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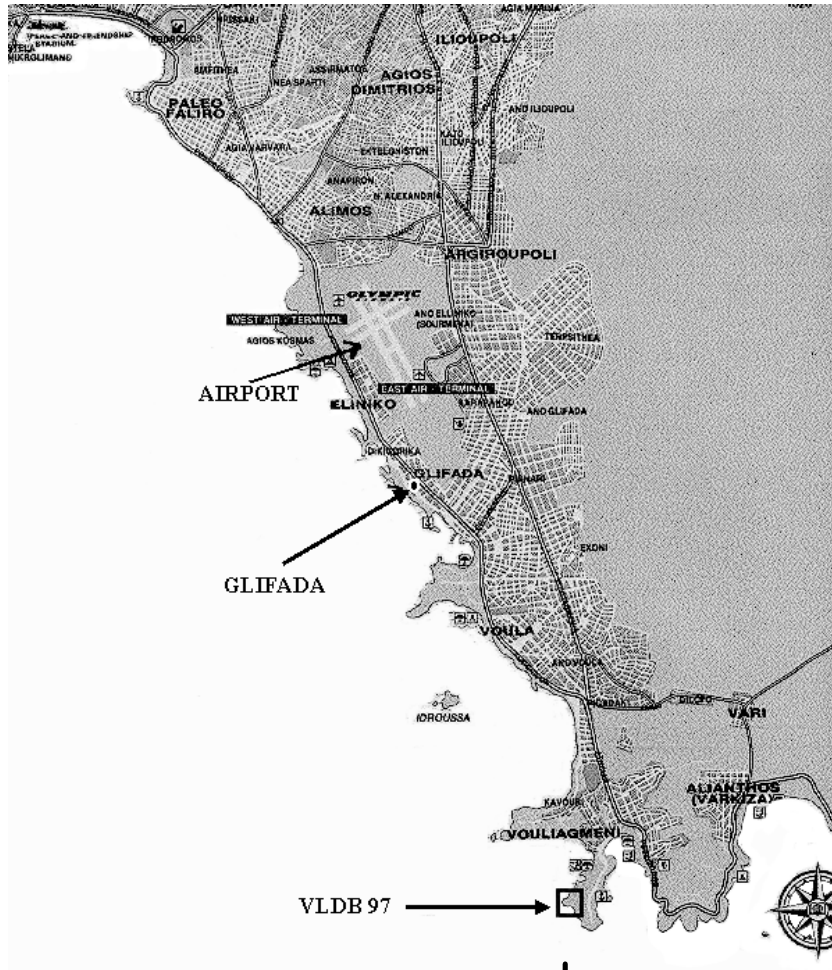
# FINAL PROGRAM

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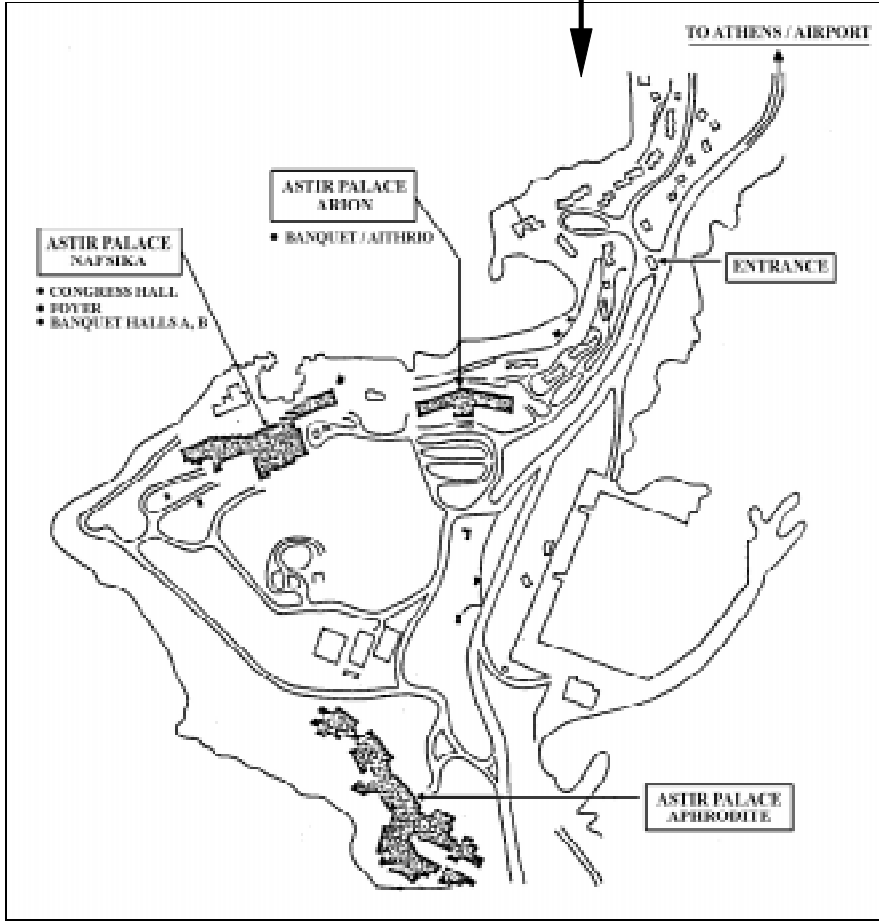
Twenty-third  
International Conference  
on  
Very Large Data Bases

