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The 19th CIRP Conference on Life Cycle Engineering continues a strong tradition of scientific meetings in the areas of sustainability and engineering within the community of the International Academy for Production Engineering (CIRP). The focus of the conference is to review and discuss the current developments, technology improvements, and future research directions that will allow engineers to help create green businesses and industries that are both socially responsible and economically successful. The symposium covers a variety of relevant topics within life cycle engineering including Businesses and Organizations, Case Studies, End of Life Management, Life Cycle Design, Machine Tool Technologies for Sustainability, Manufacturing Processes, Manufacturing Systems, Methods and Tools for Sustainability, Social Sustainability, and Supply Chain Management. This book constitutes the refereed proceedings of the Second International Conference on Decision Support Systems Technology, ICDSST 2016, held in Plymouth, UK, May 23-25. The theme of the event was “Decision Support Systems Addressing Sustainability & Societal Challenges”, organized by the EURO (Association of European Operational Research Societies) working group of Decision Support Systems (EWG-DSS). The 15 full papers presented in this book were selected out of 51 submissions after being carefully reviewed by internationally experts from the ICDSST 2016 Program Committee and external invited reviewers. The selected papers are representative of current and relevant research activities in various areas of decision support systems, such as sustainability and societal challenges; risk management and project portfolio management; business intelligence and knowledge management; and technologies to improve system usability. Achieving corporate sustainability (CS) is one of the most difficult challenges facing organizations in the twenty-first century. This comprehensive Handbook examines the current status and future direction of sustainability frameworks and applications in the corporate environment. Internationally reputed scholars portray the frameworks of CS practices in contemporary businesses. They explore in detail

these frameworks and the associated computer-based modelling tools that companies are using, or can use, to aid their decision-making with regards to CS and corporate social responsibility practices. The contributors expertly investigate the future direction of model-based applications in CS as well as related planning processes. This innovative and informative Handbook will provide a timely reminder to scholars, government agencies, international bodies, academics and practitioners that appropriate decision-making and a correct understanding of these complex problems are essential to the success of CS planning. The objective of the DSS is to provide a guide to the user about the most convenient process for the used and / or damaged equipment: recycling, repair, recovery, ...i.e, to assist managers in determining management options for different types of such equipment, giving priority to sustainable use of resources, reuse and recycling. For the decision, the DSS will be based on real-time data of reverse logistics costs, costs of materials and processes necessary for the treatment, environmental costs, etc., all of them averaged according to flexible and programmable criteria. The DSS will consist of several modules, including a data entry repository in a local database, a cost calculation module, a repository of applicable legislation and regulations, a decision module, a user interface and an API to highlight toDDBB remotes, etc. The DSS system willbe applied to a real project. Nowadays, decision makers and stakeholders more and more require information on the effectiveness to exploit renewable energy sources. Methods and tools are more and more required to support their decisions as regards renewable power plant installations both from the choice of the proper location and from the choice of the proper technology viewpoints. This book provides an overall methodology to evaluate the sustainability of a WPP in specific sites according to a three-fold model: the wind model, the WPP model, and the cost/benefit evaluation. The book proposes an environmental decision support system for the sustainable design of wind power plants both in terms of the site selection over a regional territory and of the optimal technology to be installed. Optimal control problems for real

time operational management, as well as an artificial neural network model for solar potential analysis are presented. This book enables researchers, engineers, private investors and public policy-makers to access the technical, economical and environmental potential for large-scale investments in wind and solar technologies. This is an edited book based on the selected submissions made to the conference titled "International Conference in Smart Cities". The project provides an innovative and new approach to holistic management of cities physical, socio-economic, environmental, transportation and political assets across all domains, typically supported by ICT and open data. Crop modelling has huge potential to improve decision making in farming. This collection reviews advances in next-generation models focused on user needs at the whole farm system and landscape scale. The continued growth of any nation depends largely on the development of their built infrastructures and communities. By creating stable infrastructures, countries can more easily thrive in competitive international markets. Sustainable Infrastructure: Breakthroughs in Research and Practice examines sustainable development through the lens of transportation, waste management, land use planning, and governance. Highlighting a range of topics such as sustainable development, transportation planning, and regional and urban infrastructure planning, this publication is an ideal reference source for engineers, planners, government officials, developers, policymakers, legislators, researchers, academicians, and graduate-level students seeking current research on the latest trends in sustainable infrastructure. The field of Information Systems has been shifting from an ‘immersion view’, which relies on the immersion of information technology (IT) as part of the business environment, to a ‘fusion view’ in which IT is fused within the business environment, forming a unified fabric that integrates work and personal life, as well as personal and public information. In the context of this fusion view, decision support systems should achieve a total alignment with the context and the personal preferences of users. The advantage of such a view is an opportunity of seamless integration between enterprise environments

