

# 26th Annual International Computer Software and Applications Conference **COMPSAC 2002** Oxford, England, 26-29th August 2002



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Francis C. M. Lau, The University of Hong Kong, Hong Kong  
Tsau Young Lin, San Jose State University, USA  
Andrew Malton, University of Waterloo, Canada  
Bruce McMillin, University of Missouri-Rolla, USA  
Hong Mei, Peking University, China  
Dennis B. Mulcare, Telcordia Technologies, USA  
Akira K. Onoma, Hosei University, Japan  
Alexander Romanovsky, University of Newcastle upon Tyne, UK  
Philippe Roose, University of Pau, France  
Guenther Ruhe, University of Calgary, Canada  
Dick B. Simmons, Texas A&M University, USA  
Harry Sneed, Regensburg University, Germany  
Stanislaw Szejko, Technical University of Gdansk, Poland  
Andrey A. Terekhov, St. Petersburg State University, Russia  
Wei-Tek Tsai, Arizona State University, USA  
K. Vairavan, University of Wisconsin-Milwaukee, USA  
Giuseppe Visaggio, Bari University, Italy  
Baowen Xu, Southeast University, China  
Qiwen Xu, University of Macau, Macau  
Yuen Tak Yu, City University of Hong Kong, Hong Kong  
Jian Zhang, Chinese Academy of Sciences, China  
Xiaofang Zhou, University of Queensland, Australia

Welcome to the Twenty-Sixth Annual International Computer Software and Application Conference (COMPSAC 2002).

COMPSAC is the major international forum for researchers, practitioners, managers, and policy makers interested in computer software and applications. The planned program will include original research papers, industrial case studies, participative workshops and discussion panels.

## COMPSAC 2002 At-a-Glance

	Monday 26th August	Tuesday 27th August	Wednesday 28th August	Thursday 29th August
09:00-10:30	Opening Session (MWLT) Keynote: T. Heng	Parallel Sessions: Panel 2 (MWLT) Paper 10 (LLT) Paper 11 (SM) Paper 12 (AWR)	Plenary Session (MWLT) Keynote: Sir A. Hoare	Parallel Sessions: Paper 27 (MWLT) Paper 28 (LLT) Paper 29 (SM) Paper 30 (AWR)
10:30-11:00	Coffee Break	Coffee Break	Coffee Break	Coffee Break
11:00-12:30	Parallel Sessions: Paper 1 (MWLT) Paper 2 (LLT) Paper 3 (SM) Paper 4 (AWR)	Parallel Sessions: Industry 1 (MWLT) Paper 13 (LLT) Paper 14 (SM) Workshop2 (1 of 3)	Parallel Sessions: Industry 2 (MWLT) Paper 20 (LLT) Paper 21 (SM) Workshop3 (1 of 3)	Parallel Sessions: Industry 3 (MWLT) Paper 31 (LLT) Paper 32 (SM) Paper 33 (AWR)
12:30-14:00	Lunch Break	Lunch Break	Lunch Break	Lunch Break
14:00-15:30	Parallel Sessions: Panel 1 (MWLT) Paper 5 (LLT) Paper 6 (SM) Workshop1 (1 of 2)	Parallel Sessions: Panel 3 (MWLT) Paper 15 (LLT) Paper 16 (SM) Workshop2 (2 of 3)	Parallel Sessions: Panel 4 (MWLT) Paper 22 (LLT) Paper 23 (SM) Workshop3 (2 of 3)	Parallel Sessions: Panel 5 (MWLT) Paper 34 (LLT) Paper 35 (SM) Workshop4 (1 of 2)
15:30-16:00	Tea Break	Tea Break	Tea Break	Tea Break
16:00-17:30	Parallel Sessions: Paper 7 (MWLT) Paper 8 (LLT) Paper 9 (SM) Workshop1 (2 of 2)	Parallel Sessions: Paper 17 (MWLT) Paper 18 (LLT) Paper 19 (SM) Workshop2 (3 of 3)	Parallel Sessions: Paper 24 (MWLT) Paper 25 (LLT) Paper 26 (SM) Workshop3 (3 of 3)	Parallel Sessions: Paper 36 (MWLT) Paper 37 (LLT) Paper 38 (SM) Workshop4 (2 of 2)

\* MWLT -- Martin Wood Lecture Theatre

LLT -- Lindemann Lecture Theatre

SR -- Simon Room

AWR -- Andrey Wood Room

\* All Workshops are in Andrey Wood Room

\* Registration Times: Monday, 08:15 - 17:00; Tuesday and Wednesday, 08:30 - 17:00; and Thursday, 08:30 - 16:30, at the conference desk.

## CONFERENCE VENUE

Keble College  
Oxford University  
Oxford  
England

## SOCIAL FUNCTIONS

### Conference Reception and Dinner

**Monday 26th August 2002**

**Reception:** 18:30 University Museum

**Dinner:** 19:30 Keble College Dining Hall

### Conference Concert and Banquet

**Tuesday 27th August 2002**

**Concert:** 18:00 Keble College Chapel

**Dinner:** 19:30 Keble College Dining Hall

## COMPSAC 2002 Technical Program

### Monday 26th August 2002

**09:00-10:30 Opening Session** -- Martin Wood Lecture Theatre

- **Welcome and Remarks:** General Chair: Ian Sommerville, Lancaster University, UK
- **Additional Greetings and Remarks:** Standing Committee Chair: Stephen S. Yau, Arizona State University, USA
- **Programme Overview:** Program Chair: H. Yang, De Montfort University, UK
- **Keynote Address 1:** *Prolong Software Life:* Terrence M. S. Heng, Senior Vice President and General Manager, Motorola Global Software Group, USA