Athens, Greece  
26-29 August, 1997

The Athens Airport Glyfada and Vouliagmeni Areas

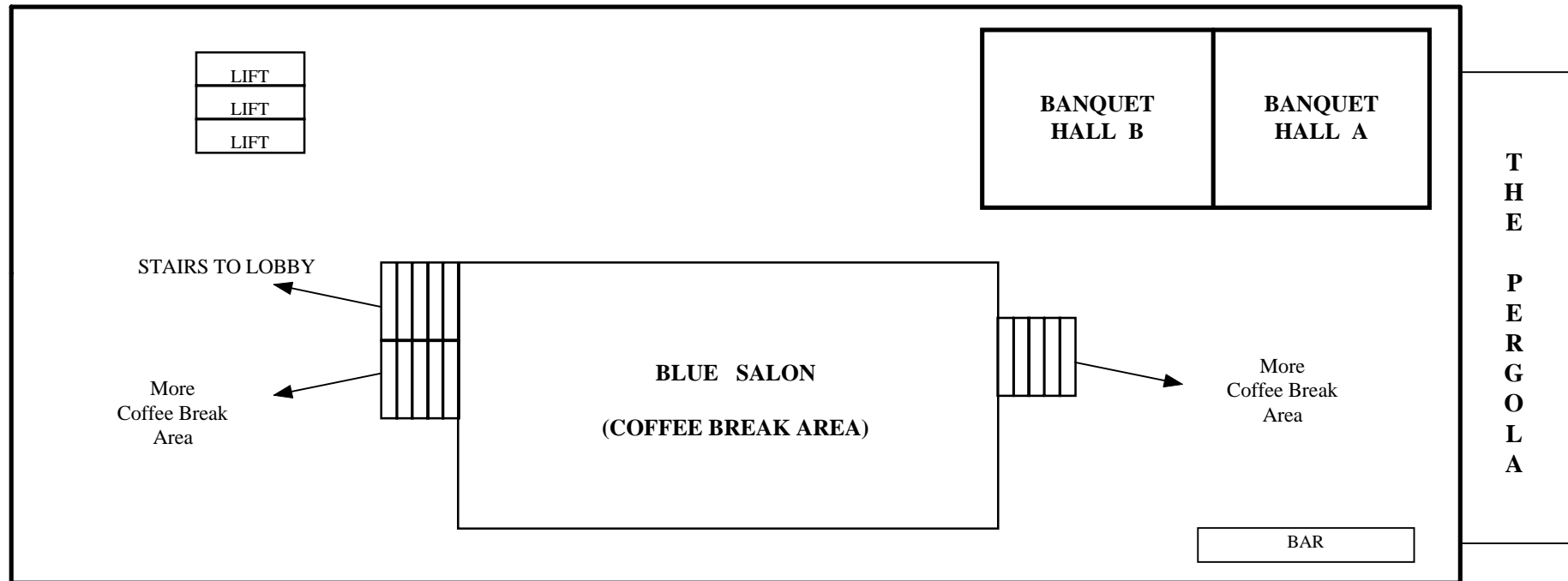
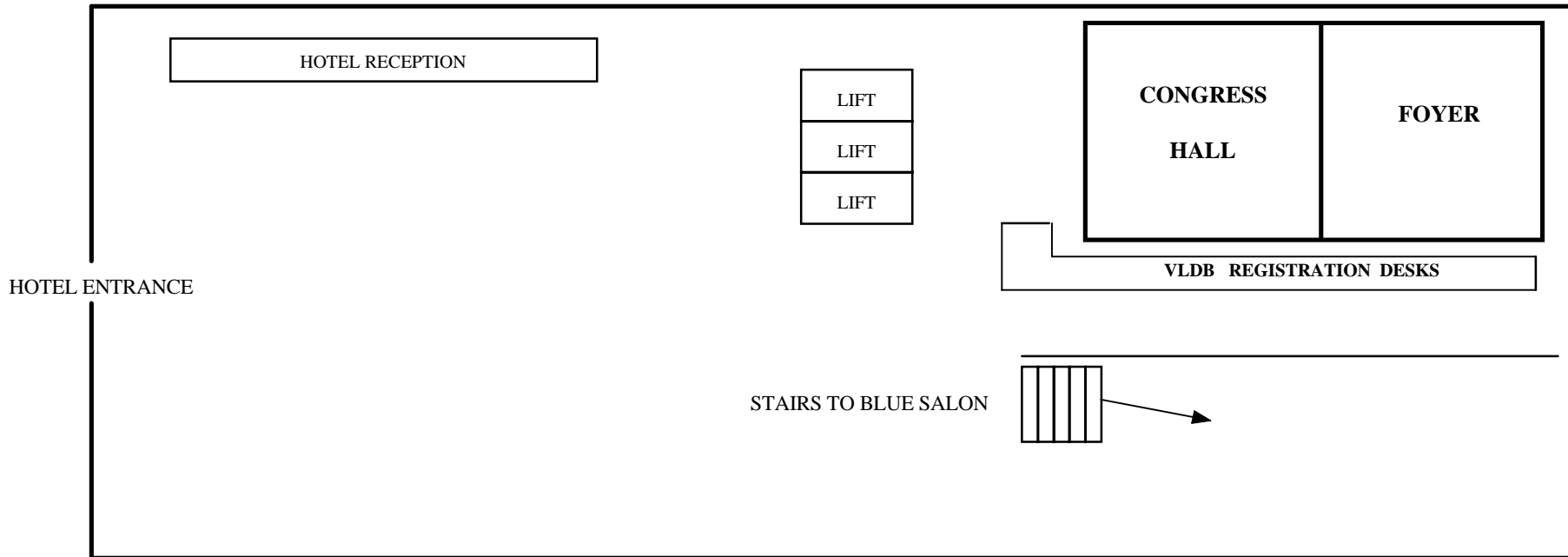


