

The Built Environment A Collaborative Inquiry Into Design Sample

Law is a complex subject and has major impacts on the built environment and all those working in it. Law is seen as one of the strongest interdisciplinary links between the various professions; it is essential to have a clear understanding of how both statute and common law, as well as the legislative frameworks (statutory controls/policy and procedures), affect all the roles/areas throughout the built environment. This book will provide students with a broad understanding of the law and its applications, from disputes to land use.

The use of secondary data for research can offer benefits, particularly when limited resources are available for conducting research using primary methods. Researchers and students at both undergraduate and postgraduate levels, including their academic instructors, are increasingly recognising the immense opportunities in applying secondary research methods in built environment research. Advances in technology has also led to vast amounts of existing datasets that can be utilized for secondary research. This textbook provides a systematic guide on how to apply secondary research methods in the built environment, including their various underpinning methodologies. It provides guidance on the secondary research process, benefits, and drawbacks of applying secondary research methods, how to source for secondary data, ethical considerations, and the various secondary research methods that can be applied in built environment research. The book incorporates chapters dealing with qualitative secondary analysis, systematic literature reviews, legal analysis, bibliometric and scientometric analysis, literature-based discovery, and meta-analysis. Secondary Research Methods in the Built Environment is an ideal research book for undergraduate and postgraduate students in construction management, construction project management, quantity surveying, construction law and dispute resolution, real estate and property management, building services engineering, architecture, and civil engineering.

Current changes and pressures to transcend professional barriers throughout the construction industry are being reflected in the way built environment education and training is now planned and designed. Courses are focusing on aspects which are common to all the subjects to foster a multi-professional approach and lead to better collaborative practice. The Built Environment Series of Textbooks (BEST) provides texts which are relevant to more than one course and addresses areas of commonality in an original and innovative way. Learning aids in the texts - chapter objectives, workpieces and checklists - will test your understanding. A clear structure to each chapter makes it easy for you to follow and absorb the information. Essential for tomorrow's architects, planners, quantity surveyors, landscape architects, building surveyors, housing managers and estate managers. All built environment professionals need business and management skills to realize their ideas. Management and Business Skills in the Built Environment will encourage professionals to develop the basic skills and knowledge needed to operate efficiently and effectively. Developing these vital skills will help achieve greater control over personal growth and development.

This unique book introduces students to the themes and aspects of studying the built environment. Contemporary issues such as

sustainability and urbanization preface the explanation of the core subject disciplines of architecture, construction management, planning, real estate management and surveying. The distinctive student experience of learning about the built environment is explored with a focus upon learning and teaching methods, learning skills and assessment. The final chapter of the book looks at the links between academic study and professional practice.

This design primer examines the forces at work in the built environment and their impact on the form of buildings and their environments. The actions of a range of individuals and agencies and the interaction between them is examined, exploring the competing interests which exist, their interaction with physical and environmental forces and the uncertain results of both individual and corporate intervention.

Digital Architecture is a particularly dynamic field that is developing through the work of architecture schools, architects, software developers, researchers, technology, users, and society alike. Featuring papers from the First International Conference on Digital Architecture, this book will be of interest to professional and academic architects involved in the creation of new architectural forms, as well as those colleagues working in the development of new computer codes of engineers, including those working in structural, environmental, aerodynamic fields and others actively supporting advances in digital architecture. Expert contributions encompass topic areas such as: Database Management Systems for Design and Construction; Design Methods, Processes and Creativity; Digital Design, Representation and Visualization; Form and Fabric; Computer Integrated Construction and Manufacturing; Human-Machine Interaction; Connecting the Physical and the Virtual Worlds; Knowledge Based Design and Generative Systems; Linking Training, Research and Practice; Web Design Analysis; the Digital Studio; Urban Simulation; Virtual Architecture and Virtual Reality; Collaborative Design; Social Aspects.