and decision support system components. Thus, researchers and practitioners have to address the challenges of dealing with this shift in viewpoint and its consequences for decision making and decision support systems theories and applications. This book presents the latest innovations and advances in decision support systems with a special focus on the fusion view. These achievements will be of interest to all those involved and interested in decision making practice and research, as well as, more generally, in the fusion view of modern information systems. The book covers a wide range of topical themes including a fusion view of business intelligence and data warehousing, applications of multi-criteria decision analysis, intelligent models and technologies for decision making, knowledge management, decision support approaches and models for emergency management, and medical and other specific domains. The World Sustainable Development Outlook series has been developed to provide an overview of sustainable development, to discuss why it is important and to provoke forward thinking on the development of a more coherent approach to solving global problems related to sustainability through science and technology. In doing so, a holistic approach is used to critically examine the interrelationship between the natural, governmental, economic and social dimensions of our world and how science and technology can contribute to solutions. This is a truly global source book, which is reflected in the varied national and cultural origins of the contributors, as well as the topics and case studies covered. Each year a different theme will be covered. The theme of World Sustainable Development Outlook 2007 is the different dimensions of knowledge and technology management in the new era of information revolution and how they relate to sustainable development. Rapid innovation in information and communication technologies (ICTs) is clearly reshaping the world we live in. Countries are increasingly judged by whether they are information-rich or information-poor. It is estimated that 30–40% of the world's economic growth and 40–50% of all new jobs will be IT-driven. Education and knowledge are the chief currencies of the modern age, and can also be

a strategic resource and a lifeline for sustainable development. Yet, in Africa, millions of people have never made a telephone call. The technological gulf between developed and developing countries (DCs) is likely to widen further with the rapid expansion of the internet and the speedy transition to digitalisation in the West. The impacts on DCs may include an increase in the so-called brain drain and growing dependence on foreign aid of a different kind – knowledge aid. There are fears that knowledge imperialism is already with us. What is clear is that most of the technological innovations in ICTs are Western-designed and fail to address the needs of the most disadvantaged. The interest of industrialised countries in the use of ICTs in DCs has largely been more concerned with the profitability of their own business enterprises than with any broader goals concerning the development of the host countries. DCs face the challenge of either becoming an integral part of the knowledge-based global economy or the very real danger of finding themselves on the wrong side of the digital divide. Successful management in the new millennium requires developing new methods and approaches to meet the challenges and opportunities of this information revolution while at the same time fostering sustainable development. Adopting a holistic approach, this book aims to critically examine the interrelationship between these different issues in order to reach solutions and a consensus for a better future, taking into account a variety of international, institutional and intellectual perspectives. It uses case and country studies in technological innovation and experience so that lessons in effective management of ICTs can be learned from successful initiatives, ideas and innovations. Information and Communication Technology for Sustainable Development shows how ICT, as an enabler for all spheres of development, can help innovate business processes and operations, and provide faster integration of new technologies into business systems. Focused on sustainability, the book addresses strategic approaches to cope with a range of climatic, environmental, cyber-security threats and other global risks, and aims to promote prosperity and economic growth. Furthermore, it explores how the

adoption of new technologies, and collective action based upon a strategic behavioral theory of new leadership, can be applied when responding to specific set of conditions that allow for the proposed strategies to cope with risks. Information technology and strategic planning complement each other to attain the sustainable development goals (SDGs). Risk management frameworks, business continuity systems, and strategic planning methodologies such as mechanism design theory, strategic adaptive cognition (SAC), and risk mechanism theory (RMT) are the fundamental components needed to have a universal approach embedded into the national development plans agenda. As technology no longer follows an orderly, linear path, but improves exponentially, developing a strategic approach to ICT implementation help world leaders in the difficult but inspiring task of making a sustainable world and consequently find solutions to achieve the SDGs and the desired growth pattern that must be sustained, inclusive and equitable. Features: Discusses for the first time the potential of ICT as a transformative power in finding solutions to climatic and economic issues. Illustrates comprehensive strategic planning for leaders to implement in both public and private organizations. Integrates standards and frameworks in the context of sustainable development along with the UN Sustainable Development Goals. Describes in detail how mechanism design, risk management, business continuity systems, a comprehensive strategic planning using SAC (Strategic Adaptive Cognition) and risk mechanism theory can be used to address environmental risks and attain sustainable development goals (SDGs). Explains eHealth as an adaptation strategy to address future changes in climate and impacts, and the links between mitigation and adaptation to ICTs. In recent years, the U.S. Environmental Protection Agency (EPA) has invested substantial resources into the research and development of computerized decision-support systems (DSS), with the aim of supporting more sustainable development and water resource management at the community level. As documented in Chapter 2, this strategy is firmly ingrained within the agency's research and development program and is part of a broader