**10:30-11:00 Coffee Break**

**11:00-12:30 Parallel Sessions**

**Paper Session 1: Component Based Software Development (1)** -- Martin Wood Lecture Theatre

*Chair:* R. Paul, Department of Defense, USA

- *Optimal Resource Allocation and Reliability Analysis for Component-Based Software Applications:* S. Kuo and J. Lo, National Taiwan University, Taiwan, M. R. Lyu and C. Huang, Chinese University of Hong Kong, Hong Kong
- *Process-Oriented, Consistent Integration of Software Components:* R. Depke, G. Engels and S. Thoenes, University of Paderborn, Germany, M. Langham and B. Luetkemeier, S&N AGK Lingenderstr, Germany
- *Open Reuse of Component Designs in OPM/Web:* I. Reinhartz-Berger and S. Katz, Israel Institute of Technology, Israel, D. Dori, Massachusetts Institute of Technology, USA

**Paper Session 2: Software Evolution (1)** -- Lindemann Lecture Theatre

*Chair:* H. D. Ehrich, Technical University of Braunschweig, Germany

- *Quantitative Aspects of Requirements Evolution:* M. Felici and S. Anderson, University of Edinburgh, UK
- *Supporting Evolution and Maintenance of Components Using A Remote Service Architecture:* S. Thomason and P. Breton, Keele University, UK
- *Requirements Specifications Evolution in A Multi-Perspective Environment:* A. B. Barragans-Martinez, J. Garcia-Duque, J. J. Pazos-Arias, A. Fernandez-Vilas and R. P. Diaz-Redondo, University of Vigo, Spain

**Paper Session 3: Software Process (1)** -- Simon Room

*Chair:* M. Aoyama, Nanzan University, Japan

- *The Software Engineering Global Model:* C. Toffolon, Littoral University, France, S. Dakhli, Paris-Dauphine University, France
- *Resource Instantiation Policies for Software Process Environments:* C. Reis, R. Q. Reis, H. Schlebbe and D. Jos Nunes, Federal University of Rio Grande do Sul, Brazil
- *On the Business Impact of Software Process Improvement:* R. J. Kusters and J. J. Trienekens, University of Technology Eindhoven, The Netherlands

**Paper Session 4: Software Architecture for Control Systems** -- Andrey Wood Room

*Chair:* D. Simmons, Texas A&M University, USA

- *Case Study: Componentization of An Industrial Control System:* F. Lüders, ABB Automation Technology Product, Control & Force Measurement, Sweden, I. Crnkovic, Mälardalen University, Sweden
- *Requirements Specification and Architecture Design for Internet-based Control Systems:* L. Tan, Central China Normal University, China, S. Yang and X. Chen, Loughborough University, UK
- *Distributed Agent Architecture for Part Automation:* T. Thurston and H. Hu, University of Essex, UK

**12:30-14:00 Lunch Break**

**14:00-15:30 Parallel Sessions**

**Panel Session 1: Formal Methods and Testing** -- Martin Wood Lecture Theatre

The panel will explore the usefulness or otherwise of formal methods in various contexts for improving software testing.

*Chair:* J. P. Bowen, South Bank University, London, UK

*Panelists:* K. Bogdanov, The University of Sheffield, UK

J. A. Clark, The University of York, UK

M. Harman, Brunel University, UK

R. M. Hierons, Brunel University, UK

P. Krause, Philips Research Laboratories and University of Surrey, UK

**Paper Session 5: Internet and Gigabit Net** -- Lindemann Lecture Theatre

*Chair:* A. Ghafoor, Purdue University, USA

- *Rights Protection for Digital Contents Redistribution Over the Internet:* S. Cheung and H. Curreen, Hong Kong University of Science and Technology, Hong Kong

- *Internet Emulation for Java Applications through Socket Factories:* A. Vecchio and M. Avenuti, University of Pisa, Italy

- *Gigabit Packet Classification by Using Lookahead Caching:* P. Wang, W. Tseng and C. Chan, Chunghwa Telecom Co. Ltd., Taiwan, Y. C. Chen, National Chiao Tung University, Taiwan

**Paper Session 6: Quality Control (1)** -- Simon Room

*Chair:* Gerardo Canfora, University of Sannio, Italy

- *Requirements Driven Quality Control:* S. Szejko, Gdańsk Technical University, Poland
- *A Fuzzy Logic Framework to Build Rule-Based Quality Prediction Models:* H. A. Sahraoui, H. M. Chawichel, G. Mai and M. Serhani, University of Montreal, M. Boukadoum, University of Quebec, Canada
- *Application of Hazard Analysis to Quality Modeling:* H. Zhu, Y. Zhang, Q. Huo and S. Greenwood, Oxford Brookes University, UK

**15:30-16:00 Tea Break**

**16:00-17:30 Parallel Sessions**

**Paper Session 7: Modelling with UML** -- Martin Wood Lecture Theatre

*Chair:* S. Catrava, Guident Corporation, USA

- *A Toolset for Supporting UML Model Checking Based on Abstract State Machines:* W. Shen and K. Compton, University of Michigan, J. Huggins, Kettering University, USA
- *From MSC and UML to SDL:* S. Bourduas, F. Khendek, Concordia University, Canada, D. Vincent, France Telecom, France
- *Do Actors Call Use Cases? -- Solving the Problems of OOSE/UML Use-Case Relationships:* S. Isoda, Toyohashi University of Technology, Japan

**Paper Session 8: XML and Semantic Web** -- Lindemann Lecture Theatre

*Chair:* S. Cheung, Hong Kong University of Science and Technology, Hong Kong

- *Using XML to Integrate Existing Software Systems:* H. M. Sneed, University of Regensburg, Germany
- *XVIP: An XML-Based Video Information Processing System:* C. H. Ngai, P. W. Chan, E. Yau, M. R. Lyu, The Chinese University of Hong Kong, Hong Kong
- *The Cooperative Web: A Complement to the Semantic Web:* D. G. Avello and D. Á. Gutiérrez, University of Oviedo, Spain

