# Table of Contents

Third IEEE International Conference on Engineering of Complex Computer Systems

**Introduction** ix

**Program Committee** x

**Keynote Address**

Problem Complexity 239

*M. Jackson*

**Session 1.A Software Process Models**

Enacting a Software Development Process 3

*M. Chen, B. Liang, R. Lin, F. Wang*

Use of the Process Meta-Model to Describe Requirements Engineering Methodologies 13

*N. Kraiem*

An Experience in Introducing Configuration Management in a Process-Centered Software Engineering Environment 22

*L. Lavazza*

**Session 1.B Real-Time Systems**

Precedence Constraints in Hard Real-Time Distributed Systems 33

*J. Orozco, J. Santos, R. Cayssials, E. Ferro*

Optimal Deadline Assignment for Scheduling Soft Aperiodic Tasks in Hard Real-Time Environments 39

*G. Buttazzo, F. Sensini*

Resolving Conflicts with Committing Transactions in Distributed Real-time Databases 49

*K. Lam, J. Cao, C. Pang, S. Son*

**Session 2.A Software Architecture**

An Architectural Style Decoupling Coordination, Computation and Data 60

*A. Karhinen, J. Kuusela, T. Tallgren*

Engineering Task Models 69

*F. Paterno, C. Mancini, S. Meniconi*

An Approach to Integration Testing Based on Architectural Descriptions 77

*A. Bertolino, P. Inverardi, H. Muccini, A. Rosetti*

**Session 2.B Networking and Protocols**

Optimal Mobile Location Tracking by Multilayered Model Strategy 86

*J. Sun, H. Lee*
A Synthesis Method for Fault-Tolerant and Flexible Multipath Routing Protocols .......................... 96
Y. Hatanaka, M. Nakamura, Y. Kakuda, T. Kikuno

Client-Access Protocols for Replicated Services ........................................................................ 106
C. Karamanolis, J. Magee

Session 3.A Panel: Industrial Experiences: Lessons Learned
Chair: F. Primatessa


Software Testing and Analysis
M. Young

Session 3.C System Design

Cache Based Fault Recovery for Distributed Systems ............................................................. 119
A. Mendelson, N. Suri

Feasibility Concerns in PGM Graphs with Bounded Buffers .................................................. 130
S. Baruah, S. Goddard, K. Jeffay

Session 4.A Keynote Address

On the Criteria to be Used in Decomposing Systems into Modules in Year 2000
P. Ravasio

Session 5.A Software Specification and Design

Evolution: A More Practical Approach than Refinement for Software Development ....................... 142
S. Liu

Hypercharts: Extended Statecharts to Support Hypermedia Specification ..................................... 152
F. Paulo, P. Masiero, M. de Oliveira

A Three Layers Software Development Method: Foundations and Definition .............................. 162
S. Dakhli, C. Toffolon

Session 5.B Distributed Processing

Versatile Real-Time Vision based on a Distributed System of Personal Computers ....................... 174
O. Bruno, L. da Fontoura Costa

Interoperability Issues in Sharing Electronic Healthcare Records —
The Synapses Approach ........................................................................................................ 180
J. Grimson, E. Felton, G. Stephens,
W. Grimson, D. Berry

Object Management for Network-Centric Systems with Mobile Objects ........................................ 186
B. Lavva, O. Holder, I. Ben-Shaul

Session 6.A Panel: Mastering Complexity
Chair: M. Pezze
Session 7.A State of the Art Report

Design Patterns
W. Pree

Session 8.A Keynote Address

Distributed Engineering of Complex Systems: Managing it All
R. Taylor

Session 9.A Software Engineering

The Butterfly Methodology: A Gateway-Free
Approach for Migrating Legacy Information Systems
B. Wu, D. Lawless, J. Bisbal, V. Wade,
J. Grimson, R. Richardson, D. O'Sullivan

Framework for Documenting Design Decisions in Product Families Development
A. Alonso, G. León, J. Dueñas, J. de la Puente

A Language Support Environment for Complex Distributed Real-Time Applications
A. Stoyen, T. Marlowe, M. Younis, P. Petrov

Session 9.B Artificial Intelligence and Neural Networks

Morphologically Realistic Neural Networks
R. Coelho, L. da Fontoura Costa

Bridging the Gap between Users and Complex Decision Support Systems:
The Role of Justification
G. Guida, M. Zanella

ICECCS'97 Industrial Track

Process Improvement Experiments
J. Bacquet, F. Primatesca

Index of Authors