Effective teamwork across disciplines is essential to solve the technological and managerial problems associated with today's construction projects. This book promotes interdisciplinary design for the construction industry, and discusses the challenges and rewards involved. It contains contributions from many prominent figures representing different professional viewpoints, among them architects Ian Ritchie and Richard Saxon, engineers Sir Alan Cockshaw, Michael Dickson and Sir Jack Zunz and developer Peter Rodgers. Case studies provide illustrations and examples. The book also presents and reviews recent innovative experiences of education for interdisciplinary design both in the university and practice environments. Further, it includes summaries of best practice in the design process drawn from management studies and academic research. In its focus on the collaborative nature of the design process the book addresses the neglected areas of teamwork and communication. It offers numerous examples where this way of working has achieved outstanding architectural results and project success in line with the Latham and Egan agendas.

Since the establishment of the CAAD futures Foundation in 1985 CAAD experts from all over the world meet every two years to present and at the same time document the state of art of research in Computer Aided Architectural Design. The history of CAAD futures started in the Netherlands at the Technical Universities of Eindhoven and Delft, where the CAAD futures Foundation came

into being. Then CAAD futures crossed the oceans for the first time, the third CAAD futures in 1989 was held at Harvard University. Next stations in the evolution were in 1991 Swiss Federal Institute of Technology, the ETC, Zürich. In 1993 the conference was organized by Carnegie Mellon University, Pittsburgh and in 1995 by National University, Singapore, CAAD futures 1995 marked the world wide nature by organizing it for the first time in Asia. Proceedings of CAAD futures held biannually provide a complete review of the state of research in Computer Aided Architectural Design.

In an increasingly globalised built environment industry, achieving higher levels of integration across organisational and software boundaries can lead to improved economic, social and environmental outcomes. This book is the direct result of a collaborative global network of industry and academic researchers spread across nine countries as part of CIB's (International Council for Research and Innovation in Building and Construction) Task Group 90 (TG90) Information Integration in Construction (IICON). The book provides a broad view of some of the opportunities and challenges brought by integrating information across organisational and system boundaries in the built environment industry. Chapters cover a large range of topics and are separated into three sections: resources, processes and added value. They provide a much-needed international perspective on a current global evolution in the industry and present leading original research and valuable lessons for researchers, industry practitioners, government clients and policy makers across the industry. Key features include: a broad range of topics that are not covered elsewhere in the literature; contributions from a diverse group of industry research leaders from across the globe; exemplar case studies providing real-world examples of where information integration has been a key factor for success or lack thereof has been at the root cause of failure; an analysis of future priority areas for research and development investment as well as their strategic implications for public and private decision-makers; the book will deliver innovation in best practice methodology for information sharing across disciplines and between the design, construction and asset management sectors.

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

People's desire to understand the environments in which they live is a natural one. People spend most of their time in spaces and structures designed, built, and managed by humans, and it is estimated that people in developed countries now spend 90 percent of their lives indoors. As people move from homes to workplaces, traveling in cars and on transit systems, microorganisms are continually with and around them.

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The human-associated microbes that are shed, along with the human behaviors that affect their transport and removal, make significant contributions to the diversity of the indoor microbiome. The characteristics of "healthy" indoor environments cannot yet be defined, nor do microbial, clinical, and building researchers yet understand how to modify features of indoor environments—such as building ventilation systems and the chemistry of building materials—in ways that would have predictable impacts on microbial communities to promote health and prevent disease. The factors that affect the environments within buildings, the ways in which building characteristics influence the composition and function of indoor microbial communities, and the ways in which these microbial communities relate to human health and well-being are extraordinarily complex and can be explored only as a dynamic, interconnected ecosystem by engaging the fields of microbial biology and ecology, chemistry, building science, and human physiology. This report reviews what is known about the intersection of these disciplines, and how new tools may facilitate advances in understanding the ecosystem of built environments, indoor microbiomes, and effects on human health and well-being. It offers a research agenda to generate the information needed so that stakeholders with an interest in understanding the impacts of built environments will be able to make more informed decisions.

