



European Series  
in Industrial Management

Editor: Prof. Gert Zülch  
University of Karlsruhe

Volume 3 - 2000

**Gert Zülch  
Andreas Rinn  
(eds.)**

**Design and Application of Simulation  
Games in Industry and Services**

Proceedings of the 5th International Workshop on  
Simulation Games in Production Management

Shaker Verlag

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Design and Application of Simulation Games in Industry and Services :  
Proceedings of the 5th International Workshop on Simulation Games in  
Production Management / Gert Zülch, Andreas Rinn (eds.).

- Als Ms. gedr. -

Aachen : Shaker, 2000

(Esim - European Series in Industrial Management ; Bd. 2000,3)

ISBN 3-8265-7388-9

Copyright Shaker Verlag 2000

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Printed in Germany.

ISBN 3-8265-7388-9

ISSN 1437-7675

Shaker Verlag GmbH • P.O. BOX 1290 • D-52013 Aachen

Phone: 0049/2407 /9596-0 • Telefax: 0049/2407/9596-9

Internet: [www.shaker.de](http://www.shaker.de) • eMail: [info@shaker.de](mailto:info@shaker.de)

# Preface

This book describes a scope of simulation games which were presented at the 5th International Workshop on Games in Production Management in Karlsruhe/Ettlingen (Germany). This workshop as well as the previous workshops in Denmark, Finland and Belgium is organised by the Special Interest Group of Simulation Games which is co-ordinated by Professor Jens Riis (University of Aalborg) and Professor Riitta Smeds (Helsinki University of Technology). This group is part of the Working Group 5.7 of the International Federation of Information Processing (*IFIP*). As in the previous workshops, the European Group of University Teachers for Industrial Management (*EHTB*) acted as supporting organisers.

The objective of the seminar series is to enhance learning in production management in academia, industry and services, through the development, application and research of simulation games. After the four previous events one could think that all information on this topic has been disseminated and there is no need for further meetings. However, the great interest of the workshop participants coming from eleven European countries prove the need for further meetings of this Special Interest Group.

This may be based mainly on the continuously changing demands in industry and services for the improvement of any existing business processes. Therefore, universities, business schools, consultancies, companies, etc. are developing new simulation games or improving existing ones in order to teach people specific skills. These skills are relevant to a wide range of tasks, starting with the solving of manufacturing and production problems and ending in service organisation. Therefore, very different planning games are needed.

The aim of the workshop is to discuss the design and the general effects of planning games as well as to focus on specific fields in services and production. The workshop is split into five general aspects:

Firstly, the principle design of planning games will be discussed. Afterwards the focus is on the effects of planning games and how they can be measured. The following three parts concentrate more on specific fields, starting with planning games in services, demonstrating planning games with social aspects in industry and ending with more technically orientated planning games in industry.

The contributions of the proceedings offer the reader a good overview about the state-of-the-art in the broad field of simulation games in production management. The main objectives of this book are to help the reader in

- getting an overview of existing simulation games and trends,
- estimating the benefits of applying simulation games,
- finding the right simulation game for the own training demands,
- customising an existing simulation game,
- designing a new specifically tailored simulation game, or
- improving a given simulation game with the help of new ideas.

Prof. Dr.-Ing. Dipl.-Wirtsch.-Ing.  
Gert Zülch

Dipl.-Wirtsch.-Ing.  
Andreas Rinn





# Contents

<b>Introduction</b>	<b>Page</b>
Computer Supported Planning Games in Production Management <i>Gert Zülch, Andreas Rinn</i>	4
<b>Part A: Design of Planning Games</b>	
Project Games: Managing Project-based Order-to-delivery Processes <i>Juha Evokari, Riitta Smeds, Olli Seppälä, Susanna Virtanen</i>	18
Using Simulation Games in Software Development to Identify and Validate User Needs <i>Antti Latva-Koivisto, Riitta Smeds</i>	29
Games as Individualised Data Providers within the Traditional Case-study Approach <i>Henri Muller(-Malek), Rik Van Landeghem</i>	41
<b>Part B: Effects of Planning Games</b>	
Project Management Simulation Games as a Means for Users' Knowledge Acquisition <i>Juan L. Cano, María J. Sáenz, Matthieu Boher</i>	55
Integrating Management and Engineering Perspectives Through Interactive Learning <i>Alastair Nicholson</i>	70

Improving Change Management Capabilities in Manufacturing: From Theory to Practice <i>Tapani Taskinen</i>	82
---	----

### **Part C: Planning Games in Services**

Moving with Awareness <i>Elke Huth</i>	96
Simulation Game as a Tool for Process Development in the Health Care Sector <i>Mari Ventä</i>	111
Learning Safety Through a Simulation Game <i>Heini Ikävalko</i>	118
Experiencing the Difficulties of Decision Making in Conflicting Multi-criteria Strategy Issues <i>Henri Muller(-Malek), Nicolas Mueller, Erik Tipans, Sergejs Romanovs</i>	125

### **Part D: Planning Games in Industry with Social Aspects**

R&D Process Development with the Evolutionary Simulation Game Method: Two Complementary Case Studies <i>Riitta Smeds, Päivi Haho, Jukka Alvesalo</i>	139
Implementation of Organisational “Bottom-up” Development Ideas <i>Minna Forssén</i>	152
Design of Efficient Assembly Flow and Human Centred Workplaces in Dutch Assembly Companies - A Participatory and Integrative Approach to Increase Productivity and Comfort in Assembly <i>Gu van Rhijn, Michiel de Looze, Bert Tuinzaad</i>	163



Aligning Organisation and its Information Technology <i>Juha Pispä, Inger V. Eriksson</i>	173
<b>Part E: Planning Games in Industry with Technical Aspects</b>	
Different Complexity Levels in the Decision System of a Manufacturing Management Game <i>Xavier Boucher, Patrick Burlat, Marie-Agnes Girard, Yacine Ouzrout</i>	190
Understanding MRP and Using it Correctly - A Simulation Game for Communicating Interrelated Logistical Factors <i>Dirk Ansorge, Arnd Hirschberg, Carsten Selke</i>	212
Interactive Planning Game for Workshop Apprentices <i>Volker Keller, Gert Zülch</i>	222
Comparing Control Strategies in Management Simulation Games <i>Oliver Strate, Ralf Illig</i>	230
<b>The Authors</b>	240