# Table of Contents

Foreword .......................................................................................................................... viii
Committees ....................................................................................................................... ix

**Session 1: Telecommunications I**
Building Business Processes Using a State Transition Model on World Wide Web ........................................... 2
  *S.-H.S. Huang*
Adaptable Software for Communications in Video Conferencing ........................................ 8
  *B. Bharghava*
Real-Time Computing: Meeting the Client’s Demand for Data Access via the Internet ............... 14
  *S.S. Iyengar and B.E. Pangburn*

**Session 2: Software Engineering I**
Model Validation Using Simulated Data .................................................................................. 22
  *S.S. Gokhle, M.R. Lyu, and K.S. Trivedi*
STAR: A CASE Tool for Requirement Engineering ................................................................ 28
  *J. Yen, J. Yin, and W.A. Tiao*
Change Analysis and Management: A Process Model and Its Application within a Commercial Setting ................................................................................................................. 34
  *W. Lam, V. Shankararaman, S. Jones, J. Hewitt, and C. Britton*
Early Prediction of Project Schedule Slippage ........................................................................ 40
  *K. Pillai and V.S.S. Nair*

**Session 3: Embedded Systems**
Ensuring System and Software Reliability in Safety-Critical Systems ........................................ 48
  *W.T. Tsai, R. Mojdehbash, and F. Zhu*
Statecharts Supervision Models for Soft Real-Time Systems ................................................... 54
  *A.M. da Silva Filho*
Use of Integrity Techniques and Risk Assessment in System Design ......................................... 60
  *R.S. Berg and V. Winter*
Reliability Prediction of a Trajectory Verification System ....................................................... 63
  *B. Cukic, D. Chakravarthy, and D. McCaugherty*
On-Board Maintenance for Long-Life Systems ...................................................................... 69
  *A.T. Tai and L. Alkalai*
Applying a Modified EQL Optimization Method to MRL Rule-Based Programs ...................... 75
  *A.M.K. Cheng and J. Wang*
Panel Session 4: Software Reliability and Quality Assurance

Moderator: Rym Mili, University of Texas at Dallas
Panelists: Raúl Appan, Nortel
W. William Everett, SPRE Inc
Danny Faught, HP Richardson Software Systems Lab
Francis Leung, Motorola
Bob Stoddard, Texas Instruments

Session 5: Software Engineering II
Observation Inaccuracy in Conformance Testing with Multiple Testers ........................................ 80
Y.-C. Young and K.-C. Tai
Dependency Characterization in Path-Based Approaches to Architecture-Based
Software Reliability Prediction .................................................. 86
S.S. Gokhale and K.S. Trivedi
Effect of Architecture Configuration on Software Reliability and Performance Estimation ................. 90

Session 6: Telecommunications II
Telecommunication Software Validation Using a Synchronous Approach ........................................ 98
L. du Bousquet, F. Ouabdesselam, and J.-L. Richier
Concepts for a Network Maturity Model .................................................................................. 102
J.M. Capone, J. Fritsch, R. Smith, S. Bhattacharya, and S. Palangala
The TMO Structuring Approach and its Potential for Telecommunication
Applications ................................................................................ 108
K.H. Kim and C. Subbaraman
A Protocol Architecture for Multimedia Document Retrieval over High Speed
LANs ............................................................................................... 116
H. Fahmi, S. Baqai, R. Paul, A. Bashandy, and A. Ghafoor
Software Reliability Analysis of Three Successive Generations of a
Telecommunications System .......................................................... 122
M. Kaâniche and K. Kanoun
An Enhanced Authentication Protocol for Personal Communication Systems ............................. 128
J.S. Stach, E.K. Park, and Z. Su

Session 7: Software Engineering III
An Object-Oriented Framework for Feedback Control Applications ........................................ 134
S.M. Yacoub and H.H. Ammar
COTS Software Failures: Can Anything be Done? ................................................................. 140
J. Voas and J. Payne
Return on Investment of Software Quality Predictions ............................................................. 145
T.M. Khoshgoftaar, E.B. Allen, W.D. Jones, and J.P. Hudepohl
Debugging in a Distributed World: Observation and Control .................................................. 151
A. Tarafdar and V.K. Garg
Measuring the Effectiveness of a Test Case ........................................................................ 157
J.C. Huang
Session 8: Languages and Databases
Parallel/Distributed Simulation with the COMPOSE Object-Relational Database
T. Wang, P.C.-Y. Sheu, C. Cotman, and C. Chubb
The Application of the SequenceL Language to Complicated Database Applications
D. Cooke and J. Urban

Panel Session 9: Future Directions in Telecommunications
Moderator: Ravi Prakash, University of Texas at Dallas
Panelists: Paul Lakhanpal, Telecomm Planning Corporation
Allen Sicher, Ericsson
Mehmet Unsoy, Nortel
Ramki Rajagopalan, Award Solutions

Panel Discussion: Lucrative Wireless Telecom Applications: Five Years from Now – Have not Even Been Invented
R. Prakash

Author Index