**Paper Session 9: Communication and Networking** -- Simon Room

*Chair:* Y. C. Chen, National Chiao Tung University, Taiwan

- *Personalised Redirection of Communication:* Y. Yang and M. H. Williams, Heriot-Watt University, UK
- *Design and Implementation of A Network Application Architecture for Thin Clients:* C. C. Kuo, P. Ting, National Taiwan University, M. Chen and J. Chen, Philips Research East Asia, Taiwan
- *Distributed Checkpointing Using Synchronized Clocks:* S. Neogy, A. Sinha and P. K. Das, Jadavpur University, India

### Tuesday 27th August 2002

**09:00-10:30 Parallel Sessions**

**Panel 2: Entrepreneurship in Software Industry** -- Martin Wood Lecture Theatre

*Chair:* S. S. Yau, Arizona State University, USA

*Panelists:* Maarten Boasson, University of Amsterdam and Quaerendo Invenietis b. v., The Netherlands

William Chu, Tunghai University, Zen Technologies Co. Ltd. and Flowing Ring Technologies Co. Ltd., Taiwan

Dick B. Simmons, Texas A & M University and The Software Commercialization and Innovation Center, Inc., USA

**Paper Session 10: UML Application and Requirement Engineering** -- Lindemann Lecture Theatre

*Chair:* G. Visaggio, Bari University, Italy

- *Case Study: Implementing A Web Based Auction System Using UML and Component-Based Programming:* F. T. Sheldon and K. Jerath, Washington State University, USA, Y. Kwon, Y. Baik, Taegu University, Korea
- *An UML Profile to Support the Formal Presentation of Software Architecture:* A. Hudaib and C. Montangero, University of Pisa, Italy
- *Transformation and Integration Method of Scenarios:* A. Ohnishi, Ritsumeikan University, Japan

**Paper Session 11: Service Based Software** -- Simon Room

*Chair:* G. A. Di Lucca, Naples University, Italy

- *Software As A Service: A Negotiation Perspective:* A. Elfatraty and P. Layzell, UMIST, UK

• *Trust Services: A Framework for Service-based Solutions*: A. Baldwin, S. Shiu and M. Casassa Mont, HP Labs, UK

• *Autonomous Real-Time Navigation Based on Work Load Situation in Demand-Oriented Information Service*: T. Zenmyo, H. Arfaoui and K. Mori, Tokyo Institute of Technology, Japan

**Paper Session 12: Software Engineering Profession and Methodology** --  
Andrey Wood Room

*Chair*: P. Roose, University of Pau, France

• *Closing the Circle on Software Engineering Professionalism and Free Movement of Labour*: J. B. Thompson, University of Sunderland, UK

• *Towards An MDA-Oriented Methodology*: M. Gervais, University of Paris, France

• *Reducing Risks of Widespread Faults and Attacks for Commercial Software Applications*: M. Casassa Mont, A. Baldwin, Y. Beres, K. Harrison, M. Sadler and S. Shiu, Hewlett-Packard Laboratories, UK

**10:30-11:00 Coffee Break**

**11:00-12:30 Parallel Sessions**

**Industry Session 1: Software Process and Quality** -- Martin Wood Lecture Theatre

*Chair*: S. Chen, Motorola Global Software Group, USA

• *Requirement Capturing and 3CR Approach*: S. Baranov, V. Kotlyarov, *Motorola, Russia*, J. Kapitonova, A. Letichevsky and V. Volkov, ISS, Ukraine

• *Constructing An EJB Application in A WFMS*, J. Wang, T. Lin, F. Wang, National Chiao Tung University, Taiwan and H. Hsu, Flowring Technology Corp., Taiwan

• *Suitability of Evolutionary Algorithms for Evolutionary Testing*: J. Wegener, A. Baresel and H. Sthamer, Daimlerchrysler AG Research and Technology, Germany

• *Program C Editor through Voice Input*: M. Yamamoto, Hosei University, Japan

• *Preliminary Case Study on Software Reuse -- Generative Approach toward Object Persistency*: H. Suganuma, Hitachi Software Engineering Co. Ltd., Japan

**Paper Session 13: Measurement and Metrics** -- Lindemann Lecture Theatre

*Chair*: K. Vairavan, University of Wisconsin-Milwaukee, USA

• *Evaluating Software Maintenance Cost Using Functional Redundancy Metrics*: T. Imai, Y. Kataoka and T. Fukaya, Toshiba Corp., Japan

• *Measuring Distance between Program Features*: W. E. Wong, S. Gokhale and J. R. Horgan, Telcordia Technologies, USA

• *The Quest for Software Components Quality*: M. Goulão and F. Brito e Abreu, Information Systems Group (INESC) FCT/UNL, Portugal

**Paper Session 14: Testing (1)** -- Simon Room

*Chair*: P. Henderson, Southampton University, UK

• *Adaptive Scenario-Based Object-Oriented Test Frameworks for Testing Embedded Systems*: W. T. Tsai, Arizona State University, USA

• *Metamorphic Testing of Programs on Partial Differential Equations: A Case Study*: T. Y. Chen, Swinburne University of Technology, Australia, J. Feng and T. H. Tse, The University of Hong Kong, Hong Kong

• *Expanding An Extended Finite State Machine to Aid Testability*: R. Hierons, T. H. Kim and H. Ural, Brunel University, UK

**12:30-14:00 Lunch Break**

**14:00-15:30 Parallel Sessions**

**Panel Session 3: Are We at Last Seeing Global Movements towards Software Engineering Professionalism?**-- Martin Wood Lecture Theatre

The panellists will be invited to consider developments that have taken place over the last two years such publication of a code of ethics and body of knowledge documents for Software Engineering, and proposals for the Harmonization of Professional Standards worldwide.

