

## Building Services Engineering Lecture Notes

This book describes the latest advances, innovations, and applications in the field of building design, environmental engineering and sustainability as presented by leading international researchers, engineers, architects and urban planners at the 3rd International Sustainable Buildings Symposium (ISBS), held in Dubai, UAE from 15 to 17 March 2017. It covers highly diverse topics, including smart cities, sustainable building and construction design, sustainable urban planning, infrastructure development, structural resilience under natural hazards, water and waste management, energy efficiency, climate change impacts, life cycle assessment, environmental policies, and strengthening and rehabilitation of structures. The contributions amply demonstrate that sustainable building design is key to protecting and preserving natural resources, economic growth, cultural heritage and public health. The contributions were selected by means of a rigorous peer-review process and highlight many exciting ideas that will spur novel research directions and foster multidisciplinary collaboration among different specialists.

These proceedings gather selected peer-reviewed papers from the 11th World Congress on Engineering Asset Management (WCEAM), which was held in Jiuzhaigou, China, on 25–28 July, 2016. These proceedings cover a wide range of topics in engineering asset management, including: · strategic asset management; · condition monitoring and diagnostics; · integrated intelligent maintenance; · sensors and devices; · information quality and management; · sustainability in asset management; · asset performance and knowledge management; · data mining and AI techniques in asset management; · engineering standards; and · education in engineering asset management. The breadth and depth of these state-of-the-art, comprehensive proceedings make them an excellent resource for asset management practitioners, researchers and academics, as well as undergraduate and postgraduate students.

Biografie van de Deense ingenieur (1895-1988).

The nation's physical infrastructure facilitates movement of people and goods; provides safe water; provides energy when and where needed; removes wastes; enables rapid communications; and generally supports our economy and quality of life. Developing a framework for guiding attempts at measuring the performance of infrastructure systems and grappling with the concept of defining good performance are the major themes of this book. Focusing on urban regions, within a context of national policy, the volume provides the basis for further in-depth analysis and application at the local, regional, state, and national levels.

