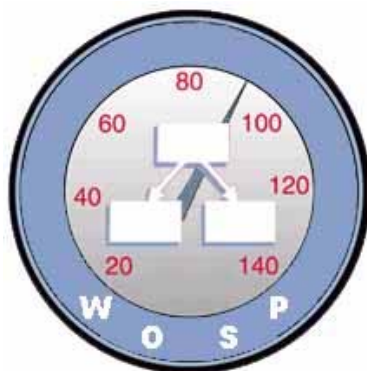


# Fifth International Workshop on Software and Performance

## WOSP'05 PROGRAM

Palma, Balearic Islands, Spain  
July 11-14, 2005



Sponsored by  
Association for Computing Machinery  
SIGMETRICS and SIGSOFT

In cooperation with  
Computer Measurement Group (CMG)  
IFIP WG 6.3 and 7.3

Organized by the  
Universitat de les Illes Balears



### General Chair

Ramon Puigjaner, Universitat de les Illes Balears (ES)

### Program Co-Chairs

Günter Haring, Universität Wien (AT)  
Carlos Juiz, Universitat de les Illes Balears (ES)  
Dorina Petriu, Carleton University (CA)

### Steering Committee

Simonetta Balsamo (IT)	Daniel Menascé (US)
Paul Clements (US)	Rob Nord (DE)
Pankaj Garg (US)	Robert Pooley (UK)
Hassan Gomaa (US)	Bran Selic (CA)
Günter Haring (AT)	Connie Smith (US)
Ulrich Herzog (DE)	Elaine Weyuker (US)
Mary Hesselgrave (US)	Alex Wolf (US)
Peter Hughes (UK)	Murray Woodside (CA)
Paola Inverardi (IT)	Dave Zubrow (US)

### Tutorial Chair

Daniel Menascé, George Mason University (US)

### Financial Chair

Bartomeu Serra, Universitat de les Illes Balears (ES)

### Publicity Co-Chairs

André Bondi, Siemens Corporate Research (US)  
Vittorio Cortellessa, Università L'Aquila (IT)

### Program Committee

Virgilio Almeida (BR)	Juha Kuusela (SF)
Simonetta Balsamo (IT)	Doug Lea (US)
Abdemalek Benzekri (FR)	Shikharesh Majumdar (CA)
Grady Booch (US)	Rafaela Miranda (IT)
Mariacarla Calzarossa (IT)	Gail Murphy (CA)
Javier Campos (ES)	Dave Nuttall (UK)
Lawrence Chung (US)	Ana Pont (ES)
Paul Clements (US)	Robert Pooley (UK)
Pierre Combes (FR)	Wolfgang Pree (AT)
Asit Dan (US)	Jerome Rolia (CA)
Evgeni Dimitrov (DE)	William Sanders (US)
Reiner Dumke (DE)	Doug Schmidt (US)
Pankaj Garg (US)	Bran Selic (CA)
Hassan Gomaa (US)	Bartomeu Serra (ES)
Neil Gunther (US)	Connie Smith (US)
Jane Hillston (UK)	Clemens Szyperski (US)
Peter Hughes (UK)	Inkeri Verkamo (FI)
Giuseppe Iazeolla (IT)	Vidar Vetland (NO)
Paola Inverardi (IT)	Elaine Weyuker (US)
Helena Karatza (GR)	Lloyd Williams (US)
Mark Klein (US)	Murray Woodside (CA)
Paul Kogut (US)	