DETAIL



The Astir Palace Hotel Area

# HOTEL NAFSIKA - LOBBY LEVEL



# HOTEL NAFSIKA - LOWER LEVEL

## Welcome to VLDB 1997

On behalf of the Conference Organizing Committee, welcome to the 23<sup>rd</sup> International Conference on Very Large Data Bases. We have got an excellent program which balances in a nice way research and practice, including research and industry sessions, tutorials and panels. We have selected a beautiful hotel and of course we are in one of the most beautiful countries of Europe! We hope that you will enjoy and profit from the presentations during this conference, have a good time meeting colleagues from around the world and take the opportunity to sample the delights of Athens.

We have spent the last two years working hard to plan an excellent conference and I would like to offer my sincere thanks to all my colleagues around the world who made it possible.

I look forward to meeting each of you in the next few days.

A handwritten signature in black ink, appearing to read 'Yannis Vassiliou', written in a cursive style.

Yannis Vassiliou  
General Chair

## Conference Program Outline

Time	Congress Hall	Foyer	Banquet Hall A
<b>Tuesday, August 26</b>			
08:00	REGISTRATION		
09:00 - 10:30	<b>TUTORIAL 1</b> Data Warehousing	<b>TUTORIAL 2</b> Geographic Information Systems	
10:30 - 11:00	Coffee Break		
11:00 - 12:30	<b>TUTORIAL 1 (cont.)</b> Data Warehousing	<b>TUTORIAL 2 (cont.)</b> Geographic Information Systems	
12:30 - 14:00	Lunch Break		
14:00 - 15:30	<b>TUTORIAL 3</b> Object-Relational Database Systems	<b>TUTORIAL 4</b> Visual Data Mining	
15:30 - 16:00	Coffee Break		
16:00 - 17:30	<b>TUTORIAL 3 (cont.)</b> Object-Relational Database Systems	<b>TUTORIAL 4 (cont.)</b> Visual Data Mining	
20:00 - 23:00	WELCOME RECEPTION: The Pergola		
20:00	REGISTRATION		
<b>Wednesday, August 27</b>			
08:00	REGISTRATION		
09:00 - 09:30	OPENING CEREMONY*		
09:30 - 10:30	KEYNOTE SPEECH 1* <b>Innovation in Database Management: Computer Science vs. Engineering</b>		
10:30 - 11:00	Coffee Break		
11:00 - 12:30	<b>Research Session 1</b> Data Warehousing	<b>Research Session 2</b> Novel Data Types	<b>Industrial Session 1</b> System Experiences
12:30 - 14:00	Lunch Break		
14:00 - 15:30	<b>Research Session 3</b> Transactions and Reliability	<b>Research Session 4</b> Multidimensional Databases	<b>Industrial Session 2</b> Application Challenges
15:30 - 16:00	Coffee Break		
16:00 - 17:30	<b>Research Session 5</b> Database Design	<b>Research Session 6</b> Data Mining	<b>Research Session 7</b> Web Databases
<b>Thursday, August 28</b>			
09:00 - 10:30	<b>TUTORIAL 5</b> Workflow Management	<b>Research Session 8</b> Tertiary Storage	<b>Research Session 9</b> Heterogeneous Databases
10:30 - 11:00	Coffee Break		
11:00 - 12:30	<b>TUTORIAL 5 (cont.)</b> Workflow Management	<b>Research Session 10</b> Query Optimization	<b>Research Session 11</b> Distributed Databases
12:30 - 14:00	Lunch Break		
14:00 - 15:30	<b>TUTORIAL 6</b> Multimedia Databases	<b>Research Session 12</b> Database Algorithms	<b>Industrial Session 3</b> Research Visions
15:30 - 16:00	Coffee Break		
16:00 - 17:30	<b>TUTORIAL 6 (cont.)</b> Multimedia Databases	<b>Research Session 13</b> Sorts and Joins	<b>Panel Session 1</b> Very Large OLAP and Statistical Databases - Progress and Problems
17:45 - 18:45	KEYNOTE SPEECH 2* <b>The Microsoft Repository</b>		
20:00 - 23:00	CONFERENCE BANQUET: The Pergola		
<b>Friday, August 29</b>			
08:30 - 10:00	<b>Research Session 14</b> Spatial Access Methods	<b>Research Session 15</b> Querying and Browsing	<b>Industrial Session 4</b> Industry Solutions
10:00 - 10:15	Coffee Break		
10:15 - 11:15	10 YEAR AWARD TALK*		
11:30 - 13:00	<b>Research Session 16</b> Query Processing	<b>Research Session 17</b> Multimedia Databases	<b>Panel Session 2</b> Digital Libraries and Digital Museums: Are they Databases?
13:00 - 14:00	CLOSING CEREMONY*		