This book presents the combined proceedings of the 12th KIPS International Conference on Ubiquitous Information Technologies and Applications (CUTE 2017) and the 9th International Conference on Computer Science and its Applications (CSA2017), both held in Taichung, Taiwan, December 18 - 20, 2017. The aim of these two meetings was to promote discussion and interaction among academics, researchers and professionals in the field of ubiquitous computing technologies. These proceedings reflect the state of the art in the development of computational methods, involving theory, algorithms, numerical simulation, error and uncertainty analysis and novel applications of new processing techniques in engineering, science, and other disciplines related to ubiquitous computing. James J. (Jong Hyuk) Park received Ph.D. degrees in Graduate School of Information Security from Korea University, Korea and Graduate School of Human Sciences from Waseda University, Japan. From December, 2002 to July, 2007, Dr. Park had been a research scientist of R&D Institute, Hanwha S&C Co., Ltd., Korea. From September, 2007 to August, 2009, He had been a professor at the Department of Computer Science and Engineering, Kyungnam University, Korea. He is now a professor at the Department of Computer Science and Engineering and Department of Interdisciplinary Bio IT Materials, Seoul National University of Science and Technology (SeoulTech), Korea. Dr. Park has published about 200 research papers in international journals and conferences. He has been serving as chair, program committee, or organizing committee chair for many international conferences and workshops. He is a steering chair of international conferences – MUE, FutureTech, CSA, CUTE, UCAWSN, World IT Congress-Jeju. He is editor-in-chief of Human-centric Computing and Information Sciences (HCIS) by Springer, The Journal of Information Processing Systems (JIPS) by KIPS, and Journal of Convergence (JoC) by KIPS CSWRG. He is Associate Editor / Editor of 14 international journals including JoS, JNCA, SCN, CJ, and so on. In addition, he has been serving as a Guest Editor for international journals by some publishers: Springer, Elsevier, John Wiley, Oxford Univ. press, Emerald, Inderscience, MDPI. He got the best paper awards from ISA-08 and ITCS-11 conferences and the outstanding leadership awards from IEEE HPCC-09, ICA3PP-10, IEE ISPA-11, PDCAT-11, IEEE AINA-15. Furthermore, he got the outstanding research awards from the SeoulTech, 2014. His research interests include IoT, Human-centric Ubiquitous Computing, Information Security, Digital Forensics, Vehicular Cloud Computing, Multimedia Computing, etc. He is a member of the IEEE, IEEE Computer Society, KIPS, and KMMS. Vincenzo Loia (BS '85, MS '87, PhD '89) is Full Professor of Computer Science. His research interests include Intelligent Agents, Ambient intelligence, Computational Intelligence. Currently he is Founder & Editor-in-chief of "Ambient Intelligence and Humanized Computing", and Co-Editor-in-Chief of "Softcomputing", Springer-Verlag. He is Chair of the Task Forces "Intelligent Agents" and "Ambient Intelligence" IEEE CIS ETTC. He has been Chair the Emergent Technical Committee "Emergent Technology", IEEE CIS Society and Vice-Chair of Intelligent Systems Applications Technical Committee. He has been author of more than 200 scientific works, Editor/co-editor of 4 Books, 64 journal papers, 25 book chapters, and 100 conference papers. He is Senior member of the IEEE, Associate Editor of IEEE Transactions on Industrial Informatics, and Associate Editor of IEEE Transactions on Systems, Man, and Cybernetics: Systems. Many times reviewers for national and international projects, Dr. Loia is active in the research domain of agents, ambient intelligence, computational intelligence, smartgrids, distributed platform for enrich added value. Gangman Yi in Computer Sciences at Texas A&M University, USA in 2007, and doctorate in Computer Sciences at Texas A&M University, USA in 2011. In May 2011, he joined System S/W group in Samsung Electronics, Suwon, Korea. He joined the Department of Computer Science & Engineering, Gangneung-Wonju National University, Korea, since March 2012. Dr. Yi has been researched in an interdisciplinary field of researches. His research focuses especially on the development of computational methods to improve understanding of biological systems and its big data. Dr. Yi actively serves as a managing editor and reviewer for international journals, and chair of international conferences and workshops. Yunsick Sung received his B.S. degree in division of electrical and computer engineering from Pusan National University, Busan, Korea, in 2004, his M.S. degree in computer engineering from Dongguk University, Seoul, Korea, in 2006, and his Ph.D. degree in game engineering from Dongguk University, Seoul, Korea, in 2012. He was employed as a member of the researcher at Samsung Electronics between 2006 and 2009. He was the plural professor at Shinheung College in 2009 and at Dongguk University in 2010. His main research interests are many topics in brain-computer Interface, programming by demonstration, ubiquitous computing and reinforcement learning. His Journal Service Experiences is Associate Editor at Human-centric Computing and Information Sciences, Springer (2015-Current).

'Several high quality scientific journals are published in the area of building energy and indoor/outdoor environment; however, one has been missing. Advances in Building Energy Research fills the gap. I recommend ABER to all technical libraries, research institutes and universities. It should also be used by construction companies and those manufacturing building materials and building products.' Professor Olli Seppnen, President of REHVA (Federation of Heating and Air-conditioning Associations) 'Advances in Building Energy Research is a unique index. It will be an inexhaustible resource for energy related sciences and a continuous inspiration for architects around the world.' N. Fintikakis, Architect and Director of UIA-ARES WP (Architecture and Renewable Energy Sources) Advances in Building Energy

Research (ABER) offers state-of-the-art information on the environmental science and performance of buildings, linking new technologies and methodologies with the latest research on systems, simulations and standards. As stringently reviewed as a journal but with the breadth of a book, this annual volume brings together invited contributions from the foremost international experts on energy efficiency and environmental quality of buildings. Spanning a broad range of technical subjects, this is a 'must have' reference on global developments in the field, suitable for architects and building engineers, environmental engineers, industry professionals, students, teachers and researchers in building science, technical libraries and laboratories.

This book deals with the energy footprints of biorefineries and the hotel and buildings sector. It presents footprint case studies, which include background information, methodological frameworks, assessment checklists, calculation tools and techniques, applications, challenges and limitations. It also discusses the application of each indicator/framework in various industrial sectors and the associated challenges, along with outlooks for the future. Consumption and conservation of energy are key elements in any industry's sustainability strategy. ?

Presenting an analysis of different approaches for predicting the service life of buildings, this monograph discusses various statistical tools and mathematical models, some of which have rarely been applied to the field. It explores methods including deterministic, factorial, stochastic and computational models and applies these to façade claddings. The models allow (i) identification of patterns of degradation, (ii) estimation of service life, (iii) analysis of loss of performance using probability functions, and (iv) estimation of service life using a probability distribution. The final chapter discusses the differences between the different methodologies and their advantages and limitations. The authors also argue that a better understanding of the service life of buildings results in more efficient building maintenance and reduced environmental costs. It not only provides an invaluable resource to students, researchers and industry professionals interested in service life prediction and sustainable construction, but is also of interest to environmental and materials scientists.

