

PRELIMINARY

PROGRAM

14th IEEE International Conference and Workshop
on the Engineering of Computer Based Systems
(ECBS' 07)

Conference and Workshops: March 26th-29th, 2007
Tucson, Arizona

“Raising Expectations of Computer Based Systems”

Hosted and supported by

Department of Electrical and Computer Engineering
The University of Arizona



Overview

Monday, March 26, 2007

Time	Salon A	Salon B	Salon D
8:45 - 10:15	Keynote		
10:15 - 10:30	Refreshments		
10:30 - 12:00	Architectures	Component-Based System Design	Embedded RealTime Software
12:00 - 1:30	Lunch		
1:30 - 3:00	Architectures	Distributed Systems Design	Embedded RealTime Software
3:00 - 3:30	Refreshments		
3:30 - 5:00	Architectures	Distributed Systems Design	Embedded RealTime Software

Tuesday, March 27, 2007

Time	Salon A	Salon B	Salon D
8:45 - 10:15	Lifecycle Processes and Process Evolution	Medical Applications	Industrial Application
10:15 - 10:30	Refreshments		
10:30 - 12:00	Requirements Elicitation and Analysis	Modeling and Analysis of Complex Systems	Reliability, Safety, Dependability
12:00 - 1:30	Lunch		
1:30 - 3:00	Panel Discussion		
3:00 - 3:30	Refreshments		
3:30 - 5:00	Model-Based System Development	Reengineering and Reuse	Reliability, Safety, Dependability

Wednesday, March 28, 2007

Time	Salon A	Salon B	Salon D
8:45 - 10:15	Doctoral Symposium	System Assessment, Testing and Metrics	Verification and Validation
10:15 - 10:30	Refreshments		
10:30 - 12:00		System Assessment, Testing and Metrics	Verification and Validation
12:00 - 1:30	Lunch		
1:30 - 3:00	Workshop on Engineering of Autonomic & Autonomous Systems (EASe 2007)	Workshop on Engineering of Autonomic & Autonomous Systems	Poster Session (EASe 2007)

		(EASe 2007)	
3:00 - 3:30	Refreshments		
3:30 - 5:00	Workshop on Engineering of Autonomic & Autonomous Systems (EASe 2007)	Industrial Reports: Towards the Autonomic Business Grid (EASe 2007)	

Thursday, March 29, 2007

Time	Salon A	Salon B	
8:45 - 9:15	Workshop on Model-Based Development: Opening & Introduction		
9:15 - 10:15	MBD Presentations I		
10:15 - 10:30	Refreshments		
10:30 - 11:30	MBD Presentations II		
11:30 - 12:00	MBD Position statements		
12:00 - 1:30	Lunch		
1:30 - 3:00	MBD Working group discussions "Model-Based Systems Development – More Than Graphic Programming"		
3:00 - 3:30	Refreshments		
3:30 - 4:30	Working group discussions (cont'd)		
4:30 - 5:00	MBD Workshop Summary & Working group decisions for the next year		

MONDAY, MARCH 26, 2007

Ballroom Foyer
7:00 - 8:00 am

Registration

Ballroom Foyer
7:45 - 8:45 am

Continental Breakfast

Salon D
8:45 - 8:50 am

Welcome/Introductory Remarks

8:50 – 10:15 am

KEYNOTE:
Composition of Cyber-Physical Systems
Janos Sztipanovits, Vanderbilt University

Ballroom Foyer
10:15 – 10:30 am

Refreshment Break

10:30 – 12:00 noon **PARALLEL SESSIONS**

Salon A

Section A1: Architectures

Generation of Related Performance Simulation Models at an Early Stage in the Design Cycle

Andreas W. Liehr and Klaus Buchenrieder

Formal Architecture Transformation Using Heuristics

Cameron Maxwell, Tim O'Neill and John Leaney

A Case Study: Applying Lyra in Modeling S60 Camera Functionality

Jukka Honkola, Sari Leppänen, Pasi Rinne-Rahkola, Martti Söderlund,
Markku Turunen and Kimmo Varpaaniemi

Salon B

Session B1: Component-Based System Design

Patterns for Integrating and Exploiting Some Non-Functional Properties in Hierarchical Software Components