From the Foreword by Rob Smith, Director of Estates and Facilities (NHS England), Department of Health 'The built environment for the delivery of Healthcare will continue to change as it responds to new technologies and modalities of care, different expectations and requirements of providers and consumers of care. It is vital that built environment students and practitioners alike avail themselves of the best possible information to guide them in their studies, continuing professional development and the delivery of their tasks. The range is enormous from the assessment of need, planning the service delivery to design, construction, commissioning, maintenance and operation of the healthcare environment. The book that follows addresses these areas from a blend of contributions of experienced practitioners to the descriptions of the output from recent research that moves forward the frontiers of knowledge and practice in the many areas of the healthcare built environment. I happily commend this book to all engaged in the exciting fields of planning, delivering, maintaining and operating healthcare environments. When we get it right, we are able to do immeasurable good.' This book helps academic researchers as well as practitioners understand how the healthcare infrastructure sector works by addressing the crucial issue of healthcare delivery from a built environment perspective. It explains the trends in healthcare, models of healthcare delivery; healthcare planning; the NHS building and investment programmes; the procurement process; and facilities management; financial models – including PFI and LIFT; risk allocation and partnering. Past investigations in the area of healthcare delivery have concentrated on either the medical aspects or the design issues of buildings but *Improving Healthcare through Built Environment Infrastructure* is unique in considering the 'meeting space' of built environment technologies and modern methods of procurement with the medical and operational needs of healthcare settings. The authors have brought together key industrialists and academics, all heavily involved in the formulation and delivery of new practices. Case studies illustrate how policies and healthcare models are implemented in practice and help identify the key challenges for the future.

This book provides insight into the theory and application of complexity techniques to model some of the built environment problems. It includes discussion of the importance of complexity for the research agenda in the built environment to introduce new users to the potential and pitfalls of his research paradigm. Among the applications presented are: modes of architectural complexity, agent based modelling systems, coping with complexity within the supply chain, complexity in design, applications of complexity theory for design, and complexity theory and the maintenance paradigm. This book will significantly augment the intellectual basis of the discipline and expand considerably the boundaries of the BE research agenda

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Sustainability in the built environment is a major issue facing policy-makers, planners, developers and designers in the UK, Europe and worldwide. The measuring of buildings and cities for sustainability becomes increasingly important as pressure for green, sustainable development translates into policy and legislation. The problems of such measurement and evaluation are presented by the authors in contributions which move from the general to the particular, e.g. from a general framework for an environmentally sustainable form of urban development to a specific input-output model application to environmental problems. The book is divided into three parts: the first covers city models and sustainable systems - research programmes, environmental policies, green corporations and collaborative strategies to make urban development more sustainable; part two discusses the problems of evaluating the built environment in planning and construction, covering economic and environmental methods and construction, development and regeneration processes; part three illustrates a number of applications using different approaches and techniques and referring to a range of environmental aspects of the natural and built environment, from maintaining historic buildings to transport management and air pollution monitoring.

The emergence of new digital and visualisation technologies in recent years has led to rapid changes in the field of architecture. Current drives to incorporate building information modelling as a part of architectural design are giving way to the increased use of IT and visualisation in architectural design, user participation and group collaboration. As digital methods become more mainstream, *Digital Participation and Collaboration in Architectural Design* provides an accessible and engaging introduction to this emerging subject. Supported by selected examples from research and practice, the book offers an overview of theories, techniques and approaches which readers can apply in their own work. In doing so, it shows how these techniques can influence communication, debate and understanding and encourages readers to see familiar buildings from original and unusual perspectives. An ideal starting point for anyone interested in the application of digital techniques, the book will help students and professionals in architectural design and digital architecture to understand and embrace new technologies.

This is a volume in a new series of textbooks which responds to changes that are occurring throughout the construction industry and in further education. The series focusses on aspects of the curriculum that are common to all professions in the built environment. The principal aim of BEST (The Built Environment Series of Textbooks) is to provide texts that are relevant to more than one course and the texts therefore address areas of commonality in a original and innovative way. Learning aids in the text such as revision notes, questions for self-testing and worked examples, will appeal to all students. This first book in the series, written by a team of professionals led by Tom Muir and Brian Rance, outlines the current and emerging collaborative practices in the development and construction industry. It addresses the changing nature of the development and construction industry in the UK and worldwide, the interdisciplinary basis of current and emerging practice in both the public and private sector and a vision of the construction and development industry into the 21st century.