This volume contains revised and extended research articles written by prominent researchers participating in the international conference on Advances in Engineering Technologies and Physical Science was held in Hong Kong, 13-15 March, 2013. Topics covered include engineering physics, engineering mathematics, scientific computing, control theory, automation, artificial intelligence, electrical engineering, and industrial applications. The book offers the state of art of tremendous advances in engineering technologies and physical science and applications, and also serves as an excellent reference work for researchers and graduate students working with/on engineering technologies and physical science and applications.

With rapid economic and industrial development in China, India and elsewhere, fluid-related structural vibration and noise problems are widely encountered in many fields, just as they are in the more developed parts of the world, causing increasingly grievous concerns. Turbulence clearly has a significant impact on many such problems. On the other hand, new opportunities are emerging with the advent of various new technologies, such as signal processing, flow visualization and diagnostics, new functional materials, sensors and actuators, etc. These have revitalized interdisciplinary research activities, and it is in this context that the 2nd symposium on fluid-structure-sound interactions and control (FSSIC) was organized. Held in Hong Kong (May 20-21, 2013) and Macau (May 22-23, 2013), the meeting brought together scientists and engineers working in all related branches from both East and West and provided them with a forum to exchange and share the latest progress, ideas and advances and to chart the frontiers of FSSIC. The Proceedings of the 2nd Symposium on Fluid-Structure-Sound Interactions and Control largely focuses on advances in the theory, experimental research and numerical simulations of turbulence in the contexts of flow-induced vibration, noise and their control. This includes several practical areas for interaction, such as the aerodynamics of road and space vehicles, marine and civil engineering, nuclear reactors and biomedical science etc. One of the particular features of these proceedings is that it integrates acoustics with the study of flow-induced vibration, which is not a common practice but is scientifically very helpful in understanding, simulating and controlling vibration. This offers a broader view of the discipline from which readers will benefit greatly. These proceedings are intended for academics, research scientists, design engineers and graduate students in engineering fluid dynamics, acoustics, fluid and aerodynamics, vibration, dynamical systems and control etc. Yu Zhou is a professor in Institute for Turbulence-Noise-Vibration Interaction and Control at Harbin Institute of Technology. Yang Liu is an associate professor at The Hong Kong Polytechnic University. Lixi Huang, associate professor, works at the University of Hong Kong. Professor Dewey H. Hodges works at the School of Aerospace Engineering, Georgia Institute of Technology.

This volume is the published Proceedings of selected papers from the IFAC Symposium, Swansea, 11-13 July 1988, where a forum was provided for discussion of the latest advances and techniques in the education of control and instrument engineers. Seven major topics were covered to aid lecturers in understanding, developing and presenting systems engineering - control and measurement - as a subject to undergraduate and postgraduate students. The teaching of real-time computer control as a topic and laboratory experiments for both continuous and discrete systems were discussed, as was process control, with the emphasis on providing the student with engineering experience by using scaled-down equipment which would teach practical skills. Included in the Proceedings are papers on measurement and instrumentation, an area felt to be neglected within academic instruction. The development of software tools for systems design within systems engineering was included, as was the exchange of teaching packages and methods between academics, and the education curriculum of systems engineering within developing countries. These Proceedings will prove to be a useful up-to-date guide and reference source for all lecturers and professors involved in curriculum development and the teaching of control and measurement in systems engineering.

This book includes a selection of reviewed papers presented at the 2016 China Academic Conference on Printing, Packaging Engineering & Media Technology, held on November 25-27, 2016 in Xi'an, China. The conference was jointly organized by China Academy of Printing Technology, Xi'an University of Technology and Stuttgart Media University of Germany. The proceedings cover the recent outcomes on color science and technology, image processing technology, digital media technology, digital process

management technology in packaging and packaging etc. They will be of interest to university researchers, R&D engineers and graduate students in graphic communications, packaging, color science, image science, material science, computer science, digital media and network technology fields.