*Chair*: J. B. Thompson, University of Sunderland, UK

*Panelists*: C. K. Chang, Iowa State University, USA

S. Rogerson, De Montfort University, UK

M. Ryan, Dublin City University, Ireland

D. B. Simmons, Texas A&M University, USA

T. H. Tse, The University of Hong Kong, Hong Kong

**Paper Session 15: Program Slicing and Analysis** --Lindemann Lecture Theatre

*Chair*: R. Hierons, Brunel University, UK

• *Slice-Based Dynamic Memory Modelling- A Case Study*: Y. Sivagurunathan, KW International, UK, M. Harman, Brunel University, B. Sivagurunathan, University of North London, UK

• *Program Slicing via FornaT Transformations*: M. P. Ward, DeMontfort University, UK

• *A Graphically Based Language for Constructing, Executing and Analysing Models of*

*Software Systems*: R. J. Walters, University of Southampton, UK

**Paper Session 16: Software Process (2)** -- Simon Room

*Chair*: M. Casassa Mont, HP, UK

• *Early Experiences on Promoting Explicit Separation of Details to Improve Software Processes Reusability*: R. Q. Reis, Federal University of Rio Grande do Sul, Brazil

• *A Typed Generic Process Model for Product Focused Process Improvement*: M. Satpathy and R. Harrison, University of Reading, UK

• *A Method to Combine Any Process Algebra with An Algebraic Specification Language: the Pi-Calculus Ex*: G. Salaun, M. Allemand and C. Attiogbe, University of Nantes, France

**15:30-16:00 Tea Break**

**16:00-17:30 Parallel Sessions**

**Paper Session 17: Web Based Systems (1)** -- Martin Wood Lecture Theatre

*Chair*: R. McCrindle, University of Reading, UK

• *The Application of Case-Based Reasoning to Early Web Project Cost Estimation*: E. Mendes, University of Auckland, N. Mosley, Auckland University of Technology, New Zealand, S. Counsell, Birkbeck College, UK

• *Tolerating Changes in A Design Psychologybased Web Page Wrapper*: Y. Li, British Telecomm, H. Yang, De Montfort University, UK, C. H. Jiau, National Cheng Kung University, Taiwan

• *Reliability Assessment of WEB Applications*: V. S. Alagar and O. Ormandjieva, Concordia University, Canada

**Paper Session 18: Software Evolution (2)** -- Lindemann Lecture Theatre

*Chair*: Harry Sneed, Regensburg University, Germany

• *Renaissance: A Method to Support Software System Evolution*: I. Warren and J. Ransom, Lancaster University, UK

• *Investigating Large Software System Evolution: The Linux Kernel*: E. Merlo, M. Dagenais, P. Bachand and J. S. Sormani, Ecole Polytechnique of Montreal, G. Antonioli, RCOST Research Centre on Software Technology, Canada

• *From System Comprehension to Program Comprehension*: C. Tjortjts, N. Gold and P. Layzell, UMIST, K. Bennett, University of Durham, UK

**Paper Session 19: Architecture for Development** -- Simon Room

*Chair*: D. Caivano, Bari University, Italy

• *Software Application Platforms: From Product Architecture to Integrated Application Strategy*: M. Saaksjarvi, Helsinki School of Economics and Business Administration, Finland

• *A Distributed Architecture for Cooperative and Adaptive Multimedia Applications*: M. Dalmau, P. Roose and F. Luthon, LIUPPA, IUT Bayonne, France

• *An Architecture-Based Approach for Component-Oriented Development*: F. Chen, Q. Wang, H. Mei and F. Yang, Peking University, China

### Wednesday 28th August 2002

**09:00-10:30 Plenary Session** -- Martin Wood Lecture Theatre

*Chair*: H. Yang, De Montfort University, UK

**Keynote Address 2: Assertions in Modern Software Engineering Practice**: Sir Antony Hoare, Microsoft Research, Cambridge, UK

**10:30-11:00 Coffee Break**

**11:00-12:30 Parallel Sessions**

**Industry Session 2: Software Tools** -- Martin Wood Lecture Theatre

*Chair*: J. Cain, Quantel Limited, UK

• *Dependency Analysis and Visualization as Tools to Prolong System Life*: D. McComb, S. Robe, S. Hoare and S. Crawford-Hines, Institute for Zero Defect Software, USA

• *TRIZ for Software Process Improvement*: T. Stanbrook, Motorola Ltd., UK

• *A Reusable Software Architecture Model*: H. Guo, F. Chen, Y. Wang and Y. Sun, Dalian University of Technology, China

• *Managing Software Quality with Defects*: D. Card, Software Productivity Consortium, USA

• *ToolManager: A Tool for Management of CASE Tools*: S. Ronaldo, B. Oliveira, A. Marcos, L. de Vasconcelos, A. Cristina Rouiller, Universidade Federal de Pernambuco, S. Ronaldo and B. Oliveira, Universidade da Amazônia, Brazil

**Paper Session 20: Web Based Systems (2)** -- Lindemann Lecture Theatre

*Chair*: B. Xu, Southeast University, China

• *An Approach to Identify Duplicated Web Pages*: G. Di Lucca and A. R. Fasolino, University of Naples, M. Di Penta, University of Sannio, Italy

• *Web Document Classification Based on Fuzzy Association*: M. Shyu, C. Haruechaiyasak, University of Miami, S. Chen, Florida International University, USA

- *Application Assembly Using Web Services*: J. van Zyl, Rubico Products (Pty) Ltd., South Africa

### Paper Session 21: Ubiquitous Computing, Middleware and Embedded Systems -- Simon Room

Chair: F. Wang, National ChiaoTung University, Taiwan

- *Development of Situation-Aware Application Software for Ubiquitous Computing Environments*: S. S. Yau, Y. Wang and F. Karim, Arizona State University, USA
- *On Bootstrapping Replicated CORBA Applications*: W. Zhao, L. E. Moser and P. M. Melliar-Smith, University of California at Santa Barbara, USA
- *Strategies for Integration of A Non-OO EIS and The J2EE Framework*: S. Tu, University of New Orleans, G. Li, OTIS, Inc., P. Augustin, NOLA Computer Service, USA

### 12:30-14:00 Lunch Break

### 14:00-15:30 Parallel Sessions

#### Panel Session 4: Knowledge Transfer from University to Industry -- Martin Wood Lecture Theatre

The aim will be to focus on the challenges of knowledge transfer from university to industrial applications.