shift away from media-specific risk-assessment and regulation towards a more de-centralized and collaborative approach, which seeks to encourage development that is socially, economically, and environmentally sustainable through a combination of multi-objective problem solving, innovation, and systems-based science and technology. Chapter 3 summarizes the fifty-year evolution of computerized DSS for community development and water resource management, including the 'bottleneck' between increasing DSS development and the persistent lack of adoption among community practitioners. Existing conceptual models and common methods of researching the (non-)adoption of DSS have provided little practical insight into the why this bottleneck exists, and what if anything can be done to overcome it. Chapter 4 details a comparative evaluation of three DSS developed to assist local land use planners in predicting the impact of land use change on stormwater runoff. The evaluation highlights tradeoffs between system attributes related to three constructs: 'legitimacy', 'organizational fit', and 'programmability', as well as the effect of specific design alternatives and a potentially 'optimal' overall design. Chapters 5 and 6 describe a mixed-methods investigation of the empirical validity, historical development, and community adoption of a DSS developed to aid local public health professionals in predicting water quality at Great Lakes beaches. This investigation included an empirical validation of the 'Virtual Beach' DSS, a 'tracer study' of the its ten-year R&D process, and a series of in-depth case studies of system's (non-)adoption among five coastal communities. In addition to providing grounded theory on the (non-) adoption of DSS, this study illustrated the methodological advantages and practical benefits of conducting long-term, process-oriented research on DSS (non-)adoption, as well as the steep institutional barriers to this approach. Endocrinology of Cardiovascular Function is a fitting inauguration to the Endocrine Update Series. The aim of these publications is to provide the clinician with cutting edge, yet succinct, access to the latest advances in endocrinology. Historically, our understanding of hormonal disturbances was restricted to the classical

secretory glands and their targets. As Endocrinology of Cardiovascular Function so aptly indicates, endocrinology is no longer constrained by our early physiologic understanding of glandular disorder. Endocrinology of Cardiovascular Function has set the standard of excellence for the future volumes in this series. Shlomo Melmed, M.D. Series Editor, Endocrine Update Growth factors such as IGF-1 play important roles in cardiovascular cell hypertrophy and the response to acute vascular injury. From another perspective, traditional endocrine hormones, such as estrogen, have been found to participate in preventing the development of atherosclerosis in women, acting through novel mechanisms on target vascular cells. Other `endocrine' hormones, such as PTHRP and adrenomedullin, also modulate cardiovascular and renovascular dynamic states, suggesting new roles for these peptides as vasodilators. This multi-authored text is dedicated to highlighting emerging and important new information regarding the endocrinology of the cardiovascular system. Ellis R. Levin, M.D. This committee report, Sustainability Criteria for Water Resource Systems, addresses the need and challenge to reexamine our approaches to water resources planning and management. Water resource systems need to be able to satisfy the changing demands placed on them, now and on into the future, without system degradation. In order to create these sustainable systems, a more holistic and integrated life-cycle approach to water resources planning, development, and management must take place. Such an approach should lead to plans, facilities, and policies that will be physically, economically, environmentally, ecologically, and socially acceptable and beneficial by current as well as future generations. This document examines many of the major issues and challenges raised by the concept of sustainability applied to water resource system design and management. Various suggested guidelines are reviewed including the extent to which they have been applied in the development and management of water resource systems. Some approaches for measuring and modeling sustainability are outlined, and ways are illustrated in which these measures and models might be used when evaluating designs and operating policies.

While this manual focuses on the contributions scientists, engineers, economists, and planners can make, it recognizes that the public stakeholders and their political representatives and institutions must also contribute to efficient and sustainable water management. 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. As national and international concern over sustainable resources becomes more prevalent, the need for decision support systems (DSS) increases. The applicable uses of a successful system can assist in the sustainability of resources, as well as the efficiency and management of the agri-environment industry. Decision Support Systems in Agriculture, Food and the Environment: Trends, Applications and Advances presents the development of DSS for managing agricultural and environmental systems, focusing on the exposition of innovative methodologies, from web-mobile systems to artificial intelligence and knowledge-based DSS, as well as their applications in every aspect from harvest planning to international food production and land management. This book provides an in depth look into the growing importance of DSS in agriculture. This book provides a global perspective on the various issues that the industry has to face as well as to provide some key global strategies that can help coping with those global challenges, such as collaboration, strategic value chain planning, and interdependency analyses. It presents literature reviews, strategic research orientations, assessment of some current key issues, and state-of-the-art methodologies. This unique book dicusses the latest research, innovative ideas, challenges and computational intelligence (CI) solutions in sustainable computing. It presents novel, in-depth fundamental research on achieving a sustainable lifestyle for society, either from a methodological or from an application perspective. Sustainable computing has expanded to become a