This book presents select proceedings of the International Conference on Sustainable Construction and Building Materials (ICSCBM 2018), and examines a range of durable, energy-efficient, and next-generation construction and building materials produced from industrial wastes and byproducts. The topics covered include alternative, eco-friendly construction and building materials, next-generation concretes, energy efficiency in construction, and sustainability in construction project management. The book also discusses various properties and performance attributes of modern-age concretes including their durability, workability, and carbon footprint. As such, it offers a valuable reference for beginners, researchers, and professionals interested in sustainable construction and allied fields.

This book gathers selected high-impact articles from the 1st International Conference on Data Science, Machine Learning & Applications 2019. It highlights the latest developments in the areas of Artificial Intelligence, Machine Learning, Soft Computing, Human–Computer Interaction and various data science & machine learning applications. It brings together scientists and researchers from different universities and industries around the world to showcase a broad range of perspectives, practices and technical expertise.

Services and service oriented computing have emerged and matured over the last decade, bringing with them a number of available services that are selected by users and developers and composed into larger applications. The Handbook of Research on Non-Functional Properties for Service-Oriented Systems: Future Directions unites different approaches and methods used to describe, map, and use non-functional properties and service level agreements. This handbook, which will be useful for both industry and academia, provides an overview of existing research and also sets clear directions for future work.

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

This book presents articles from the International Conference on Sustainable Design, Engineering, Management, and Sciences (ICSDEMS 2020), held in Bali, Indonesia. It highlights recent advances in civil engineering and sustainability, bringing together researchers and professionals to address the latest, most relevant issues in these areas.

This book presents the selected peer-reviewed proceedings of the International Conference on Recent Trends and Innovations in Civil Engineering (ICRTICE 2019). The volume focuses on latest research and advances in the field of civil engineering and materials science such as design and development of new environmental materials, performance testing and verification of smart materials, performance analysis and simulation of steel structures, design and performance optimization of concrete structures, and building materials analysis. The book also covers studies in geotechnical engineering, hydraulic engineering, road and bridge engineering, building services design, engineering management, water resource engineering and renewable energy. The contents of this book will be useful for students, researchers and professionals working in civil engineering. The Building Services Handbook summarises concisely, in diagrams and brief explanations, all elements of building services. Practice, techniques and procedures are clearly defined with supplementary references to regulations and relevant standards. This is an essential text for all construction/building services students up to undergraduate level, and is also a valuable reference text for building service professionals. This new book is based on Fred Hall's 'Essential Building Services and Equipment 2ed' and has been thoroughly updated throughout. It is a companion volume to the highly popular textbook 'Building Construction Handbook' by Chudley and Greeno, which is now in its fourth edition.

Do Smart Adaptive Systems Exist? is intended as a reference and a guide summarising and focusing on best practices when using intelligent techniques and building systems requiring a degree of adaptation and intelligence. It is therefore not intended as a collection of the most recent research results, but as a practical guide for experts from other areas and industrial users interested in building solutions to their problems using intelligent techniques. One of the main issues covered is an attempt to answer the question of how to select and/or combine suitable intelligent techniques from a large pool of potential solutions. Another attractive feature of the book is that it brings together experts from neural network, fuzzy, machine learning, evolutionary and hybrid systems communities who will provide their views on how these different intelligent technologies have contributed and will contribute to creation of smart adaptive systems of the future.

IT securiteers - The human and technical dimension working for the organisation. Current corporate governance regulations and international standards lead many organisations, big and small, to the creation of an information technology (IT) security function in their organisational chart or to the acquisition of services from the IT security industry. More often than desired, these teams are only useful for companies' executives to tick the corresponding box in a certification process, be it ISO, ITIL, PCI, etc. Many IT security teams do not provide business value to their company. They fail to really protect the organisation from the increasing number of threats targeting its information systems. IT Security Management provides an insight into how to create and grow a team of passionate IT security professionals. We will call them "securiteers". They will add value to the business, improving the information security stance of organisations.