How global change is impacting on the social, physical, and economic structure of cities and their inhabitants In recent decades significant financial and professional resources have been invested in urban regeneration, housing renovation, and the revitalization of old neighborhoods, with considerable impacts on the social, physical, and economic structure of cities and their inhabitants. The first objective of this volume is to present the key issues related to these changes, which were discussed at an international symposium of experts organized by the International Association for People-Environment Studies and CSBE Networks in Istanbul. The second objective is to show how concepts and methods in the field of people-environment studies can

be successfully applied to study complex questions related to the revitalization of the built environment, both at the small scale of specific buildings and at the larger scale of neighborhoods. The contributions in this volume are centered around the following main themes: Key issues concerning heritage and cultural identity The institutional, economic, and political contexts of revitalization Implementation and how to address the key challenges This volume will be useful to researchers, graduate students, teachers, and professional practitioners in housing design and construction, the maintenance and upgrading of existing buildings and urban areas, conservation management, and the broad field of housing studies. The book is pertinent to people trained in environmental psychology, social policy studies, architecture, urban design, urban sociology, human geography, and building and landscape conservation.

Rapid urbanization represents major threats and challenges to personal and public health. The World Health Organisation identifies the 'urban health threat' as three-fold: infectious diseases, non-communicable diseases; and violence and injury from, amongst other things, road traffic. Within this tripartite structure of health issues in the built environment, there are multiple individual issues affecting both the developed and the developing worlds and the global north and south. Reflecting on a broad set of interrelated concerns about health and the design of the places we inhabit, this book seeks to better understand the interconnectedness and potential solutions to the problems associated with health and the built environment. Divided into three key themes: home, city, and society, each section presents a number of research chapters that explore global processes, transformative praxis and emergent trends in architecture, urban design and healthy city research. Drawing together practicing architects, academics, scholars, public health professional and activists from around the world to provide perspectives on design for health, this book includes emerging research on: healthy homes, walkable cities, design for ageing, dementia and the built environment, health equality and urban poverty, community health services, neighbourhood support and wellbeing, urban sanitation and communicable disease, the role of transport infrastructures and government policy, and the cost implications of 'unhealthy' cities etc. To that end, this book examines alternative and radical ways of practicing architecture and the re-imagining of the profession of architecture through a lens of human health.

This book takes a sweeping view of the ways we build things, beginning at the scale of products and interiors, to that of regions and global systems. In doing so, it answers questions on how we effect and are affected by our environment and explores how components of what we make—from products, buildings, and cities—are interrelated, and why designers and planners must consider these connections.

This book argues that interior architects have a responsibility to practice their profession in collaborative ways that address the needs of communities and of to be the agents of social justice and cultural heritage. The book is divided into three sections, based on three pivotal themes — community engagement, social justice and cultural heritage. Each section has chapters that put forward the principles of these themes, leading into a variety of fascinating case studies that illustrate how socially sustainable design is implemented in diverse communities across the world. The second section includes four concise case studies of community

housing issues, including remote-area indigenous housing and housing for the homeless. The third section offers two extensively researched essays on design and cultural heritage — a case study of the development of a redundant industrial site and a historical study of gendered domestic interiors. The book appeals to a wider audience than the design community alone and challenges mainstream interior design/interior architecture practitioners nationally and internationally to take a leading role in the field of socially responsible design. The issues raised by the authors are relevant for individuals, communities, government and non-government organisations, professionals and students. “In the twenty-first century we seem to have entered into a new world of knowledge discovery, where many of the most exciting insights come not from the authority of a traditional discipline, but from the dialogue that happens at the hubs and intersections of thought — the arenas where different disciplines and approaches, different schools and habits of thinking, come together to collaborate and contend. This collection is a good example of this, and I hope the book will be widely read and its lessons learned and applied.” Tim Costello, Officer of the Order of Australia, Chief Executive, World Vision Australia.

