

PREFACE

Digital Enterprise Technology: Perspectives and Future Challenges

Manufacturing industry and the associated services are undergoing a period of considerable and sustained change, facilitated by the rapid growth of large Asian economies, such as the Chinese and Indian, the incorporation of Eastern European countries into the European Union and the development of new production capabilities and consumer markets in many other parts of the world. Sustaining innovation and the rapid development of new products and services are key elements for ensuring the competitiveness of manufacturing companies, in a global context.

Digital engineering methods and systems are vitally important for performing key technical and business functions in a distributed and collaborative manner. The product design and engineering systems are gradually being developed to include a variety of tools for DfX as well as incorporate aspects of digital manufacturing. Product Data Management and Product Lifecycle Management systems are now more seamlessly integrated with product design systems, allowing connectivity and management of the global design, production and service processes, across the product lifecycle.

There is growing realisation that the competitiveness of industrial companies in today's global environment is closely associated with the efficiency and performance of its production networks and the logistics of the supply chain operations. These are areas of considerable promise for the development of novel digital modelling and optimisation methods for large and complex systems and networks.

New applications, such as systems integration software for product verification and validation and RFIDs, are having a major impact on the way product quality can be assessed during manufacturing and assembly and on how logistic functions can be executed in industry, respectively. The importance and potential impact of such infusion of digital technologies have not been fully realised as the integration of associated systems and services is still incomplete. These are, therefore, areas in which research and development effort from the academic community should be channelled to deal with the new and challenging areas of digital enterprise technology.

This book contains papers accepted and presented at the 3rd CIRP sponsored International Conference in Digital Enterprise Technology (DET'06) held in Setubal, Portugal, in September 2006. DET 2006 follows on the success of the two previous meetings held in Durham, UK, and Seattle, USA, in 2002 and 2004 respectively. The papers presented represent relevant examples of current state-of-art in the development and use of systems and methods for the digital modelling of global product development and realization processes, in the context of life cycle management.

The presented papers are thematically related to the five technical areas of Digital Enterprise Technology namely;

- *Distributed and Collaborative Design*
- *Process Modelling and Process Planning*
- *Advanced Factory Design and Modelling*
- *Physical-to-Digital Environment Integrators*
- *Enterprise Integration Technologies*

The integrated vision to design and management of products, processes and production systems was introduced in DET'06 through the session in *Production System Evolution* (SPECIES). The relevance of this theme comes from the presentation and discussion of techniques and methods devoted to determining the most appropriate evolution strategy for production systems.

The five keynote papers provide valuable insights on the future trends and challenges of digital enterprise technology. These papers make an important contribution to the definition of perspectives for developing technologies and systems to address the digital design of products, factories and networks.

The Editors and Joint Chairmen of DET'06 would like to gratefully acknowledge the contribution of all colleagues who participated in the meeting with the submission of high quality papers. We would also like to formally thank all those who assisted in any way with the preparation and delivery of DET'06, including the distinguished members of the International Scientific Committee and of the Local Organising Committee, as well as the Publishers of the scientific output of DET'06. We would also like to acknowledge the great contribution of our referees, whose valuable comments improved the quality of papers and consequently enhanced the academic quality of this book.

Finally, we are deeply grateful to the many sponsors of DET'06, whose financial support was essential for the success of the meeting and the outcomes obtained, such as the present book.

The future of the International Conferences in *Digital Enterprise Technology* is well established with the organization already assured for the next events. These meetings will address novel digital technology developments, particularly on novel digital methods and systems for the Design, Modelling, and Verification of Complex Products, Systems and Networks.

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