Chair: S. Rogerson, De Montfort University, UK

- Panel Members: A. Adam, University of Salford, UK  
N. Copp, Consignia, UK  
J. Leighfield CBE, former Chairman of ISTEEL, UK  
S. Szejko, Technical University of Gdansk, Poland

#### Paper Session 22: Quality Control (2) -- Lindemann Lecture Theatre

Chair: R. Harrison, University of Reading, UK

- *Quality Models Reuse: Experimentation on Field*: A. Bianchi, D. Caivano and G. Visaggio, University of Bari, Italy
- *The Method of Software Reliability Growth Models Choice*: V. Kharchenko, O. Tarasyuk, National Aerospace University, V. Sklyar, V. Dubnitsky, Kharkiv Military University, Ukraine
- *A Programming Environment for Teaching Object-Oriented Concepts*: C. J. Harrison and O. M. Sallabi, UMIST, UK

#### Paper Session 23: Component Based Software Development (2) -- Simon Room

Chair: K. Bennett, Durham University, UK

- *Component Based System Framework for Dynamic B2B Interaction*: J. Hu, University of Twente, The Netherlands
- *Mining Legacy Systems for Business Components: An Architecture for An Integrated Toolkit*: P. Johnson, De Montfort University, UK
- *Control-Driven Coordination Based Assembling of Components*: A. Chimaris and G. A. Papadopoulos, University of Cyprus, Cyprus

### 15:30-16:00 Tea Break

### 16:00-17:30 Parallel Sessions

#### Paper Session 24: Agent Based and Intelligent Systems -- Martin Wood Lecture Theatre

Chair: S. Szejko, Technical University of Gdansk, Poland

- *MADSS: A Multi-Agent Based Distributed Scripting System*: J. Lin, Taichung Healthcare and Management University, Z. Hong, and G. Fang, Feng Chia University, Taiwan
- *Extending Applications Using Reflective Assistant Agents*: A. Di Stefano, G. Pappalardo, C. Santoro and E. Tramontana, University of Catania, Italy
- *Supporting Event Based Traceability through High-Level Recognition of Change Events*: J. Cleland-Huang and C. K. Chang, University of Illinois at Chicago, USA

#### Paper Session 25: Web Application and Pattern Language -- Lindemann Lecture Theatre

Chair: X. Liu, Napier University, UK

- *WWM: A Practical Methodology for Web Application Modeling*: C. Kaewkasi and W. Rivepiboon, Software Engineering Laboratory, Chulalongkorn University, Thailand
- *Developing Web-based Applications through E-Prototyping*: W. Bleek, M. Jeenicke and R. Klischewski, Hamburg University, Germany
- *A Process for Framework Construction Based on A Pattern Language*: R. T. Braga and P. Cesar Masiero, University of São Paulo, Brazil

#### Paper Session 26: Application Framework and Concurrency -- Simon Room

Chair: M. Boasson, University of Amsterdam, The Netherlands

- *Defining the Problems of Framework Reuse*: D. Kirk, M. Roper and M. Wood, University of Strathclyde, UK

- *An Application Framework for TCP/IP Applications*: A. Kumazaki, M. Noro and H. Chang, Nanzan University, Japan

- *Design and Implementations of the Concurrency Control in the Main-Memory DBMS Tachyon*: S. Kim and B. Kim, Kangwon National University, W. Choi, Electronic and Telecommunication Research Institute, Korea

## Thursday 29th August 2002

### 09:00-10:30 Parallel Sessions

#### Paper Session 27: Formal Methods (1) -- Martin Wood Lecture Theatre

Chair: J. P. Bowen, Southbank University, London, UK

- *A Formal Method for Analyzing Software Architecture Models in SAM*: H. Yu, X. He, Y. Deng and L. Mo, Florida International University, USA
- *The Semantics of The Extended SOFL*: S. Liu, Hosei University, Japan, J. Dong, National University of Singapore, Singapore
- *Formalizing Incremental Design in Real-time Area: SCTL/MUS-T*: A. F. Vilas, J. J. Arias, R. P. Redondo and A. B. Martínez, Universidad de Vigo, Spain

#### Paper Session 28: Mobile Computing -- Lindemann Lecture Theatre

Chair: M. Harman, Brunel University, UK

- *MoCha, A Middleware Based on Mobile Channels*: F. Arbab, F. de Boer and G. Scholten, Leiden University, The Netherlands
- *Towards A Software Architecture for Distributed and Mobile Collaborative Systems*: S. Dustdar and H. Gall, Vienna University of Technology, Austria
- *A QoS Sensitive Content Adaptation System for Mobile Computing*: F. Lau and W. Y. Lum, The University of Hong Kong, Hong Kong

#### Paper Session 29: Software Maintenance -- Simon Room

Chair: M. Ward, De Montfort University, UK

- *Object Identification in Legacy Code as A Grouping Problem*: H. A. Sahraoui, P. Valtchev, I. Konkobo and S. Shen, University of Montreal, Canada
- *Software Maintainability Improvement: Integrating Standards and Models*: W. C. Chu, Tunghai University, Taiwan, C. W. Lu, C. H. Chang and Y. C. Chung, Feng Chia University, Taiwan, B. Xu, Southeast University, China
- *Understanding SQL through Iconic Interfaces*: L. Aversano, G. Canfora, A. De Lucia and S. Stefanucci, University of Sannio, Italy