significant research area covering the fields of computer science and engineering, electrical engineering and other engineering disciplines, and there has been an increase in the amount of literature on aspects sustainable computing such as energy efficiency and natural resources conservation that emphasizes the role of ICT (information and communications technology) in achieving system design and operation objectives. The energy impact/design of more efficient IT infrastructures is a key challenge in realizing new computing paradigms. The book explores the uses of computational intelligence (CI) techniques for intelligent decision support that can be exploited to create effectual computing systems, and addresses sustainability problems in computing and information processing environments and technologies at the different levels of CI paradigms. An excellent guide to surveying the state of the art in computational intelligence applied to challenging real-world problems in sustainable computing, it is intended for scientists, practitioners, researchers and academicians dealing with the new challenges and advances in area. This book reviews the current state-of-the-art within each of the four major themes: science and policy; inventory and monitoring; statistics and modelling; and information and knowledge management, in the context of sustainable forestry. It fosters dialogue across thematic areas concerning both strategic and operational approaches to integrate research on sustainable forestry. It also enhances and encourages international collaboration towards sustainable forestry practice worldwide. "This reference explores some of the most recent developments in sustainability, delving into topics beyond environmental science to cover issues of sustainable economic, political, and social development"--Provided by publisher. Acclaim for the first edition: Š The book Handbook of Sustainable Development Planning is perfect for readers in different professions who deal with planning and development management. It contains interesting theoretical considerations, provoke In recent years, much work has been done in formulating and clarifying the concept of sustainable development and related theoretical and research issues. Now, the

challenge has shifted to designing and stimulating processes of effective planning and decision-making, at all levels of human activity, in such a way as to achieve local and global sustainable development. Information technology can help a great deal in achieving sustainable development by providing well-designed and useful tools for decision makers. One such tool is the decision support system, or DSS. This book explores the area of DSS in the context of sustainable development. As DSS is a very new technique, especially in the developing world, this book will serve as a reference text, primarily for managers, government officials, and information professionals in developing countries. It covers the concept of sustainable development, defines DSS and how it can be used in the planning and management of sustainable development, and examines the state of the art in DSS use. Other interested readers will include students, teachers, and analysts in information sciences; DSS designers, developers, and implementors; and international development agencies. In recent decades, practices like the cultivation of a few high-yielding crop varieties on a large scale, the application of heavy machinery and continued mechanization of agriculture, the removal of natural habitats, and the application of pesticides and synthetics have resulted in the simplification of agro-ecosystems. This has enabled a substantial increase in food production but has at the same time transformed landscapes. Indeed, there is a concern that a decline in biodiversity has affected microbiome activities that support processes across soils, plants, animals, the marine environment, and humans. Although they have increased food production, the above practices cannot be considered sustainable in long-term applications. Biodiversity, Functional Ecosystems, and Sustainable Food Production explore ecosystems in terms of crop and animal production, pest and disease control, nutrient cycling, and soil fertility. Chapters range from agro-biodiversity to antimicrobial use in animal food production to microbiome applications for sustainable food systems and the impacts of environment-friendly unit operations on the functional properties of bee pollen. By examining such topics about each other, the text

emphasizes how food production, ecosystem function, food quality, and consumer health are all interconnected. This book constitutes the proceedings of the 4th International Conference on Decision Support Systems, ICDSST 2018, held in Heraklion, Greece, in May 2018. The main topic of this year's conference was "Sustainable Data-Driven and Evidence Based Decision Support". The 15 papers presented in this volume were carefully reviewed and selected from 71 submissions. They were organized in topical sections named: decision support systems for a sustainable society; decision support systems serving the public; decision support systems in management and organization; and advances in decision support systems' technologies and methods. The EWG-DSS series of International Conference on Decision Support System Technology (ICDSST), starting with ICDSST 2015 in Belgrade, were planned to consolidate the tradition of annual events organized by the EWG-DSS in offering a platform for European and international DSS communities, comprising the academic and industrial sectors, to present state-of-the-art DSS research and developments, to discuss current challenges that surround decision-making processes, to exchange ideas about realistic and innovative solutions, and to co-develop potential business opportunities. The two volumes IFIP AICT 414 and 415 constitute the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2013, held in University Park, PA, USA, in September 2013. The 133 revised full papers were carefully reviewed and selected for inclusion in the two volumes. They are organized in 4 parts: sustainable production, sustainable supply chains, sustainable services, and ICT and emerging technologies. Plymouth, UK, 23-25 May 2016 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. Weed management Decision Support Systems (DSS)