### Local Chair

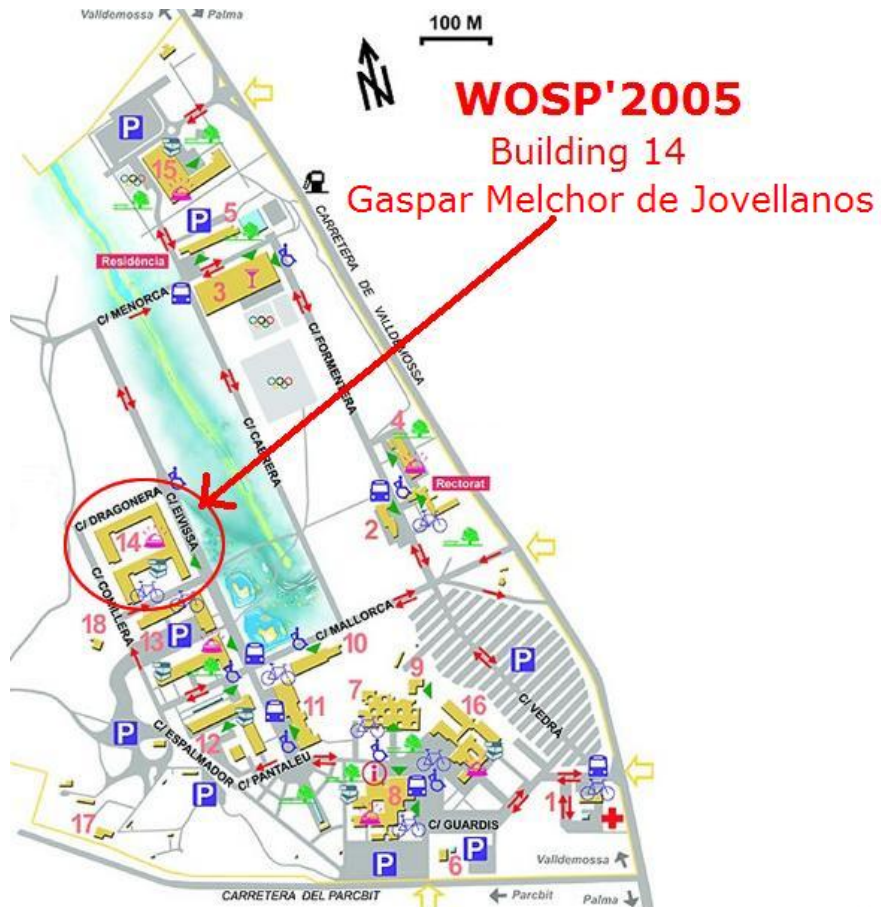
Carlos Guerrero, Universitat de les Illes Balears, Spain

### Secretariat

Isaac Lera, Roser Lluch, Magdalena Riudavets, Pere Pau Sancho and Miquela Vanrell

## LOCATION

The sessions will be held at the Conference room (Sala d'Actes) of the Gaspar Melchor de Jovellanos building in the UIB campus



(Valldemossa road km 7.5).

## TRANSPORTATION

A bus will pick up the conference attendees at the official hotels to bring them to the conference site. At the end of the sessions a bus will also transport the attendees to the official hotels.

## BUS TIMETABLE

Monday, July 11

➤ From the hotels to the UIB

Bosque Sol: 08:10  
Isla de Mallorca: 08:20  
Mirador: 08:25  
Palas Atenea: 08:30

➤ From the UIB to the hotels: 18:30

Tuesday, July 12

➤ From the hotels to the UIB

Bosque Sol: 08:10  
Isla de Mallorca: 08:20  
Mirador: 08:25  
Palas Atenea: 08:30

➤ From the UIB to the hotels: 18:30

➤ From the hotels to the Bellver Castle

Isla de Mallorca: 20:00  
Mirador: 20:10  
Palas Atenea: 20:15  
Bosque Sol: 20:25

Wednesday, July 13

➤ From the hotels to the UIB

Bosque Sol: 07:25  
Isla de Mallorca: 07:35  
Mirador: 07:40  
Palas Atenea: 07:45

➤ From the UIB to the hotels: 18:30

➤ Note:

The Bahía Mediterráneo Restaurant is at walking distance from all the hotels.

Thursday, July 14

➤ From the hotels to the UIB

Bosque Sol: 07:25  
Isla de Mallorca: 07:35  
Mirador: 07:40  
Palas Atenea: 07:45

➤ From the UIB to the hotels: 19:00

## MONDAY, JULY 11

09:00 Registration

09:30 **TUTORIAL**

Software Rejuvenation - Modeling and Analysis  
*Kishor Trivedi and Kalyan Vaidyanathan, Duke Univ. (US)*

In this tutorial, methods of evaluating the effectiveness of proactive fault management in operational software systems and determining optimal times to perform rejuvenation will be discussed. This is done by developing stochastic models which tradeoff the cost of unexpected failures due to software aging with the overhead of proactive fault management. The second half the tutorial will deal with measurement-based models which are constructed using workload and resource usage data collected from operating systems over a period of time. The models are then used to determine the best time to perform rejuvenation. It will also be described the use of rejuvenation in cluster systems and its implementation in a major commercial system.

13:00 Lunch

14:30 **TUTORIAL**

Workload Information: Mapping Businesses and Applications to Servers and Processes  
*Tim R. Norton, Visa (US)*

This tutorial looks at some techniques for measuring system resource usage and explores related issues, such as aggregation; categorization; and probation. Using the understanding of general system measurements as a foundation, the tutorial will then explore the business side of the equation. The tutorial concludes with a discussion of the relationship between these two aspects of computer workloads, including how the decisions related to one can change the meaning of the other, and the need for a repository of definitions and relationships to provide workload consistency from business products to computer systems.