Future Challenges in Sustainable Development within the Built Environment stimulates and reinterprets the demands of Responsible and Sustainable Development in the Built Environment for future action and development. It examines the methods of evaluation, the use of technology, the creation of new models and the role of human factors for examining and developing the subject over the next twenty years.

Like the first edition, the central question this book addresses is how virtual reality can be used in the design, production and management of the built environment. The book aims to consider three key questions. What are the business drivers for the use of virtual reality? What are its limitations? How can virtual reality be implemented within organizations? Using international case studies it answers these questions whilst addressing the growth in the recent use of building information modelling (BIM) and the renewed interest in virtual reality to visualize and understand data to make decisions. With the aim of inspiring and informing future use, the authors take a fresh look at current applications in the construction sector, situating them within a broader trajectory of innovation. The new edition expands the scope to consider both immersive virtual reality as a way of bringing professionals inside a building information model, and augmented reality as a way of taking this model and related asset information out to the job-site. The updated edition also considers these technologies in the context of other developments that were in their infancy when the first edition was written – such as laser scanning, mobile technologies and big data. Virtual Reality in the Built Environment is essential reading for professionals in architecture, construction, design, surveying and engineering and students on related courses who need an understanding of BIM, CAD and virtual reality in the sector. Please follow the book's Twitter account: @vrandbe <http://buildingvr.blogspot.co.uk/>

Collaborative virtual environments (CVEs) are multi-user virtual realities which actively support communication and co-operation. This book offers a comprehensive reference volume to the state-of-the-art in the area of design studies in CVEs. It is an excellent mix of contributions from over 25 leading researcher/experts in multiple disciplines from academia and industry, providing up-to-

date insight into the current research topics in this field as well as the latest technological advancements and the best working examples. Many of these results and ideas are also applicable to other areas such as CVE for design education. Overall, this book serves as an excellent reference for postgraduate students, researchers and practitioners who need a comprehensive approach to study the design behaviours in CVEs. It is also a useful and informative source of materials for those interested in learning more on using/developing CVEs to support design and design collaboration.

The book collects the latest research on both contractual and conceptual collaborative practices in construction. It identifies common problems faced by the industry and draws out practical implications. Construction projects are increasingly run in ways that undermine the traditional boundary of the firm and sometimes also the definition of the project coalition. This poses challenges for construction firms whose clients demand ever increasing performance improvements as well as those firms who want to improve their strategies for greater collaboration to give themselves competitive advantage. The editors identify three main themes: collaborative relationships, operating both in frameworks and within networks of contacts, e.g. relational contracting in partnering, supply chain management and other procurement-driven initiatives. The second theme is frameworks, both contractual frameworks binding parties together over a series of contracts, and conceptual frameworks used to develop future performance improvement arising from the proactive strategies of firms. The third theme is the network of relationships that supports individuals and firms within the project coalition in delivering services and adding value to improve performance. These networks define the investment and incentives supporting the inter-firm and intra-firm relationships, as well as the formal contractual conditions through which such incentives flow. Networks of information exchange define the structure of the activity and help predict organisational configurations for successful project outcomes.

Praise for Construction Project Management by Peter Fewings: "The complexity of the subject matter has at least been reinforced in an informative document with a large helping of common sense ... written in a comprehensive and well structured manner."

Building Engineer Magazine Ethics are not an optional extra for the professional in the built environment sector. Whether you're a civil engineer, an architect or a construction project manager, an understanding of the ethical context of your work is an institutional requirement and a commercial demand, not to mention a matter of personal pride. Sometimes, as a construction professional you will be faced with complicated dilemmas, as commercial responsibilities clash with health and safety, environmental or competition concerns. Peter Fewings brings together practical construction project management experience with ethical theory to establish how best to deal with difficult issues.