are increasingly important computer-based tools for modern agriculture. Nowadays, extensive agriculture has become highly dependent on external inputs and both economic costs, as well the negative environmental impact of agricultural activities, demands knowledge-based technology for the optimization and protection of non-renewable resources. In this context, weed management strategies should aim to maximize economic profit by preserving and enhancing agricultural systems. Although previous contributions focusing on weed biology and weed management provide valuable insight on many aspects of weed species ecology and practical guides for weed control, no attempts have been made to highlight the forthcoming importance of DSS in weed management. This book is a first attempt to integrate `concepts and practice' providing a novel guide to the state-of-art of DSS and the future prospects which hopefully would be of interest to higher-level students, academics and professionals in related areas. An international group of experts review guidelines for achieving sustainability in water resource systems. This series is directed to diverse managerial professionals who are leading the transformation of individual domains by using expert information and domain knowledge to drive decision support systems (DSSs). The series offers a broad range of subjects addressed in specific areas such as health care, business management, banking, agriculture, environmental improvement, natural resource and spatial management, aviation administration, and hybrid applications of information technology aimed to interdisciplinary issues. This book series is composed of three volumes: Volume 1 consists of general concepts and methodology of DSSs; Volume 2 consists of applications of DSSs in the biomedical domain; Volume 3 consists of hybrid applications of DSSs in multidisciplinary domains. The book is shaped decision support strategies in the new infrastructure that assists the readers in full use of the creative technology to manipulate input data and to transform information into useful decisions for decision makers. HOW SUSTAINABLE IS INNOVATION? Problematically, most contemporary patterns of innovation in human social systems and organisations are

not sustainable. This prevents people from learning effectively, from recognising and solving their problems, and from operating in sustainable ways. It is arguably why societies, businesses and industries around the world are so unsustainable. Sustainable innovation is a pattern of social learning and problem-solving that is, itself, sustainable. The sustainability of innovation, moreover, is linked to the sustainability of its outcomes, which manifest themselves in what people produce and do in the world. Sustainable innovation, then, is a necessary precondition for sustainability in how societies and organisations function – the ways they organise, the products and services they make, the energy and resources they use, and the wastes they produce. As challenges such as demographic pressures, ethnic tensions, terrorism, global poverty, pandemics and abrupt climate change force their way into mainstream politics and business, so we see growing interest in innovation, entrepreneurial solutions and, critically, issues such as how to ensure successful solutions replicate and scale. Sustainable Innovation aims to illustrate that shift. Instead of simply focusing on environmental and technological matters, it views and evaluates innovation-for-sustainability in terms of the human, social and management challenges and responses. It argues that a just, efficient and sustainable balancing of these elements is best achieved by the development of new knowledge, and by the evolution of better means both of embedding that emerging knowledge in organisations and institutions, and of managing the relevant flows of information, knowledge and wisdom. The book stresses that claims that a particular product, production process or service are sustainable usually assume that an appropriate balance has been achieved between people, planet and profit. However, calculating the sustainability of such things, let alone of complex systems such as enterprises or economies, can be impossible. Instead of "sustainability", the book favours the use of terms such as "making sustainable", emphasising that in dynamic operating environments organisational processes are changing constantly, whether or not they are under effective strategic control by management. Innovation, too, is

dynamic by definition. Sustainable Innovation argues that there must be a constant focus on the triple bottom line of economic, social and environmental value creation during the innovation process. Sustainable innovation is a new challenge for organisations. It is a process that should permeate the whole organisation, in terms of its members, its tasks, its coordination mechanisms and its procedures. Waste or pollution should not be seen as the reason for further intervention downstream, but as an end-of-the-pipe effect, which could be organisationally cured upstream. Developed from the Dutch research programme "Knowledge Creation for Sustainable Innovation", this book presents empirical research and cases to develop a theory of sustainable innovation that is based on management of knowledge, knowledge and cognition and innovation approaches. Sustainable Innovation suggests that knowledge and innovation will be the key drivers of social and corporate sustainability in the years ahead. It will be essential reading for managers and researchers in areas such as sustainability, innovation, knowledge management and organisational learning. For MIS specialists and nonspecialists alike, a comprehensive, readable, understandable guide to the concepts and applications of decision support systems.