

Preface

This book of proceedings contains papers accepted and peer reviewed for the 19th ISPE International Conference on Concurrent Engineering, held at the University of Applied Sciences in Trier, Germany, from September 3 to 7, 2012. The CE Conference series is organized annually by the International Society for Productivity Enhancement (ISPE) and constitutes an important forum for international scientific exchange on concurrent and collaborative enterprise engineering. These international conferences attract a significant number of researchers, industrialists and students, as well as government representatives, who are interested in the recent advances in concurrent engineering research and applications.

Discovered in the late 80's the CE approach is based on the idea that different phases of a product life cycle should be accomplished concurrently and initiated as early as possible within the product creation process (PCP). The main goal of CE is to increase the efficiency of the PCP and to reduce errors in the late phases of the PCP. In the past decades CE has become the substantive basic methodology in many industries (automotive, aerospace, machinery, shipbuilding, consumer goods) and also adopted in the development of new services.

Meanwhile, the initial, basic CE concepts have grown up and have become the foundations of many new ideas, initiatives, approaches and tools. Generally, the present CE concentrates on enterprise collaboration and its many different elements, from integrating people and processes to very specific complete multi/inter-disciplinary solutions. Current research on CE is driven again by many factors like increased customer demands, globalization, (international) collaboration and environmental strategies. The successful application of CE in the past opens also the perspective for applications like overcoming of natural catastrophes und new mobility concepts with electrical vehicles.

The organization committee identified 24 thematic areas within CE and launched the call for papers accordingly. The submissions come from all continents around the world. The conference is entitled: "Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment". This title demonstrates the variety of processes and methods which

influences the modern product creation. Finally the submissions as well as invited talks were collected in 12 sessions led by outstanding researchers and practitioners.

The proceeding contains 100 papers by authors from 26 countries. There are papers which are theoretic, conceptual and strong pragmatic containing industrial best practices. The involvement of more than 20 companies from many industries in the presented papers gives a special importance for this conference.

This book on Concurrent Engineering Approaches for Sustainable Product Development in a Multi-Disciplinary Environment is directed at three constituencies: researchers, design practitioners, and educators. Researchers will find latest research results in product creation processes and related methodologies. Engineering professionals and practitioners will find the current state of concurrent engineering practice, new approaches, methods and their applications. It is also important for educators to include the latest advances and methodologies for engineering curricula.

Part 1 of the proceedings entitled “System Innovation” gives an overview on the new research and development directories on concurrent engineering like disaster recovery and networking. In part 2 a variety of the requirements engineering best practices from industry is highlighted.

Part 3 contains the most papers and outlines the importance of knowledge-based engineering within the concurrent engineering, what kinds of methods to develop, and what is the general approach in the product creation process for capturing and using this knowledge.

Part 4 deals with the broad variety of value engineering in various industries and applications. Part 5 focuses on decision making context in engineering design.

In part 6 the authors discuss and describe specific methodologies dealing with the product and service engineering. Part 7 gives the recent insights into product lifecycle management (PLM). Part 8 deals with various aspects of concurrent engineering within the digital factory.

Part 9 highlights special aspects of consumer-oriented product design and development with applications in transportation, medicine, consumer products and public organizations. Part 10 deals with the broad variety of systems concurrent engineering of complex products especially for aerospace and space applications.

The proceeding are closed with parts 11 and 12 which comprises the recent research on cloud computing in concurrent engineering and web in concurrent engineering, respectively. While not directly related to product development and design, we consider this research important for future applications in the overall product creation process.

We acknowledge the contributions of all authors to this book, and the work of the members of the international program committee who assisted with the review of the original papers submitted and presented at the conference.

You are sincerely invited to consider all of the contributions made by this year’s participants through the presentation of CE2012 papers collated into this book of proceedings, in the hope that you will be further inspired in your work by giving you ideas for new approaches for sustainable product development in a multi-disciplinary environment.

Josip Stjepandić
General Chair, CE 2012
PROSTEP AG, Germany

Georg Rock
General Chair, CE 2012
University of Applied Science Trier, Germany

Cees Bil
Program Chair, CE 2012
RMIT, Australia

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Stjepandic, J.; Rock, G.; Bil, C. (Eds.)

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