In today's dynamic practice environment, collaboration and teamwork skills are increasingly critical to the successful completion of building projects. Indeed, it is the careful nurturing of comradeship among complementary but distinctive egos that drives creativity underlying the hi-tech algorithms that help shape complex projects. Designing Relationships: The Art of Collaboration in Architecture focuses on the skill set necessary to facilitate effective teamwork and collaboration among all stakeholders no matter what project delivery mode or technology is deployed. This book provides valuable guidance on how to design and construct

buildings in a team context from inception to completion. It is the less tangible elements of collaboration and teamwork that provide the magic that transforms the most challenging projects into great works of architecture, and it is these more nuanced and subtle skills which the book brings to the fore. Showing examples of best and worst practice to illustrate the principles with real-life situations, this book presents the reader with an approach that is flexible and applicable to their everyday working life.

This open access book explores the strategic importance and advantages of adopting multidisciplinary and multiscale approaches of inquiry and intervention with respect to the built environment, based on principles of sustainability and circular economy strategies. A series of key challenges are considered in depth from a multidisciplinary perspective, spanning engineering, architecture, and regional and urban economics. These challenges include strategies to relaunch socioeconomic development through regenerative processes, the regeneration of urban spaces from the perspective of resilience, the development and deployment of innovative products and processes in the construction sector in order to comply more fully with the principles of sustainability and circularity, and the development of multiscale approaches to enhance the performance of both the existing building stock and new buildings. The book offers a rich selection of conceptual, empirical, methodological, technical, and case study/project-based research. It will be of value for all who have an interest in regeneration of the built environment from a circular economy perspective.

This book is for all those actively working in the built environment. It presents the latest theory and practice of engaging with stakeholders to co-design, develop and manage thriving places. It starts from the importance of integrating design of nature into practice built on a foundation of First Nations understanding of place. The art of engagement of community, government and the development industry is discussed with reference to case studies and best practice techniques. The book then focuses on the critical role placemaking has in supporting resilience and adaptability of communities and looks at issues of leadership and governance. Building on these steps for placemaking, the last parts of the book address economics, evaluation, digital and art based tools and approaches to support projects that aim to create an engaged, contributive, collaborative and active citizen. In order for educational systems not to become stagnant, teaching strategies must be routinely re-evaluated. Not only does this optimize the learning process, but it enhances the overall experience for the students. Collaboration and Student Engagement in Design Education is a pivotal reference source for the latest scholarly research on the implementation of teamwork between architecture students in design courses to enrich knowledge attainment and boost creativity. Highlighting pedagogical insights into team building and relevant case studies, this book is ideally designed for educators, students, administrators, and professionals interested in the development of effective design programs.

Sustainable Design for the Built Environment marks the transition of sustainable design from a specialty service to the mainstream approach for creating a healthy and resilient built environment. This groundbreaking and transformative approach introduces sustainable design in a clear, concise, easy-to-read format. This book takes the reader deep into the foundations of sustainable design, and creates a holistic and integrative approach addressing the social, cultural, ecological, and aesthetic aspects in addition

to the typical performance-driven goals. The first section of the book is themed around the origins, principles, and frameworks of sustainable design aimed at inspiring a deeper, broader, and more inclusive view of sustainability. The second section examines strategies such as biophilia and biomimicry, adaptation and resilience, health and well-being. The third section examines the application of sustainability principles from the global, urban, district, building, and human scale, illustrating how a systems thinking approach allows sustainable design to span the context of time, space, and varied perspectives. This textbook is intended to inspire a new vision for the future that unites human activity with natural processes to form a regenerative, coevolutionary model for sustainable design. By allowing the reader an insightful look into the history, motivations, and values of sustainable design, they begin to see sustainable design, not only as a way to deliver green buildings, but as a comprehensive and transformative meta-framework that is so needed in every sector of society. Supported by extensive online resources including videos and PowerPoints for each chapter, this book will be essential reading for students of sustainability and sustainable design.

Complications arising from poor collaboration are the source of a variety of the construction industry's biggest problems. It is now widely recognized that an effective collaboration strategy based on the implementation of information systems and careful consideration of the wider organizational issues is key to delivering construction projects successfully. Against a backdrop of rapidly developing communication technologies, and continuing efforts to improve working practices, this book provides clear explanations of how to successfully devise and implement a collaboration strategy. The concepts introduced include: collaborative working as a holistic concept in construction a new framework on how to plan and implement effective collaboration change management approaches for introducing collaborative working systems, and implementing new technologies in construction projects. Examinations of emerging technologies like mobile and wireless are combined with overviews of relevant management theories, and industry case studies, to provide a comprehensive guide suitable for both practitioners and students. Underpinned by research carried out by leading academics in co-operation with practitioners using the latest technologies, this is the most up-to-date and relevant guide to this crucial subject available. This is essential reading for all practitioners and serious students of management in the built environment.

