication (Digital Concrete), held online and hosted by the Eindhoven University of Technology, the Netherlands from 6-9 July 2020. Focusing on additive and automated manufacturing technologies for the fabrication of cementitious construction materials, such as 3D concrete printing, powder bed printing, and shotcrete 3D printing, the papers highlight the latest findings in this fast-growing field, addressing topics like mixture design, admixtures, rheology and fresh-state

behavior, alternative materials, microstructure, cold joints & interfaces, mechanical performance, reinforcement, structural engineering, durability and sustainability, automation and industrialization.

This book contains the proceedings of the 13th KES International Conference on Sustainability and Energy in Buildings 2021 (SEB2021) held in Split, Croatia, during 15–17 September 2021 organized by KES International. SEB21 invited contributions on a range of topics related to sustainable buildings and explored innovative themes regarding sustainable energy systems. The conference formed an exciting chance to present, interact and learn about the latest research and practical developments on the subject. The conference attracted submissions from around the world. Submissions for the Full-Paper Track were subjected to a blind peer-review process. Only the best of these were selected for presentation at the conference and publication in these proceedings. It is intended that this book provides a useful and informative snapshot of recent research developments in the important and vibrant area of sustainability in energy and buildings.

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.

Every two years, industry leaders and practitioners from around the world gather at the Rapid Excavation and Tunneling Conference (RETC), the authoritative program for the tunneling profession, to learn about the most recent advances and breakthroughs in this unique field. The information presented helps professionals keep pace with the ever-changing and growing tunneling industry. This book includes the full text of 106 papers presented at the 2021 conference. Though the tunneling industry continues to develop both technically and contractually, one notable adaptation of the last two years has been the onset and management of COVID-19. The hallmarks of tunneling professionals include adaptability,

resiliency, optimism, and management of change. These are traits that have been recently put to an entirely new challenge over the last year or so. We have truly witnessed why what we do is deemed “essential” infrastructure. The COVID-19 pandemic has impacted each of us, personally and professionally, and while times have been hard, we are fortunate to work in a field that is able to meet the challenge and thrive thereafter. Congratulations are in order to everyone in our industry for keeping the planning and development of projects moving forward and for maintaining safe and productive worksites in these challenging times.

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.

Das Beuth Pocket "BIM - Einstieg kompakt" bietet eine leicht zugängliche, auf das Wesentliche komprimierte und schnelle Orientierungshilfe in das Thema BIM: International hat sich Building Information Modeling (BIM) als die gebräuchlichste Arbeitsmethode für Großprojekte bereits bewährt. Nun hält die digitale Planungsmethode auch Einzug in deutsche Unternehmen. Erweitert um projektbezogene Themen bietet auch die zweite Auflage den idealen Einstieg in dieses weitläufige Thema. Inhaltliche Schwerpunkte: Der Begriff BIM // Unterschiede zur traditionellen Arbeitsweise // BIM Werte // Strategischer Bestandteil BIM // BIM: Einführung im Unternehmen und im Projekt. Prinzipielle Erläuterungen ermöglichen dem Anwender die Möglichkeit, BIM für sich zu entdecken und zu verstehen.

"This book is for students of the past, present, and future communication system. It is for people in policy, business, and civil society who want to influence change in this system and also for people who are largely unaware that what they do every day is changing this system. I examine some of the causes and consequences of innovations in the modern digital communication system. These have been at the centre of my interest in social transformation for a long time.

Investigations of what has come to be known as the information society normally are conducted within disciplinary

boundaries in the humanities, social sciences, or natural and physical sciences. In this book, I cross these boundaries, something I have been encouraged to do throughout my career"--Preface, p. [vii]

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