18:30 Bus departure

14:30 **OPENING REMARKS**

14:45 **INVITED TALK**

Chair: Dorina Petriu

An Overview of MDA: Where It Came From and Where It's Going  
*Michael Rosen, Wilton Consulting Group (US)*

15:45 Break

16:15 **SESSION 1: MODEL TRANSFORMATIONS 1**

Chair: Connie Smith

**REGULAR PAPERS**

Performance by Unified Model Analysis (PUMA)  
*M. Woodside, D.C. Petriu, D.B. Petriu, H. Shen, T. Israr, Carleton Univ. (CA); J. Merseguer, Univ. Zaragoza (ES)*

From StoCharts to MoDeST: a comparative reliability analysis of train radio communications

*H. Hermanns, Univ. Saarlandes (DE); D.N. Jansen, Max-Planck-Inst. Informatik (DE); Y.S. Usenko, Tech. Univ. Eindhoven (NL)*

From Design to Analysis Models: a Kernel Language for Performance and Reliability Analysis of Component-based Systems

*V. Grassi, R. Mirandola, A. Sabetta, Univ. Rome "Tor Vergata" (IT)*

**POSTER PAPER**

Performance Evaluation of UML Software Architectures with Multiclass Queueing Network Models

*S. Balsamo, M. Marzolla, Univ. Ca'Foscari di Venecia (IT)*

20:30 **RECEPTION AT THE BELLVER CASTLE**

Offered by the Palma Town Hall

## TUESDAY, JULY 12

09:00 Registration

09:30 **TUTORIAL**

MARTE: The Future of the UML Profile for Schedulability, Performance and Time  
*Murray Woodside and Dorina C. Petriu, Carleton Univ. (CA)*

The tutorial will discuss the capabilities and limitations of the present version of the SPT Profile, with the help of a few examples. Next, the scope, goals and approach of the emerging UML Profile for Quality-of-Service and Fault Tolerance will be presented and compared with SPT. The QoS Profile supports modeling a wide range of QoS concepts (QoS characteristics, constraints, contracts, execution models, adaptation, monitoring, etc.). The goal of the tutorial is not only to inform the audience of the latest OMG developments, but also to collect ideas and suggestions for a future proposal in response to the MARTE RFP. The tutorial will be followed by a WOSP Working Session, where those who are interested are invited to express their feedback and comments.

13:00 Lunch

## WEDNESDAY, JULY 13

08:30 **SESSION 2: SYSTEM PERFORMANCE 1**

Chair: Murray Woodside

**REGULAR PAPERS**

Ensuring Stable Performance for Systems that Degrade  
*A. Avritzer, A. Bondi, Siemens Corporate Research (US); E.J. Weyuker, AT&T Labs Research (US)*

A Method for Evaluating the Impact of Software Configuration  
*M. Sopitkamol, D. Menascé, George Mason Univ. (US)*

Run-time Performance Management of the Siena Publish/Subscribe Middleware

*M. Caporuscio, A. Di Marco, P. Inverardi, Univ. L'Aquila (IT)*

10:00 **INVITED TALK**  
Chair: Günter Haring  
Designing High Performance Data Access Systems  
*Andrew Hanushevsky, Stanford Univ. (US)*

11:00 Break

11:30 **SESSION 3: MODEL TRANSFORMATIONS 2**  
Chair: Carlos Juiz

#### REGULAR PAPERS

A Model Transformation Framework for the Automated Building of Performance Models from UML Models  
*A. D'Ambrogio, Univ. Rome "Tor Vergata" (IT)*

From UML Models to Software Performance Results: An SPE Process Based on XML Interchange Formats  
*C.U. Smih, Performance Engineering Services (US); V. Cortellessa, A. Di Marco, Univ. dell'Aquila (IT); C.M. Lladó, Univ. Balearic Islands (ES); L.G. Williams, Software Eng. Research (US)*

From UML to LQN by XML algebra-based graph transformations  
*G. Ping Gu, D.C. Petriu, Carleton Univ. (IT)*

13:00 Lunch

14:30 **SESSION 4: MEASUREMENT AND TESTING**  
Chair: Vincenzo Grassi

#### REGULAR PAPER

Application of Redundant Computation in Software Performance Analysis  
*Z. Alzamil, Riyadh Col. Technology (SA); B. Korel, Illinois Inst. Technology (US)*

#### EXPERIENCE PAPER

Towards a Framework for Source Code Instrumentation Measurement Validation  
*H. Najafzadeh, Seth Chaiken, State Univ. New York (US)*