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.

Brings together leading thinking on issues of new professional practice and on the future of a sustainable built environment This book focuses on both construction and development issues, and examines how we can transition to a sustainable future by the year 2050—bringing together leading research and practice at building, neighbourhood, and city levels. It deftly analyses how emerging socio-economic, technological, and environmental trends will influence the built environment of the future. The book covers a broad spectrum of interests across the scales of buildings, communities and cities, including how professional practice will need to adapt to these trends. The broader context is provided by an analysis of emergent business models and the changing requirements for expert advice from clients. Sustainable Futures in the Built Environment to 2050: A Foresight Approach to Construction and Development features chapters covering: data and trends, including historical data and UK and international case studies; policies and practice related to the field; current state of scientific understanding; key challenges; key technological advances (including disruptive and systemic technological innovations); change issues and critical uncertainties; and future visions. It provides: A strong conceptual framework based on a 'Foresight' approach Discussion of the key data and trends that underpin each chapter Coverage of both construction and property development Specially commissioned chapters by academics and practitioners A synthesis of the main findings in the book and key insights for the future to 2050 Sustainable Futures in the Built Environment to 2050: A Foresight Approach to Construction and Development is an important book for postgraduate students and researchers, construction, real estate and property development specialists, engineers, planners, architects, foresight and futures studies specialists, and anyone involved in sustainable buildings.

Buildings and infrastructure represent principal assets of any national economy as well as prime sources of environmental degradation. Making them more sustainable represents a key challenge for the construction, planning and design industries and governments at all levels; and the rapid urbanisation of the 21st century has turned this into a global challenge. This book embodies the results of a major research programme by members of the Australia Co-operative Research Centre for Construction Innovation and its global partners, presented for an international audience of construction researchers, senior professionals and advanced students. It covers four themes, applied to regeneration as well as to new build, and within the overall theme of Innovation: Sustainable Materials and Manufactures, focusing on building material products, their manufacture and assembly – and the reduction of their ecological 'fingerprints', the extension of their service lives, and their re-use and recyclability. It also explores the prospects for applying the principles of the assembly line. Virtual Design, Construction and Management, viewed as increasing sustainable development through automation, enhanced collaboration (such as virtual design teams), real time BL performance assessment during design, simulation of the construction process, life-cycle management of project information (zero information loss) risk minimisation, and increased potential for innovation and value adding. Integrating Design, Construction and Facility Management over the Project Life Cycle, by converging ICT, design science engineering and sustainability science.

Integration across spatial scales, enabling building–infrastructure synergies (such as water and energy efficiency). Convergences between IT and design and operational processes are also viewed as a key platform increased sustainability.

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.

Disasters threaten all parts of the world and they appear to be increasing in frequency, scale and intensity. Despite huge improvements in the emergency response, permanent reconstruction is often uncoordinated, inefficiently managed and slow to begin. International agencies are geared to an efficient response in terms of humanitarian relief, but they are not well versed in the requirements of long-term reconstruction, which is often constrained by lack of planning and poorly coordinated management. The construction industry is typically engaged in a range of critical activities after a disaster, including provision of temporary shelter in the immediate aftermath and restoration of permanent shelter and public infrastructure once the immediate humanitarian needs have been attended to. Post-Disaster Reconstruction of the Built Environment identifies the challenges that face the industry and highlights best practice to enable the construction industry to address those problems which make an effective response to these unexpected events difficult. Written by an international team of experts, this book will help researchers and advanced students of construction understand the problems faced by communities and the construction industry when faced with a natural or man-made disaster, and identify the planning and management processes required by the industry to mount an effective response.

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