\* All plenary sessions to be held in the Congress Hall

## Opening Ceremony

*Wednesday, August 27, 09:00 -09:30, Congress Hall*

**Brief Presentations by:** Government representatives and the Conference Officials

## Tutorials

### **Tutorial 1: The Ins and Outs (and everything in between) of Data Warehousing**

Donovan Schneider

*Tuesday, August 26, 09:00 - 12:30, Congress Hall*

**Session chair:** Ken Ross (USA)

This tutorial seeks to provide clarity to the current confusion on what is and isn't data warehousing by focusing on the following five core functions of a data warehouse: Data Extraction and Preparation (getting data into the warehouse), Data Modeling and Schema Design, Data storage within the warehouse, Data access within the warehouse, Client analysis and applications. Similarities and differences between OLTP and data warehousing systems will be highlighted. Furthermore, emphasis will be placed on discussing features of database vendors' products, as well as on-going research projects. Open research problems at all levels will be discussed. Examples derived from data warehousing customers will be used heavily in the presentation.

This tutorial is targeted at database researchers as well as practitioners. The research community will be served by learning about all of the different aspects of data warehousing, from data extraction from an operational system, to data modeling, to client analysis. Emphasis will be placed on identifying open research problems in each of these areas. Practitioners will be served by getting a broader and more technical overview to the warehousing arena and its primary differences from OLTP, as well as learning about techniques employed by various database vendors.

DONOVAN SCHNEIDER is a Senior Staff Engineer at Red Brick Systems, Inc. From Sept. 1990 to Nov. 1994, he was a Member of Technical Staff at Hewlett-Packard Laboratories in Palo Alto where he worked on a number of research projects involving parallel query processing. Dr. Schneider received a Ph.D. in Computer Science from the University of Wisconsin, Madison in 1990 for his work on parallel join query processing in the Gamma database machine. He has published over 20 research papers, served on numerous program committees including SIGMOD, VLDB, PDIS, and Data Engineering, and was the editor for SIGMOD '95. He received the Best Paper Award at SIGMOD in 1990.

### **Tutorial 2: Geographic Information Systems**

Hanan Samet

*Tuesday, August 26, 09:00 - 12:30, Foyer*

**Session chair:** Tok Wang Ling (Singapore)

The objective of this tutorial is to introduce and understand the technical issues behind current and emerging developments in geographic information systems (GIS). The implementation of such systems combines techniques from image processing, pattern recognition, computer graphics, cartography, databases, and graphical user interfaces. Attendees will gain an appreciation of the common underlying concepts and also their relationship to issues that arise in the related fields. Topics include systems, problems, data structures, and algorithms. They will also learn how they are addressed in a some commercial systems and see a demonstration of their use in a research prototype. The focus will be on simplicity, differences between competing approaches, and how to perform a proper evaluation.

HANAN SAMET is a Professor of Computer Science at the University of Maryland, College Park. He is a member of the Computer Vision Laboratory of the Center for Automation Research and also has an appointment in the University of Maryland Institute for Advanced Computer Studies. At the Computer Vision Laboratory he leads a number of research projects on the use of hierarchical data structures for geographic information systems. His research group has developed the QUILT system which is a GIS based on hierarchical spatial data structures such as quadrees and octree, and the SAND system which integrates spatial and non-spatial data. He received his Ph.D. in Computer Science from Stanford University in 1975. He has consulted for a number of industrial and government organizations and has conducted numerous short courses, seminars, and tutorials on geographic information systems, spatial data structures, LISP, and artificial intelligence. He has written over 125 technical publications and is considered as an authority on the use and design of hierarchical spatial data structures such as the quadtree for geographic information systems, image processing, and computer graphics. He is an Area Editor of several international journals and the author of the two books "The Design and Analysis of Spatial Data Structures" and "Applications of Spatial Data Structures: Computer Graphics, Image Processing and GIS" published by Addison-Wesley. He is a Fellow of the ACM, IEEE, and the IAPR (International Association of Pattern Recognition).

### **Tutorial 3: Object-Relational Database Systems - Principles, Products, and Challenges**

Krishna Kulkarni, Nelson Mattos, Anil K. Nori

*Tuesday, August 26, 14:00 - 17:30, Congress Hall*

**Session chair:** Christine Collet (France)

"Object-relational" database systems are emerging as the next major generation of commercial database system technology. Current products from various DBMS vendors (e.g., IBM, Informix, Oracle, UniSQL, and others) provide varying degrees of object-relational features, and all of the major vendors appear to be on course to delivering full object-relational support in their products over the next few years. In addition, the SQL3 standard is pushing in this direction as well. The tutorial will address what the key features are for object-relational database systems, what existing products provide, and where these systems are heading (both in terms of standards and their end goals).

KRISHNA KULKARNI is working as a database architect at Informix Software, Inc. since September 1995. Prior to that, Krishna was with the NonStop SQL Group, Tandem Computers Inc. and with the Database Research Group, Digital Equipment Corporation. Krishna currently serves as a member of the ANSI X3H2 Technical Committee on Database Languages and ISO DBL Rapporteur Group. Krishna has contributed extensively to the design of SQL3.

NELSON MATTOS is a Senior Technical Staff Member in IBM's Data Base Technology Institute. He is a technical leader in SQL and in object-relational extensions to IBM's DB2 products as well as in the Extender products that exploit DB2's object-relational features. He is heavily involved in the SQL3 standard, serving as a key IBM representative on the ANSI and ISO SQL committees.