Proceedings of the 8th International Symposium on Heating, Ventilation and Air Conditioning is based on the 8th International Symposium of the same name (ISHVAC2013), which took place in Xi'an on October 19-21, 2013. The conference series was initiated at Tsinghua University in 1991 and has since become the premier international HVAC conference initiated in China, playing a significant part in the development of HVAC and indoor environmental research and industry around the world. This international conference provided an exclusive opportunity for policy-makers, designers, researchers, engineers and managers to share their experience. Considering the recent attention on building energy consumption and indoor environments, ISHVAC2013 provided a global platform for discussing recent research on and developments in different aspects of HVAC systems and components, with a focus on building energy consumption, energy efficiency and indoor environments. These categories span a broad range of topics, and the proceedings provide readers with a good general overview of recent advances in different aspects of HVAC systems and related research. As such, they offer a unique resource for further research and a valuable source of information for those interested in the subject. The proceedings are intended for researchers, engineers and graduate students in the fields of Heating, Ventilation and Air Conditioning (HVAC), indoor environments, energy systems, and building information and management. Angui Li works at Xi'an University of Architecture and Technology, Yingxin Zhu works at Tsinghua University and Yuguo Li works at The University of Hong Kong.

This proceeding represents state-of-the-art trends and developments in the emerging field of engineering asset management as presented at the Eight World Congress on Engineering Asset Management (WCEAM). The Proceedings of the WCEAM 2013 is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering topics such as: Asset condition monitoring and intelligent maintenance, 2. Asset data warehousing, data mining and fusion, 3. Asset performance and level-of-service models, 4. Design and life-cycle integrity of physical assets, 5. Deterioration and preservation models for assets, 6. Education and training in asset management, 7. Engineering standards in asset management, 8. Fault diagnosis and prognostics, 9. Financial analysis methods for physical assets, 10. Human dimensions in integrated asset management, 11. Information quality management, 12. Information systems and knowledge management, 13. Intelligent sensors and devices, 14. Maintenance strategies in asset management, 15. Optimisation decisions in asset management, 16. Risk management in asset management, 17. Strategic asset management, 18. Sustainability in asset management. King WONG served as Congress Chair for WCEAM 2013 and ICUMAS 2013 is the President of the Hong Kong Institute of Utility Specialists (HKIUS) and Convener of International Institute of Utility Specialists (IIUS). Peter TSE is the Director of the Smart Engineering Asset Management laboratory (SEAM) at the City University of Hong Kong and served as the Chair of WCEAM 2013 Organising Committee. Joseph MATHEW served as the Co-Chair of WCEAM 2013 is also WCEAM's General Chair. He is the Chief Executive Officer of Asset Institute, Australia.

The idea about this book has evolved during the process of its preparation as some of the results have been achieved in parallel with its writing. One reason for this is that in this area of research results are very quickly updated. Another is, possibly, that a strong, unchallenged theoretical basis in this field still does not fully exist. From other hand, the rate of innovation, competition and demand from different branches of industry (from biotech industry to civil and building engineering, from market forecasting to civil aviation, from robotics to emerging e-commerce) is increasingly pressing for more customised solutions based on learning consumers behaviour. A highly interdisciplinary and rapidly innovating field is forming which focus is the design of intelligent, self-adapting systems and machines. It is on the crossroads of control theory, artificial and computational intelligence, different engineering disciplines borrowing heavily from the biology and life sciences. It is often called intelligent control, soft computing or intelligent technology. Some other branches have appeared recently like intelligent agents (which migrated from robotics to different engineering fields), data fusion, knowledge extraction etc., which are inherently related to this field. The core is the attempts to enhance the abilities of the classical control theory in order to have more adequate, flexible, and adaptive models and control algorithms.

This book provides a comprehensive, systematic overview of original theoretical, experimental, and numerical studies in the building services engineering domain. It brings together different strands of the topic, guided by the two key features of energy savings and reduction of the pollutant emissions. Technical, economic, and energy efficiency aspects related to the design, modelling, optimisation, and operation of diverse building services systems are explored. This book includes various theoretical studies, numerical and optimisation models, experiments, and applications in this field, giving an emphasis to: indoor environment quality assurance; energy analysis, modelling, and optimisation of heating systems; improving the energy performance of refrigeration and air-conditioning systems; valorising the solar and geothermal energies; analysis of thermal energy storage technologies; hydraulic simulation and optimisation of water distribution systems; and improving the energy efficiency of water pumping. With 11 pedagogically structured chapters, containing numerous illustrations, tables, and examples, this book provides researchers, lecturers, engineers, and graduate students with a thorough guide to building service engineering.