#### Paper Session 30: Formal Methods (2) -- Andrey Wood Room

Chair: J. Zhang, Chinese Academy of Science, China

- *Specification and Verification of Spatial Data Types with B-Toolkit*: Y. Kim and D. Hung, The United Nations University International Institute for Software Technology, Macau
- *Toward Efficient Algorithms for Generating Compact Petri Nets from Labelled Transition Systems*: U. Buy and G. Singal, University of Illinois at Chicago, USA
- *A Tableau-based Procedure for Model Checking Programs*: A. Santone, University of Sannio, G. Vaglini, University of Pisa, Italy

### 10:30-11:00 Coffee Break

### 11:00-12:30 Parallel Sessions

#### Industry Session 3: Software Reuse and Evolution -- Martin Wood Lecture Theatre

Chair: Dennis B. Mulcare, Telcordia Technologies, USA

- *An Investigation: Reengineering A Sequential Procedure-Driven Software into An Object-Oriented Event*: R. Millham, Telus Communications Inc., Canada
- *Process Diagnostics*: V. S. Phanindra, M. Murugappan and G. Keeni, Tata Consultancy Services, India
- *Business Interaction Defines E-Business Processes*: G. Piccinelli, HP Laboratories, UK, S. Williams, HP Software & Solutions, USA
- *Reviving Pacbase COBOL-Generated Code*: J. Bernardy, Raincode, Belgium
- *A Data Collection Case Study Supporting Requirements Oriented Prediction and Management in Software*: K. Boness, Simulus Ltd., R. Harrison, University of Reading, UK

#### Paper Session 31: Frameworks -- Lindemann Lecture Theatre

Chair: W. C. Chu, TungHai University, Taiwan

- *Framework for Goal Driven System Design*: J. Savolainen and J. Kuisela, Nokia Research Center, Finland
- *A Nested Invocation Suppression Framework for Active Replication Fault-Tolerant CORBA*: D. Liang, J. Tsai, Institute of Information Science, C. Fang and C. Chen, National Taiwan University of Science and Technology, Taiwan

- *A Simple Mathematically Based Framework for Rule Extraction from An Arbitrary Programming Language*: F. V. Ramsey, De Montfort University, UK, J. J. Alpigini, Penn State Great Valley School of Graduate Professional Studies, USA

### Paper Session 32: Management (1) -- Simon Room

Chair: A. De Lucia, University of Sannio, Italy

- *ContentP2P: A Peer-to-Peer Content Management System*: G. Canfora, S. Manzo, V. F. Rollo and M. L. Villani, University of Sannio, Italy
- *An Investigation of Prediction Models for Project Management*: D. Rodriguez, R. Harrison and M. Satpathy, University of Reading, UK, J. J. Dolado, University of Basque Country, Spain
- *A Shared Information System Architecture for Integrating Risk Management Tools: A Case Study*: S. Xu and H. In, Texas A&M University, M. S. Feather, California Institute of Technology, USA

### Paper Session 33: File System and Information Management -- Andrey Wood Room

Chair: A. Romanovsky, University of Newcastle upon Tyne, UK

- *SIFA: A Scalable File System with Intelligent File Allocation*: H. Tsai, J. Huang, C. Chao and M. Chen, National Taiwan University, C. Liao, Synology Co. Ltd., Taiwan
- *A File Naming Scheme Using Hierarchical-Keywords*: H. Tada and O. Honda, Osaka University, M. Higuchi, Kinki University, Japan
- *Private Information Retrieval in The Presence of Malicious Failures*: E. Y. Yang, J. Xu and K. H. Bennett, University of Durham, UK

### 12:30-14:00 Lunch Break

### 14:00-15:30 Parallel Sessions

### Panel Session 5: System - Level Issues and Approaches in Software Development -- Martin Wood Lecture Theatre

This panel offers diverse insights into system-level issues that can significantly facilitate or improve software development, structure and performance.

Chair: S. White, Long Island University, USA

- Panelists: M. Boasson, University of Amsterdam, The Netherlands  
B. Buchanan, Napier University, UK  
I. Crnkovic, Malardalen University, Sweden  
D. Mulcare, Independent Consultant, USA  
I. Pyle, University of Wales, UK

### Paper Session 34: Testing (2) -- Lindemann Lecture Theatre

Chair: T. H. Tse, The University of Hong Kong, Hong Kong

- *Temporal Modeling of Software Test Coverage*: S. Sedigh-Ali and A. Ghafoor, Purdue University, R. A. Paul, Department of Defense, USA
- *Hypothesis Testing for Module Test in Software Development*: T. Yamaura, Hitachi Software Engineering, A. K. Onoma, Hosei University, Japan, W. T. Tsai, Arizona State University, USA
- *Class Specification Implementation Graphs and their Application in Regression Testing*: S. Beydeda and V. Gruhn, University of Dortmund, Germany

### Paper Session 35: System Development with Java -- Simon Room

Chair: H. Zhu, Oxford Brookes University, UK

- *Concurrency Control with Java and Relational Databases*: S. Soares and P. Borba, Federal University of Pernambuco, Brazil
- *Using Standard Verifier to Check Secure Information Flow in Java Bytecode*: C. Bernardeschi, N. De Francesco and G. Lettieri, University of Pisa, Italy
- *Generating A Pattern-Based Application Development Environment for Enterprise JavaBeans*: I. Hammouda and K. Koskimies, Tampere University of Technology, Finland