ANIL K. NORI is one of the lead architects at Oracle Corporation USA. He is working on support for object-relational features in Oracle's DBMS products, and has been with Oracle since 1994. Previously, he worked on Rdb for Digital Equipment Corporation in Nashua; before that, he was with the Computer Corporation of America in Cambridge, MA. He has worked in the area of database research and product development for over 17 years.

### **Tutorial 4: Visual Data Mining**

Daniel A. Keim

*Tuesday, August 26, 14:00 - 17:30, Foyer*

**Session chair:** Christos Faloutsos (USA)

The goal of the tutorial is to provide an overview of data visualization techniques which can be used for exploring large databases. The tutorial presents the state-of-the-art in data visualization, classifying the existing visual data mining techniques into eight groups: Geometric, Icon-based, Graph-based, Pixel-oriented, Hierarchical, 3D, Dynamic, and Hybrid Techniques. Besides describing each of the classes, the tutorial focuses on new developments in data visualization, which are relevant to the area of data mining. In particular, we describe a wide range of recently developed techniques for visualizing large amounts of arbitrary multi-attribute data which does not have any two- or three-dimensional semantics and therefore does not lend itself to an easy display. A detailed comparison shows the strength and weaknesses of the existing techniques and reveals potentials for further improvements. Several examples demonstrate the benefits of visual data mining techniques in real database applications. The tutorial concludes with an overview of existing visual data mining systems, including research prototypes as well as commercial products.

DANIEL A. KEIM is a Teaching and Research Assistant at the University of Munich, Germany, since October 1994. He has given several lectures and tutorials on different topics, including information visualization, computer graphics and visualization, visual database exploration etc. He has also been a member of several program committees. Dr. Keim received his Diploma in Computer Science from the University of Dortmund, Germany, in August 1990 and his PH.D in Computer Science from the University of Munich, Germany in October of 1994. He has also been a Research Associate at the Naval Postgraduate School, Monterey, CA, from September of 1990 to August of 1991.

### **Tutorial 5: Workflow Management - From Business Process Automation to Inter-Organizational Collaboration**

Dimitrios Georgakopoulos, Marek Rusinkiewicz

*Thursday, August 28, 09:00 - 12:30, Congress Hall*

**Session chair:** Kazimierz Subieta (Poland)

Today's business enterprises must deal with global competition, reduce the cost of doing business, and rapidly develop new services and products. To address these requirements enterprises must constantly reconsider and improve the way they do business and must change their systems, applications, and human organizations to support evolving business processes. Workflow technology provides methodologies and software to support (i) business process modeling to capture business processes as workflow specifications, (ii) business process reengineering to improve specified processes, and (iii) workflow automation to generate workflow implementations from workflow specifications. This

tutorial consists of three parts entitled overview, evaluation of the state in the art in workflow technology, and directions for enterprise-wide and inter-organizational workflow. In the overview, we discuss business drivers and requirements for workflow technology, review workflow concepts, provide classifications of workflows, and discuss current workflow methodologies. In the evaluation in the state of the art in workflow technology, we present a detailed overview of current capabilities and limitations of workflow products. In this tutorial section we use examples and illustrations from real workflow systems. In the directions for enterprise-wide and inter-organizations workflow, we focus on the most important limitations of existing workflow models and technology and discuss approaches and research directions that address these limitations. In particular, we discuss how new infrastructure technologies such as distributed object management and customized transaction management can address the interoperability and reliability limitations of current workflow technology and extend workflow systems to support enterprise-wide processes. In addition, we discuss the combination of web and workflow technologies for composing and managing business processes involving multiple enterprises that provide virtual services. Finally, we discuss related workflow research activities at GTE Labs, MCC, and other research organizations that currently have active workflow-related projects.

DIMITRIOS GEORGAKOPOULOS is currently the principal investigator of the Workflow Management Infrastructure (WMI) project at GTE Laboratories. The WMI project is developing workflow infrastructure for organizational/business process automation and task-specific system integration. He specializes in the areas of workflow and advanced transaction management, web-based infrastructure and services for large distributed systems. His research interests (and previous research experience) include distributed object management systems, multidatabase systems, and data warehouses. Dimitrios received the B.S. degree from Aristotelio University of Thessaloniki, Greece, in 1982, and the M.S. and Ph.D. degrees from the University of Houston, Texas, in 1986 and 1990, respectively. He has received two IEEE Computer Society Outstanding Paper Awards in 1991 and 1994, respectively. His Transaction Specification and Management Environment (TSME) project at GTE was nominated for the 1994 Computerworld Smithsonian Award in Science.

MAREK RUSINKIEWICZ is vice president for Information Technology Research in the Microelectronics and Computer Technology Corporation. He came to MCC from the University of Houston, where he was a Professor of Computer Science. Before joining the faculty at Houston in 1981, Rusinkiewicz held academic positions at the University of Glasgow, Warsaw Technological University, the University of Michigan, and Purdue. His research interests include heterogeneous database systems, workflows, transaction processing and agent-based systems. Rusinkiewicz was the Program Chairman of the first IEEE CS International Workshop on Interoperability in Multidatabase Systems in Kyoto, NSF/DARPA workshop on Interoperability and Resolution of Semantic Heterogeneity, and IEEE CS International Conference on Data Engineering.

## **Tutorial 6: Multimedia Databases**

Stavros Christodoulakis

*Thursday, August 28, 14:00 - 17:30, Congress Hall*

**Session chair:** Pamela Drew (USA)

Multimedia Applications have grown past the phase of small scale and most implementators realize the need for systematic development and data base support. In addition, new applications like Video on Demand, impose hard requirements on the underline databases. The tutorial will cover the State of the Art in the research and development in the area of multimedia databases as well as technology, standards, commercial systems and applications.