Hervé Chang and Philippe Collet

Component-Based System Integration via (Meta) Model Composition

Krishnakumar Balasubramanian, Douglas C. Schmidt, Zoltán Molnár and
Ákos Lédeczi

COTS Selection: Past, Present, and Future

Abdallah Mohamed, Guenther Ruhe and Armin Eberlein

Salon D

Session C1: Embedded RealTime Software Systems

Dynamic Scheduling of Skippable Periodic Tasks in Weakly-Hard Real-Time Systems

Maryline Chetto and Audrey Marchand

Time- and Space-Efficient Evaluation of Sparse Boolean Functions in Embedded Software

Vaclav Dvorak

End-User Development Framework for Embedded System Applications

Miroslav Sveda

12:00 – 1:30 pm

Salon E

Lunch

1:30 – 3:00 pm

PARALLEL SESSIONS

Salon A

Section A2: Architectures

Application of Bayesian Networks to Architectural Optimisation

Artem Parakhine, Tim O'Neill and John Leaney

Expanding the View on Complexity within the Architecture Trade-off Analysis Method

David Colquitt and John Leaney

An Event-Driven Architecture for Fine Grained Intrusion Detection and Attack Aftermath Mitigation

Jianfeng Peng, Chuan Feng, Haiyan Qiao and Jerzy Rozenblit

Salon B

Session B2: Distributed Systems Design

Modern Distributed Data Acquisition and Control Systems Based on OPC Techniques

Vu Van-Tan, Dae-Seung Yoo and Myeong-Jae Yi

Node-Oriented Modeling and Simulation of IP Networks

Nanjun Li

Transformation of Existing Programs into Autonomic and Self-Healing Entities

M. Muztaba Fuad and Michael J. Oudshoorn

Salon D

Session C2: Embedded RealTime Software Systems

Agile Development Methodology for Embedded Systems: A Platform-Based Design Approach

Lucas Cordeiro, Raimundo Barreto, Rafael Barcelos, Meuse Oliveira, Vicente Lucena and Paulo Maciel

Embedded System Modeling based on Resource-Oriented Model

Jin Hyun Kim and Jin-Young Choi

Diagnosis of Embedded Software Using Program Spectra

Peter Zoetewij, Rui Abreu, Rob Golsteijn and Arjan J.C. van Gemund

Ballroom Foyer

3:00 – 3:30 pm Refreshment Break

3:30 – 5:00 pm **PARALLEL SESSIONS**

Salon A

Section A3: Architectures

Using Weak Bisimulation for Enterprise Integration Architecture Formal Verification - I

Ernest Cachia and Mark Vella

Design and Description of a Classification System Framework for Easier Reuse

Sérgio Lopes, Adriano Tavares, João Monteiro and Carlos Silva

Salon B

Session B3: Distributed Systems Design

Methods of Sensors Localization in Wireless Sensor Networks

Zenon Chaczko, Ryszard Klempous, Jan Nikodem and Michal Nikodem

Adaptive Misbehavior Detection in Wireless Sensors Network Based on Local Community Agreement

Ryszard Klempous, Jan Nikodem, Lukasz Radosz and Norbert Raus

Design of a Wireless Sensor Network Based Automatic Light Controller in Theater Arts

Chuan Feng, Lizhi Yang, Jerzy W. Rozenblit and Peter Beudert

Salon D

Session C3: Embedded RealTime Software Systems

Integrating Security Modeling into Embedded System Design

Matthew Eby, Jan Werner, Gabor Karsai and Akos Ledeczki

TUESDAY, MARCH 27, 2007

Ballroom Foyer

7:45 - 8:45 am

Continental Breakfast

8:45 – 10:15 am

PARALLEL SESSIONS

Salon A

Session A4: Lifecycle Processes and Process Evolution

A Look at Typical Difficulties in Practical Software Development from the Developer Perspective - A Field Study and a First Solution Proposal with UPEX