### 15:30-16:00 Tea Break

### 16:00-17:30 Parallel Sessions

### Paper Session 36: Compression, Pattern Matching and Genetic Algorithms

-- Martin Wood Lecture Theatre

Chair: H. Gall, Technical University of Vienna, Austria

- *A Compression Algorithm for Operation-based Version Control Systems*: H. Shen and C. Sun, Griffith University, Australia
- *A Dictionary-based Compressed Pattern Matching Algorithm*: M. Ho and H. Yen, National Taiwan University, Taiwan
- *Parallel Genetic Algorithms with Schema Migration*: Y. Guan and B. Xu, Southeast University, China, K. R. Leung, Hong Kong Institute of Vocational Education, Hong Kong

### Paper Session 37: Management (2) -- Lindemann Lecture Theatre

Chair: I. Crnkovic, Malardalen University, Sweden

- *Multi-Criteria Preference Analysis for Systematic Requirements Negotiation*: H. In, D. Olson and T. Rodgers, Texas A&M University, USA
- *Enhanced Intranet Management in A DHCP-enabled Environment*: J. Wang and T. Lee, National Taiwan University, Taiwan.
- *Achieving Scalability in Hierarchical Location Services*: M. van Steen and G. Ballintijn, Vrije University, The Netherlands

### Paper Session 38: Code Coupling, Information Retrieval and Scheduling

-- Simon Room

Chair: X. He, Florida International University, USA

- *An Investigation into The Effects of Code Coupling on Team Dynamics and Productivity*: J. W. Cain, Quantel Limited, R. J. McCrindle, University of Reading, UK
- *An Effective Content-based Visual Image Retrieval System*: X. Li, B. Furht, Florida Atlantic University, S. Chen, Florida International University, M. Shyu, University of Miami, USA
- *New Model and Scheduling Protocol for Transactional Workflows*: K. Ding, B. Jin, J. Wei and Y. Feng, Chinese Academy of Sciences, China

# COMPSAC 2003

Hong Kong, September 30 – October 3, 2003

## CALL FOR CONTRIBUTIONS

**Submission Categories:** regular papers, industrial abstracts, panels and workshops.

### Topics

Methodology topics include, but not limited to, the following:

Software Architecture, Framework, and Design Patterns; Requirements Engineering; Object-Oriented Technology; Component-Based Software Development; Professional Development; Software Reengineering; Process Management; Product-line Management; Quality Management; Software Reuse; Safety and Security; Software Reliability; Software Testing, Metrics and Measurement

Application topics include, but not limited to, the following:

Electronic Commerce; Ubiquitous/Pervasive Computing

System topics include, but not limited to, the following:

Collaborative Systems; Distributed Systems; Embedded Systems; Enterprise Systems; Internet and Web-Based Systems; Middleware Systems; Mobile Systems; Multimedia Systems

### Submission

Submit to:

**Doo-Hwa Bae, Program Co-Chair**

Computer Science Division

Electrical Engineering and Computer Science Department

Korea Advanced Institute of Science and Technology

3731, Kusong-dong, Yusong-ku, Taejeon, 305-701, Korea

Phone: +82-(0)42-869-3539

Fax: +82-(0)42-869-3510

Email: [bae@salmosa.kaist.ac.kr](mailto:bae@salmosa.kaist.ac.kr)

URL: <http://se.kaist.ac.kr/compsac2003>

Tentative deadline for all submissions: February 28, 2003.

Tentative date for notification of acceptance: May 12, 2003.

**General Chair: Paul Y. S. Cheung**

Innovation and Technology Commission, Hong Kong

**Standing Committee Chair: Stephen S. Yau**

Arizona State University, U. S. A.

## Planning Meeting

17:30 Monday 26th August 2002

All conference participants are invited

Meeting Room: Andrey Wood Room

# COMPSAC 2002 Workshops

## Monday 26th August 2002

14:00-15:30, Break, 16:00-17:30

### **Workshop 1: Web Security and the Semantic Web** -- Andrey Wood Room

*Organiser and Chair:* B. Thuraisingham, National Science Foundation, USA

- *Workshop Chair's Introduction:* B. Thuraisingham, National Science Foundation, USA, E. Ferrari, University of Como, Italy
- *An Application of Directory Service Markup Language (DSML) for Role-based Access Control (RBAC):* D. Shin and G. Ahn, University of North Carolina, USA, J. Park, Syracuse University, USA
- *A Chinese Wall Approach to Privacy Policies for The Web:* F. A. Lategan and M. S. Olivier, Rand Afrikaans University, South Africa
- *MACX: An Access Control System for Digital Libraries and The Web:* E. Bertino, University of Milano, E. Ferrari, University of Como, Italy
- *Hybrid Role Hierarchy for Generalized Temporal Role Based Access Control Model:* J. Joshi, A. Ghafoor, Purdue University, USA, E. Bertino, University of Milan, Italy
- *On the Response of Software Decoys: Conducting Software-Based Deception in The Cyber Battlespace:* B. Michael, Naval Postgraduate School USA
- *Data and Applications Security: Developments and Directions:* B. Thuraisingham, The National Science Foundation, USA
- *Placing the Chinese Walls on The Boundary of Conflicts Analysis of Symmetric Binary Relations:* T. Y. Lin, San Jose State University, USA