STAVROS CHRISTODOULAKIS has been involved with the area of multimedia information systems since the beginning of the 80's and has developed in his group some of the earliest prototypes of multimedia object management (MINOS project) in the Universities of Toronto and Waterloo. He is currently Professor of the Department of Computer and Electronic Engineering of the Technical University of Crete and Director of the Multimedia Systems Institute of the Technical University of Crete (MU.S.I.C). MUSIC has participated in over 25 European R & D projects the last 6 years in the area of multimedia information systems and applications. MUSIC is currently Prime Contractor in the ESPRIT Long Term Research project HERMES on High Performance Multimedia Information Systems. Professor Christodoulakis is in the Editorial Board of the ACM/Verlag Multimedia Systems, the Distributed and Parallel Databases Journal and the Information Systems Journal. He has also been a Program Chairman for VLDB 92 and in the Editorial Board of ACM TOIS. He participated in many Program Committees in the areas of Databases Multimedia and Information Systems and has given several Tutorials in these conferences. Professor Christodoulakis has a PhD Degree from the Department of Computer Science of the University of Toronto.

## Research Sessions

### Research Session 1: Data Warehousing

Wednesday, 27 August, 11:00 - 12:30, Congress Hall

**Session chair:** Anant Jhigran (USA)

Incremental Organization for Data Recording and Warehousing

*H.V. Jagadish, P.P.S. Narayan, S. Seshadri, S. Sudarshan, R. Kanneganti*

Multiple-View Self-Maintenance in Data Warehousing Environments.

*N. Huyn*

Recovering Information from Summary Data

*C. Faloutsos, H.V. Jagadish, N.D. Sidiropoulos*

### Research Session 2: Novel Data Types

Wednesday, 27 August, 11:00 - 12:30, Foyer

**Session chair:** Yannis Ioannidis (USA)

A Language for Manipulating Arrays

*A. P. Marathe, K. Salem*

Implementing Abstract Objects with Inheritance in Datalog-neg

*H. M. Jamil*

The Case for Enhanced Abstract Data Types

*P. Seshadri, M. Livny, R. Ramakrishnan*

### Research Session 3: Transactions and Reliability

Wednesday, 27 August, 14:00 - 15:30, Congress Hall

**Session chair:** Krithi Ramamritham (USA)

Integrating Reliable Memory in Databases ☆ **BEST PAPER AWARD** ☆

*W. T. Ng, P. M. Chen*

Logical and Physical Versioning in Main Memory Databases

*P. Bohannon, D. Leinbaugh, R. Rastogi, S. Seshadri, A. Silberschatz, S. Sudarshan*

Using Versions in Update Transactions : Application to Integrity Checking

*F. Llirbat, E. Simon, D. Tombroff*

### Research Session 4: Multidimensional Databases

Wednesday, 27 August, 14:00 - 15:30, Foyer

**Session chair:** Christian Jensen (Denmark)

A Foundation for Multi-dimensional Databases

*M. Gyssens, L. V.S. Lakshmanan*

Fast Computation of Sparse Datacubes

*K. A. Ross, D. Srivastava*

Data Warehouse Configuration

*D. Theodoratos, T. Sellis*

### Research Session 5: Database Design

Wednesday, 27 August, 16:00 - 17:30, Congress Hall

**Session chair:** Asuman Dogac (Turkey)

Algorithms for Materialized View Design in Data Warehousing Environment

*J. Yang, K. Karlapalem, Q. Li*

An Efficient Cost-Driven Index Selection Tool for Microsoft SQL Server

*S. Chaudhuri, V. Narasayya*

Materialized Views Selection in a Multidimensional Database

*E. Baralis, S. Paraboschi, E. Teniente*

### Research Session 6: Data mining

Wednesday, 27 August, 16:00 - 17:30, Foyer

**Session chair:** Martin Kersten (The Netherlands)

Efficient Construction of Regression Trees with Range and Region Splitting

*Y. Morimoto, H. Ishii, S. Morishita*

Parallel Algorithms for High-dimensional Proximity Joins

*J. C. Shafer, R. Agrawal*

STING: A Statistical Information Grid Approach to Spatial Data Mining

*W. Wang, J. Yang, R. Muntz*

### **Research Session 7: Web Databases**

*Wednesday, 27 August, 16:00 - 17:30, Banquet Hall A*

**Session chair:** Tamer Ozsu (Canada)

Merging Ranks from Heterogeneous Internet Sources

*L. Gravano, H. Garcia-Molina*

To Weave the Web

*P. Atzeni, G. Mecca, P. Merialdo*

Using Probabilistic Information in Data Integration

*D. Florescu, D. Koller, A. Levy, A. Pfeffer*

### **Research Session 8: Tertiary Storage**

*Thursday, 28 August, 09:00 - 10:30, Foyer*

**Session chair:** Alfons Kemper (Germany)

On-Demand Data Elevation in a Hierarchical Multimedia Storage Server

*P. Triantafillou, T. Papadakis*

Principles of Optimally Placing Data in Tertiary Storage Libraries

*S. Christodoulakis, P. Triantafillou, F. A. Zioga*

Vertical Data Migration in Large Near-Line Document Archives Based on Markov-Chain Predictions