Ivonne Erfurth and Wilhelm R. Rossak

Ontological Traceability over the Unified Process

Rodrigo Perozzo Noll and Marcelo Blois Ribeiro

A Service-Oriented Extension of the V-Modell XT

Michael Meisinger and Ingolf Krüger

Salon B

Session B4: Medical Applications

Dimensionality Reduction for the Control of Powered Upper Limb Prostheses

Klaus Buchenrieder

Computer Based Psychotherapy for Treatment of Depression and Anxiety

Byron Purves and David Purves

A Hybrid View in a Laparoscopic Surgery Training System

Chuan Feng, Jerzy W. Rozenblit and Allan J. Hamilton

Salon D

Session C4: Industrial Applications

Reengineering a Legacy Tool for Software Evolution

Chia-Chu Chiang

I-Navigate: Intelligent, Self-Adapting Navigation Maps

Herwig Mayr

Ballroom Foyer

10:15 – 10:30 am

Refreshments

10:30 – 12:00 noon

PARALLEL SESSIONS

Salon A

Session A5: Requirements Elicitation and Analysis

**Selecting Requirements Engineering Techniques Based on Project Attributes –
A Case Study**

Li Jiang and Armin Eberlein

Supporting UML Sequence Diagrams Using a Processor-Net Model

Tony Spiteri Staines

**Reconciling Synthesis and Decomposition: A Composite Approach to Capability
Identification**

Ramya Ravichandar, James D. Arthur and Robert P. Broadwater

Salon B

Session B5: Modeling and Analysis of Complex Systems

Modeling the Functionality of Multi-Functional Software Systems

Alexander Gruler, Alexander Harhurin and Judith Hartmann

**A Theory for Model-Based Transformation Applied to Computer-Supported
Preservation in Digital Archives**

Thomas Triebsees and Uwe M. Borghoff

**A Practical Approach for Process Family Engineering of Embedded Control
Software**

Cord Giese, Arnd Schnieders and Jens Weiland

Salon D

Session C5: Reliability, Safety, Dependability, Security

Model-Based Cyber Security

Galen Rasche, Erin Allwein, Michael Moore and Ben Abbott

Secure Communication Trees in Ad Hoc Networks

Jan Nikodem and Maciej Nikodem

A Multi-Tier, Multi-Role Security Framework for E-Commerce Systems

Ernest Cachia and Mark Micallef

12:00 – 1:30 pm

Salon E

Lunch

1:30 – 3:00 pm

Salon D

PANEL DISCUSSION

Ballroom Foyer

3:00 – 3:30 pm

Refreshments

3:30 – 5:00 pm

PARALLEL SESSIONS

Salon A

Session A6: Model-Based System Development

Model-Based Data Processing with Transient Model Extensions

Michael Thonhauser, Gernot Schmoelzer and Christian Kreiner

Model-Driven Engineering for Development-Time QoS Validation of Component-Based Software Systems

James H. Hill, Sumant Tambe and Aniruddha Gokhale

A Partitioning Analysis of the .NET Common Language Runtime

Kenneth B. Kent, Joshua R. Dick and Joseph C. Libby

Salon B

Session B6: Reengineering and Reuse

DP-Miner: Design Pattern Discovery Using Matrix

Jing Dong, Dushyant S. Lad and Yajing Zhao

Introducing Impact Analysis for Architectural Decisions

Matthias Riebisch and Sven Wohlfarth

Salon D

Session C6: Reliability, Safety, Dependability, Security

Alert Fusion for Computer Host Based Intrusion Detection System

Chuan Feng, Jianfeng Peng, Haiyan Qiao and Jerzy W. Rozenblit

Behavior Analysis-Based Learning Framework for Host Level Intrusion Detection

Haiyan Qiao, Jianfeng Peng, Chuan Feng and Jerzy W. Rozenblit

Engineering Vertical Orchestration: From Biometric Trace Events to Incident Reporting

Patricia O'Hagan, Edward Hanna, Roy Sterritt and Paul McKay

WEDNESDAY, MARCH 28, 2007

Ballroom Foyer

7:45 - 8:45 am

Continental Breakfast

8:40 – 10:15

PARALLEL SESSIONS

Salon A

Session A7: Doctoral Symposium

Validation of Component-Based Software with a Customer Centric Domain Level Approach

Oliver Skroch

Model-Based Empirical Performance Evaluation Based on Relational Traces

Marko Bošković

The Strategic Impact of Service Oriented Architectures

Philipp Liegl

Salon B

Session B7: System Assessment, Testing and Metrics

A Statistical Approach to Model-Based Robustness Testing

Miroslav Popovic and Jelena Kovacevic

Towards Model-Based Testing with Architecture Models

Stephan Schulz, Jukka Honkola and Antti Huima

Testing Time Goal-Driven Requirements with Model Checking Techniques

Gregorio Diaz, Elena Navarro, María-Emilia Cambronero, Valentín Valero and Fernando Cuartero