## Tuesday 27th August 2002

11:00-12:30, Lunch Break, 14:00-15:30, Break, 16:00-17:30

### **Workshop 2: Dependable On-line Upgrading of Distributed Systems** -- Andrey Wood Room

*Organiser and Chair:* A. Romanovsky, University of Newcastle upon Tyne, UK

- *Workshop Chair's Introduction:* A. Romanovsky, University of Newcastle upon Tyne, I. Smith, Dependable Systems Ltd, UK
- *Online Software Upgrading: New Research Directions and Practical Considerations:* M. E. Segal., Telcordia Technologies, USA
- *Online Upgrades Become Standard:* L. Moser, Eternal Systems, Inc., USA
- *Improving Service Availability via Low-Outage Upgrades:* C. Dislis, Motorola Ireland Ltd., Ireland
- *Dynamic On-line Object Update in The Grumps System:* H. Evans, Glasgow University, UK
- *A Structured Approach to Handling On-Line Interface Upgrades:* C. Jones, A. Romanovsky and I. Welch, University of Newcastle upon Tyne, UK
- *Using RAIC for Dependable On-line Upgrading of Distributed Systems:* C. Liu and D. J. Richardson, University of California, Irvine, USA
- *The Architecture of A Dynamically Updatable, Component-based System:* R. P. Bialek, University of Copenhagen, Denmark
- *Metadata Support for Safe Component Upgrades:* P. Brada, University of West Bohemia in Pilsen, Czech Republic
- *Dynamically Evolvable Distributed Systems:* R. Pandey, S. Malabarba, T. Stapko and B. Hashii, University of California, USA
- *A Case Study of Dependable Software Upgrade with Distributed Components:* X. Shan, and J. Li, Avaya Labs, USA
- *An Upgrade Mechanism Based on Publish/Subscribe Interaction:* M. R. Chaudron, Eindhoven University of Technology, The Netherlands, F. van de laar, Philips Research Laboratories, The Netherlands
- *Towards Upgrading Actively Replicated Servers On-the-fly:* M. Solarski, Fraunhofer Gesellschaft, Germany, H. Meling, Norwegian University of Science and Technology, Norway

## Wednesday 28th August 2002

11:00-12:30, Lunch Break, 14:00-15:30, Break, 16:00-17:30

### **Workshop 3: Cooperative Supports for Distributed Software Engineering** Processes -- Andrey Wood Room

*Organisers and Co-Chairs:* G. Canfora and A. De Lucia, University of Sannio, Italy

- *Workshop Chair's Introduction:* G. Canfora and A. De Lucia, University of Sannio, Italy
- *Generalised Environment for Process Management in Co-operative Software Engineering:* M. Gaeta and P. Ritovato, CRMPA, Italy
- *FlowManager: A Workflow Management System Based on Petri Nets:* L. Aversano, A. Cimitile, P. Gallucci and M. Villani, University of Sannio, Italy
- *Applying Workflow Management to Support Massive Maintenance:* L. Aversano and S. Stefanucci, University of Sannio, Italy, S. Betti and E. Pompella, EDS, Italy
- *A Unified Process Support Framework for Global Software Development:* J. Sa and E. Maslova, University of the West of England, UK
- *Tool Support for Distributed Inspection:* F. Lanubile and T.M. Mallardo, University of Bari, Italy
- *Maintenance in Joint Software Development:* P. F. Tiako, Oklahoma State University, USA
- *Active Artefact Management for Distributed Software Engineering:* C. Boldyreff, D. Nutter and S. Rank, University of Durham, UK
- *Using Peer-to-Peer Technology to Support Global Software Development - Some Initial Thoughts:* S. Bowen and F. Maurer, University of Calgary, Canada
- *Palantir: Coordinating Distributed Workspaces:* A. Sarma and A. Van der Hoek, University of California, USA
- *A Decision Model Supporting Cooperative Work as an Experience:* P. M. Baldassarre, D. Caivano and G. Visaggio, University of Bari, C.A. Visaggio, Politecnico di Bari, Italy
- *A Model for Selecting CSCW Technologies for Distributed Software Maintenance Teams in Virtual Organisations:* C. Tjortjis, G. Dafaoulas, P. Layzell and L. Macaulay, UMIST, UK
- *An Actor-Oriented Approach to Distributed Product Management Systems:* P. Jiang and Q. Mair, Glasgow Caledonian University, UK
- *Tool Demo 1:* H. Gall, Technical University of Vienna, Austria
- *Tool Demo 2:* S. Bowen and F. Maurer, University of Calgary, Canada

## Thursday 29th August 2002

14:00-15:30, Break, 16:00-17:30

### **Workshop 4: Foundation of Data Mining via Granular and Rough Computing** -- Andrey Wood Room

*Organisers and Co-Chairs:* S. Tsumoto, Shimane Medical University, Japan, T. Y. Lin, San Jose State University, USA, and J.F. Peters, University of Manitoba, Canada

- *Workshop Chair's Introduction:* S. Tsumoto, Shimane Medical University, Japan, T. Y. Lin, San Jose State University, USA, J.F. Peters, University of Manitoba, Canada
- *Theorize with Data Using Rough Sets:* Z. Pawlak, Polish Academy of Sciences, Poland
- *Mining Decision-rule Preference Model from Rough Approximation of Preference Relation:* R. Slowinski, Poznan University of Technology, S. Greco and B. Matarazzo, University of Catania, Spain
- *A Rough Set Approach to Measuring Information Granules:* J. F. Peters, University of Manitoba, Canada
- *Software Quality Knowledge Discovery: A Rough Set Approach:* S. Ramanna, University of Winnipeg, Canada
- *Postprocessing of Rule Sets Induced from A Melanoma Data Set:* J. W. Grzymala-Busse, University of Kansas, Z. S. Hippe, University of Information technology and Management, USA
- *Fundamental Issues and Modeling in Database Mining:* T. Y. Lin, San Jose State University, USA
- *Association Rules and Non-Classical Logics:* T. Murai and Y. Sato, Hokkaido University, Japan
- *Logic-based Granular Prototyping:* A. Bargiela, W. Pedrycz, K. Hirota and A. Bargiela, Nottingham Trent University, UK
- *On Similarity Measures for Cluster Analysis in Clinical Laboratory Examination Databases:* S. Hirano and X. Sun, Shimane Medical University, Japan
- *Rule and Matroid Theory:* S. Tsumoto, Shimane Medical University, Japan