*A. Kraiss, G. Weikum*

### **Research Session 9: Heterogeneous Databases**

*Thursday, 28 August, 09:00 - 10:30, Banquet Hall A*

**Session chair:** Fausto Rabitti (Italy)

Describing and Using the Query Capabilities of Heterogeneous Sources

*V. Vassalos, Y. Papakonstantinou*

Don't Scrap It, Wrap It! A Wrapper Architecture for Legacy Data Sources

*M. Tork Roth, P. Schwarz*

Optimizing Queries Across Diverse Data Sources

*L. M. Haas, D. Kossmann, E.L. Wimmers, J. Yang*

### **Research Session 10: Query Optimization**

*Thursday, 28 August, 11:00 - 12:30, Foyer*

**Session chair:** Laura Haas (USA)

Optimizing Queries with Universal Quantification in Object-Oriented and Object-Relational Databases

*J. Claussen, A. Kemper, G. Moerkotte, K. Peithner*

Parallel Query Scheduling and Optimization with Time- and Space-Shared Resources

*M. N. Garofalakis, Y. E. Ioannidis*

The Complexity of Transformation-Based Join Enumeration

*A. Pellenkoff, C. A. Galindo Legaria, M. Kersten*

### **Research Session 11: Distributed Databases**

*Thursday, 28 August, 11:00 - 12:30, Banquet Hall A*

**Session chair:** Günter von Bültzingslöwen (Switzerland)

1-Safe Algorithms for Symmetric Site Configurations

*R. Humborstad, M. Sabaratnam, S. O. Hvasshovd, O. Torbjornsen*

Adaptive Data Broadcast in Hybrid Networks

*K. Stathatos, N. Roussopoulos, J. S. Baras*

Finding Data in the Neighborhood

*A. Eickler, A. Kemper, D. Kossmann*

### **Research Session 12: Database Algorithms**

*Thursday, 28 August, 14:00 - 15:30, Foyer*

**Session chair:** Ken Salem (Canada)

A One-Pass Algorithm for Accurately Estimating Quantiles for Disk-Resident Data

*K. Alsabti, S. Ranka, V. Singh*

Concurrent Garbage Collection in O2

*M. Skubiszewski, P. Valduriez*

Garbage Collection in Object Oriented Databases Using Transactional Cyclic Reference Counting

*S. Ashwin, P. Roy, S. Seshadri, A. Silberschatz, S. Sudarshan*

### **Research Session 13: Sorts and Joins**

*Thursday, 28 August, 16:00 - 17:30, Foyer*

**Session chair:** Betty Salzberg (USA)

Dynamic Memory Adjustment for External Mergesort

*W. Zhang, P-A. Larson*

Evaluation of Main Memory Join Algorithms for Joins with Subset Comparison Join Predicates

*S. Helmer, G. Moerkotte*

Spatial Joins Using R-trees: Breadth-First Traversal with Global Optimizations

*Y-W. Huang, N. Jing, E. A. Rundensteiner*

### **Research Session 14: Spatial Access Methods**

*Friday, 29 August, 08:30 - 10:00, Congress Hall*

**Session chair:** Nick Roussopoulos (USA)

A Generic Approach to Bulk Loading Multidimensional Index Structures

*J. van den Bercken, B. Seeger, P. Widmayer*

A Region Splitting Strategy for Physical Database Design of Multidimensional File Organizations

*J-H. Lee, Y-K. Lee, K-Y. Whang, I-Y. Song*

M-tree: An Efficient Access Method for Similarity Search in Metric Spaces

*P. Ciaccia, M. Patella, P. Zezula*

### **Research Session 15: Querying and Browsing**

*Friday, 29 August, 08:30 - 10:00, Foyer*

**Session chair:** Inderpal Mumick (USA)

DataGuides: Enabling Query Formulation and Optimization in Semistructured Databases

*R. Goldman, J. Widom*

Using Taxonomy, Discriminants, and Signatures for Navigating in Text Databases

*S. Chakrabarti, B. Dom, R. Agrawal, P. Raghavan*

Towards an ODMG-Compliant Visual Object Query Language

*M. Chavda, P. Wood*

### **Research Session 16: Query Processing**

*Friday, 29 August, 11:30 - 13:00, Congress Hall*

**Session chair:** Theo Härder (Germany)

Fast Incremental Maintenance of Approximate Histograms

*P. B. Gibbons, Y. Matias, V. Poosala*

Groupwise Processing of Relational Queries

*D. Chatziantoniou, K. A. Ross*

Selectivity Estimation Without the Attribute Value Independence Assumption

*V. Poosala, Y. E. Ioannidis*

### **Research Session 17: Multimedia Databases**

*Friday, 29 August, 11:30 - 13:00, Foyer*

**Session chair:** Shahram Ghandeharizadeh (USA)

Effective Memory Use in a Media Server

*E. Chang, H. Garcia-Molina*

Efficient User-Adaptable Similarity Search in Large Multimedia Databases  
*T. Seidl, H-P. Kriegel*

Resource Scheduling in Enhanced Pay-Per-View Continuous Media Databases  
*M. N. Garofalakis, B. Özden, A. Silberschatz*

## Industrial/Commercial Sessions

### Industrial Session 1: System Experiences

*Wednesday, August 27, 11:00 - 12:30, Banquet Hall A*

**Session chair:** Tekin Ozsoyoglou (USA)

Integrating SQL databases with Content-specific Search Engines  
*S. Dessoach, N.M. Mattos*