Salon D

Session C7: Verification and Validation

Exploring Clause Symmetry in a Distributed Bounded Model Checking Algorithm

Hugo Barros, Sergio Campos, Mark Song and Luis Zarate

Reasoning About Cryptographic Protocols in Observational Theories

Imen Zaabar and Narjes Berregeb

Ballroom Foyer

10:15 – 10:30

Refreshments

10:30 – 12:00

PARALLEL SESSIONS

Salon B

Session B8: System Assessment, Testing and Metrics

Automatic Verification and Performance Analysis of Time Constrained SysML

Activity Diagrams

Yosr Jarraya, Andrei Soeanu, Mourad Debbabi and Fawzi Hassaïne

System Level Performance Assessment of SOC Processors with SystemC

Claudio Talarico, Min-sung Koh and Esteban Rodriguez-Marek

Salon D

Session C8: Verification and Validation

IPOG: A General Strategy for T-Way Software Testing

Yu Lei, Raghu Kacker, D. Richard Kuhn, Vadim Okun and James Lawrence

Model Checking of Computer-Based Systems

Jinzhao Wu and Wei Yan

WORKSHOPS

WEDNESDAY, MARCH 28, 2007

Fourth IEEE International Workshop on Engineering of Autonomic & Autonomous Systems (EASe 2007)

1:30 – 3:00 pm PARALLEL SESSIONS

Salon A

EASe Session I

The need for self-managed access nodes in grid environments

Ramon Nou, Ferran Julià, Jordi Torres

On Utility Driven Deployment in a Distributed Environment

Debzani Deb, Michael J. Oudshoorn

Using Signatures of Self-Organisation for Monitoring and Influencing Large Scale Autonomic Systems

Martin Randles, A. Taleb-Bendiab, P. Miseldine, D. Lamb

Salon B

EASe Session II

Model Predictive Analysis for Autonomic Workflow Management in Large-scale Scientific Computing Environments

Steve Nordstrom, Abhishek Dubey, Turker Keskinpala, Rahul Datta, Sandeep
Neema, Ted Bapty

A Generative Approach to the Development of Autonomous Robot Software

Philipp Baer, Roland Reichle, Michael Zapf, Thomas Weise, and Kurt Geihs

Runtime Analysis of a Self-Adaptive Hard Real-Time Robotic Control System

Jens Steiner, Matthias Hagner

Salon D

EASe Session III

Towards Self-Managing Web Sites: The ‘Broken Links’ Problem

David Bustard, Declan Higgins, Adrian Moore, David Ayre

Reflex Autonomicity in an Agent-Based Security System :: The Autonomic Access Control System

Sarah Eowyn Johnston, Roy Sterritt, Edward Hanna, Patricia O'Hagan

An OSA-CBM Multi-Agent Vehicle Health Management Architecture for Self-Health Awareness

Gustavo González, Cecilio Angulo, Cristóbal Raya

Ballroom Foyer Refreshments
3:00 – 3:30 pm

3:30 – 5:00 pm PARALLEL SESSIONS

Salon A EASe Poster Session

System Architecture of an Autonomic Element

M. Muztaba Fuad and Michael J. Oudshoorn

Autonomic Model For Managing Complex Autonomic Model For Managing Complex

Wail M. Omar, Samir K. Amin, A. Taleb-Bendiab

Flexible Architectures and Agents for Adaptive Autonomic Systems

Sebastien Leriche, Jean-Paul Arcangel

Salon B EASe Industrial Reports

Towards the Autonomic Business Grid

Carsten Franke, Wolfgang Theilmann, Yi Zhang, Roy Sterritt

THURSDAY, MARCH 29, 2007

**Fifth Workshop on Model-based Development for Computer Based Systems:
Domain-Specific Approaches to Model-Based Development**

Salon A MBD WORKSHOP

8:45 Workshop opening & Introduction

9:15 Presentations I

Andrea Schauerhuber: Aspect-Oriented Modeling of Ubiquitous Web

Applications: The aspectWebML Approach

Joel Huselius: Evaluating the Quality of Models Extracted from Embedded Real-Time Software

10:15 – 10:30 Refreshments

10:30 Presentations II

Bas Graaf: Visualisation of domain-specific modelling languages using UML

Jing Liu: State-Based Modeling to Support the Evolution and Maintenance of Safety-Critical Software Product Lines

11:30 Position statements

Bernhard Schaetz: Structured Functional Specifications - Modularization and Merging

Manuel Wimmer et. al: Bridging DSLs to UML with Profile and Transformation Generation

(see <http://www.proinf.de/mbd> for updates and papers)

12:00 – 1:30 Lunch

1:30 – 3:00 Working group discussions "Model-Based Systems Development - More Than Graphic Programming"

3:00 – 3:30 Refreshments

3:30 – 4:30 Working group discussions (cont'd)

4:30 – 5:00 Workshop Summary & Working group decisions for the next year