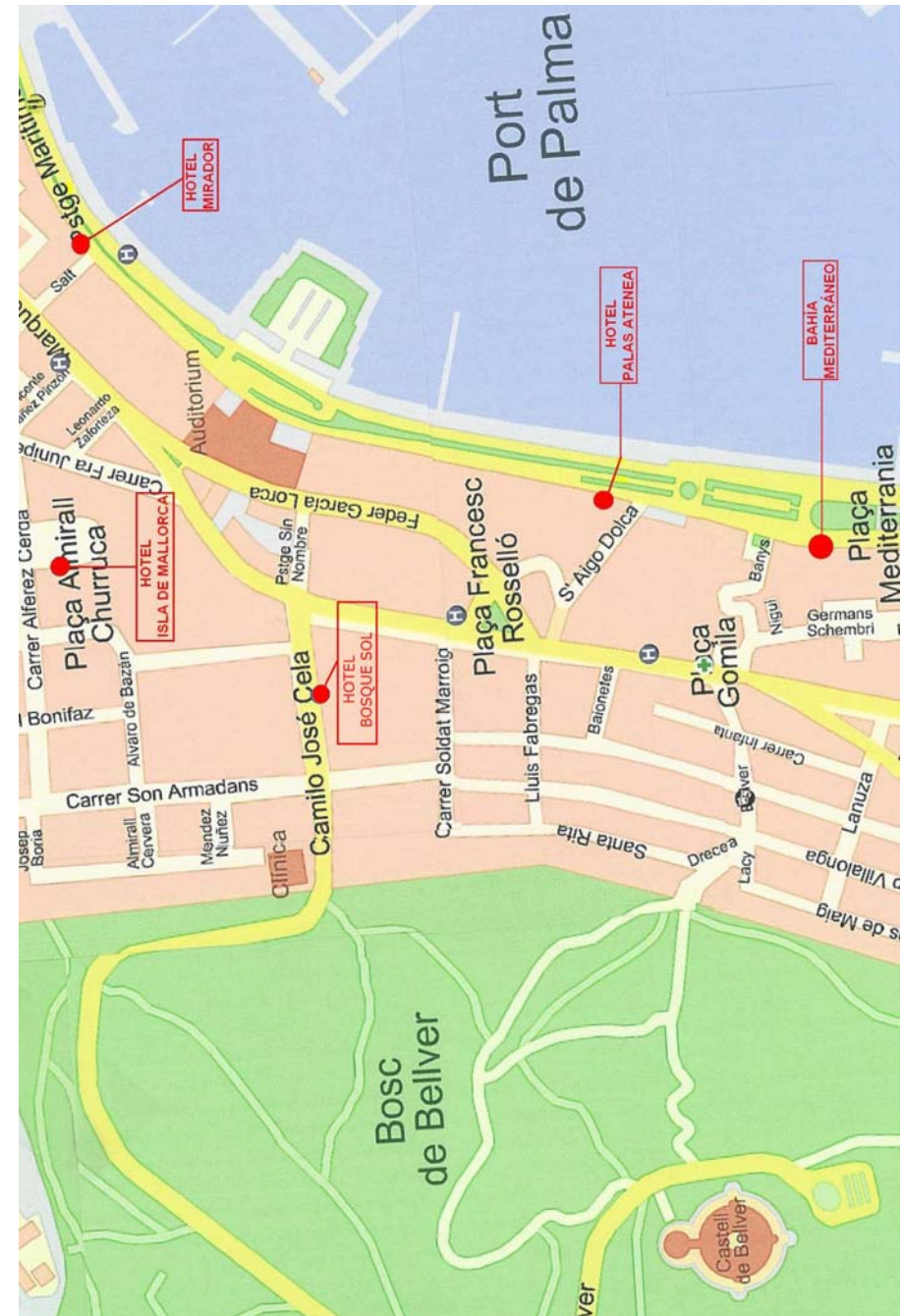
#### POSTER PAPER

Software Performance Testing Using Covering Arrays: Efficient Screening Designs with Categorical Factors  
*D.S. Hoskins, C.J. Colbourn, D.C. Montgomery, Arizona State Univ. (US)*