Edited by Jussi Kantola, the founding faculty member of the world's first university Knowledge Service Engineering Department at Korea Advanced Institute of Science and Technology, and Waldemar Karwowski from the Department of Industrial Engineering and Management Systems at UCF, Knowledge Service Engineering Handbook defines what knowledge services engineering means and how it is different from service engineering and service production. This groundbreaking handbook explores recent advances in knowledge service engineering from the accomplished researchers and practitioners in this field from around the world and provides engineering, systemic, industry, and consumer use viewpoints to knowledge service systems and engineering paradigms. The handbook outlines how to acquire and utilize knowledge in the 21st century presenting multiple cultural aspects including US, European, and Asian perspectives. Organized into four parts, it begins with an introduction to the main concepts of knowledge services. It then explores data, information and knowledge based engineering methods and applications that can be used to develop knowledge services, followed by discussions of the importance of human networks in knowledge services. The handbook concludes with descriptions of high-performance knowledge service systems. This structure allows different uses: the information can be looked up as needed or read in the order presented. As with any new field, the excitement lies in seeing how to combine these advances in data, information, and human parts of knowledge services in the future. While most books on this subject concentrate on data, information, or knowledge, this handbook integrates coverage of all three, thus providing a complete examination of sustainable knowledge services. The handbook has been carefully designed to be of use to professionals who develop new knowledge services and related businesses, for academic researchers and lecturers to start new research projects, and for students studying knowledge services, knowledge service production, and knowledge service business.

The Industrial Ventilation Design Guidebook addresses the design of air technology systems for the control of contaminants in industrial workplaces such as factories and manufacturing plants. It covers the basic theories and science behind the technical solutions for industrial air technology and includes publication of new fundamental research and design equations contributed by more than 40 engineers and scientists from over 18 countries. Readers are presented with scientific research and data for improving the indoor air quality in the workplace and reducing emissions to the outside environment. The Guidebook represents, for the first time, a single source of all current scientific information available on the subject of industrial ventilation and the more general area of industrial air technology. New Russian data is included that fills several gaps in the scientific literature. \* Presents technology for energy optimization and environmental benefits \* A collaborated effort from more than 60 ventilation experts throughout 18 countries \* Based on more than 50 million dollars of research and development focused on industrial ventilation \* Includes significant scientific contributions from leading ventilation experts in Russia \* Presents new innovations including a rigorous design methodology and target levels \* Contains extensive sections on design with modeling techniques \* Content is well organized and easily adaptable to computer applications

Intelligent buildings provide stimulating environments for people to work and live in. This book brings together a body of the latest knowledge about design, management, technology and sustainability set against the background of developments in the cultural landscapes, which affect those living and working in buildings.

This handbook contains information and practical guidance on the environmental issues likely to be encountered at each stage in the tendering and construction phases of a building or civil engineering project. It is aimed at informing construction managers, clients, designers and other consultants, engineers and scientists on their obligations and the opportunities open to them to improve the industry's environmental performance.

Course on Engineering of Building Services Lecture Notes IAENG Transactions on Engineering Sciences Special Issue of the International MultiConference of Engineers and Computer Scientists 2013 and World Congress on Engineering 2013 CRC Press

This book focuses on current subcontracting practices in the construction industry and their effects on Singapore's construction productivity. It offers readers a better understanding of how the fragmentation of large and small firms in Singapore impacts construction productivity when operating under the commonly adopted multilayer subcontracting system (MLSS), which extends globally to the construction industries in other countries that have adopted the MLSS. The book also assesses the effectiveness of subcontracting practices in helping local contractors improve their construction productivity (and thereby improve the industry's overall productivity). In closing, it provides recommendations on how the problems associated with the MLSS can best be addressed, and how its benefits can be capitalized on through organizational learning.

This book highlights current research and developments in the area of Structural Engineering and Construction Management, which are important disciplines in Civil Engineering. It covers the following topics and categories of Structural Engineering. The main chapters/sections of the proceedings are Structural and Solid Mechanics, Construction Materials, Systems and Management, Loading Effects, Construction Safety, Architecture & Architectural Engineering, Coastal Engineering, Foundation engineering, Materials, Sustainability. The content of this book provides necessary knowledge for construction management practices, new tools and technologies on local and global levels in civil engineering which can mitigate the negative effects of built environment.?

Two large international conferences on Advances in Engineering Sciences were held in Hong Kong, March 13-15, 2013, under the International MultiConference of Engineers and Computer Scientists (IMECS 2013), and in London, U.K., 3-5 July, 2013, under the World Congress on Engineering 2013 (WCE 2013) respectively. IMECS 2013 and WCE 2013 were organized

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