15:40 Break

16:10 **WORKING WORKSHOP SESSION**

21:00 **CONFERENCE DINNER**  
Bahía Mediterráneo Restaurant



## THURSDAY, JULY 14

- 08:30 **SESSION 5: SPE APPLICATIONS**  
Chair: Vittorio Cortellessa
- EXPERIENCE PAPER**  
Modeling the Performance of a NAT/Firewall Network Service for the IXP2400  
*T. Verdickt, W. Van de Meerssche, K. Vlaeminck, T. Stevens, F. De Turck, B. Dhoedt, Ghent Univ. (BE)*
- WORK IN PROGRESS PAPER**  
Applying SPE Techniques for Modeling a Grid-enabled JAVA Platform  
*M. Curiel, M.A. Pérez de Ovalles, R. González, Simón Bolívar Univ. (VE)*
- 09:10 **INVITED TALK**  
Chair: Ramon Puigjaner  
Safety Critical Software Development for Space Application  
*Michel Turin, Gtió (FR)*
- 10:10 Break
- 10:50 **SESSION 6: MODELLING AND WORKLOADS**  
Chair: Simonetta Balsamo
- REGULAR PAPER**  
Automatic Generation of Layered Queuing Software Performance Models from Commonly Available Traces  
*T.A. Israr, IBM Canada (CA); D.H. Lau, G. Franks, M. Woodside, Carleton Univ. (CA)*
- EXPERIENCE PAPERS**  
Solving Layered Queueing Networks of Large Client-Server Systems with Symmetric Replication  
*T. Omari, G. Franks, M. Woodside, A. Pan, Carleton Univ. (CA)*  
Extending TPC-W to allow for fine grained workload specification  
*C. Kurz, Univ. Vienna (AT); C. Guerrero, R. Puigjaner, Univ. Balearic Islands (ES); G. Haring, Univ. Vienna (AT)*
- POSTER PAPERS**  
Modeling continuous changes of the user's dynamic behavior in the WWW  
*R. Peña-Ortiz, Intelligent Software Components S.A. (ES); J. Sahuquillo, A. Pont, J.A. Gil, Polytechnic Univ. Valencia (ES)*  
Fast Estimation of Probabilities of Soft Deadline Misses in Layered Software Performance Models  
*T. Zheng, M. Woodside, Carleton Univ. (CA)*  
A Web Service for Solving Queuing Network Models using PMIF  
*J. Rosselló, C.M. Lladó, R. Puigjaner, Univ. Balearic Islands (ES); C.U. Smith, Performance Engineering Services (US)*

## WORK IN PROGRESS PAPER

Automatic Performance Evaluation and Feedback for MASCOT designs  
*P.P. Sancho, C. Juiz, R. Puigjaner, Univ. Balearic Islands (ES)*

13:00 Lunch

## SESSION 7: MULTIPLE NON-FUNCTIONAL ASPECTS

Chair: Raffaella Mirandola

## REGULAR PAPERS

How far are we from the definition of a common software performance ontology?  
*V. Cortellessa, Univ. L'Aquila (IT)*

Performance Assessment on Ambient Intelligent Applications through Ontologies

*I. Lera, C. Juiz, Univ. Balearic Islands (ES); C. Kurz, Univ. Vienna (AT); R. Puigjaner, Univ. Balearic Islands (ES); G. Haring, J. Zottl, Univ. Vienna (AT)*

Architecture Based Analysis of Performance, Reliability and Security of Software Systems

*V.S. Sharma, Indian Inst. Tech. (IN); K.S. Trivedi, Duke Univ. (US)*

16:00 Break

## SESSION 8: SYSTEM PERFORMANCE 2

Chair: Daniel Menascé

## REGULAR PAPERS

A capacity management service for resource pools

*J. Rolia, L. Cherkasova, M. Arlitt, Hewlett-Packard Laboratories (US); A. Andrzejak, Zuse Inst. Berlin (DE)*

Evolutionary Performance-Oriented Development of Parallel Programs by Composition of Components

*N. Mahmood, Y. Feng, J.C. Browne, Univ. Texas at Austin (US)*

## EXPERIENCE PAPER

A J2EE Application for Process Accounting, LPAR Accounting, and Transaction Accounting

*C.E. Wu, W.P. Horn, IBM T.J. Watson Research Center (US)*

## POSTER PAPER

Performance Characterization of Decentralized Algorithms for Replica Selection in Distributed Object Systems

*C. Tan, Massachusetts Inst. Technology (US); K. Mills, National Inst. Standards and Technology (US)*

## WORK IN PROGRESS PAPER

EPYFQ: A Novel Scheduling Algorithm for Performance Virtualization in Shared Storage Environment

*Y. Feng, Y. Zhang, R. Jia, Northwestern Polytechnical Univ. (CN)*

18:20 **CLOSING REMARKS**



■ Departament de Presidència

Direcció Insular

d'Informació Turística



**Universitat de les  
Illes Balears**