Facilitating Multimedia Database Exploration through Visual Interfaces and Perpetual Query Reformulations  
*W-S. Li, K. Selcuk Candan, K. Hirata, Y. Hara*

Geo/Environmental and Medical Data Management in the RasDaMan System  
*P. Baumann, P. Furtado, R. Ritsch, N. Widmann*

### Industrial Session 2: Application Challenges

*Wednesday, August 27, 14:00 - 15:30, Banquet Hall A*

**Session chair:** Bernhard Mitschang (Germany)

GTE SuperPages: Using IR Techniques for Searching Complex Objects  
*S. Whitehead, H. Sinha, M. Murphy*

Data Manager for Evolvable Real-time Command and Control Systems  
*E. Hughes, R. Ginis, B. Thuraisingham, P. Krupp, J. Maurer*

Mining Insurance Data at Swiss Life  
*J-U. Kietz, U. Reimer, M. Staudt*

### Industrial Session 3: Research Visions

*Thursday, August 28, 14:00 - 15:30, Banquet Hall A*

**Session chair:** Kyu-Young Whang (Korea)

The Network as a Global Database: Challenges of Interoperability, Proactivity, Interactiveness, Legacy  
*P. Lockemann, U. Koelsch, A. Kölsch, R. Kramer, R. Nikolai, M. Wallrath, H-D Walter*

Distributed Processing over Stand-alone Systems and Applications  
*G. Alonso, C. Hagen, H-J. Schek, M. Tresch*

Critical Database Technologies for High Energy Physics  
*D.M. Malon, E.N. May*

### Industrial Session 4: Industry Solutions

*Friday, August 29, 08:30 - 10:00, Banquet Hall A*

**Session chair:** Gustavo Alonso (Switzerland)

Caprera: An Activity Framework for Transaction Processing on Wide-Area Networks  
*S. Kumar, E-K. Kwang, D. Agrawal*

The Oracle Universal Server Buffer Manager  
*W. Bridge, A. Joshi, M. Keihl, T. Lahiri, J. Loaiza, N. Macnaughton*

Efficient Testing of High Performance Transaction Processing Systems  
*D. Wildfogel, R. Yerneni*

## Panel Sessions

### **Panel 1: Very Large OLAP and Statistical Databases - Progress and Problems**

*Thursday, 28 August, 16:00 - 17:30, Banquet Hall A*

*Moderator:* Frank Olken, Lawrence Berkeley National Laboratory (USA)

The panelists include:

Wolfgang Lehner, Univ. of Erlangen and GFK (Germany)  
Arie Shoshani, Lawrence Berkeley National Laboratory (USA)  
Donovan Schneider, Red Brick Systems (USA).

Major issues to be addressed include data models for OLAP and statistical databases (multi-dimensional, extended relational, nested relational model of statistical tables, etc), operations, and implementation issues. The panelists, will be asked for their assessments of the relative merits of the various proposals, whether we need further work on the issues, and prospects for new, advanced technology.

### **Panel 2: Digital Libraries and Digital Museums: Are they Databases?**

*Friday, 29 August, 11:30 - 13:00, Banquet Hall A*

*Moderator:* Erich Neuhold, GMD-IPSI, Darmstadt (Germany)

The panelists include

Stavros Christodoulakis, Tech. Univ. of Crete and MUSIC (Greece)  
Jim Devine, University of Glasgow (United Kingdom)  
Michael Ley, University of Trier (Germany)  
Tamer Ozsu, University of Alberta (Canada).

The availability of information traditionally found in Libraries and Museums will be profoundly influenced by the Global Information Infrastructure as it is currently instantiated by the World Wide Web. With relative ease such information can be digitized as text, facsimile, pictures, audio, video, etc. and distributed either by push or pull technology to service providers (electronic libraries, museums), value adders (authors, editors) or consumers (we all).

Currently a multitude of storage or depositories as archival approaches to keeping such information consistent, authenticated, protected, and persistent exist. However, only a few of such mechanisms are built on database technology. Is therefore the age of databases in digital libraries and digital museums over before it has even begun? Major issues to be addressed by the panelists include the role of authors, publishers, libraries, and/or museums in the Global Information Society, what services will be offered, what services will be included in databases-middleware-application software, what is the required functionality of databases, and what are the existing, coming or needed products.

## Invited Talks

### **Keynote Speech 1: Innovation in Database Management: Computer Science vs. Engineering**

*Wednesday, August 29, 11:30 - 10:30, Congress Hall*

**Session chair:** Yannis Vassiliou (Greece)

**Speaker:** Kenneth R. Jacobs, Oracle Corporation

Vendors of commercial database management system face many challenges in incorporating into their products innovative technologies developed in academia. Pragmatic considerations and operational requirements can limit the viability of applying promising research. Technology leadership in commercial products is often the result of taking unconventional approaches rather than following "conventional wisdom", as illustrated with several examples of technologies in Oracle8 and its predecessors. The challenge shared by researchers and practitioners alike: "making what we do matter."

KENNETH JACOBS is vice president of Product Strategy for Oracle's Server Technologies Division. He is responsible for a number of technology planning activities for the Oracle database product family, including parallel processing, object technology and high performance systems. He has most recently acted as the senior manager responsible for coordinating all company activities surrounding the release of Oracle's next generation database product, Oracle8. Previous to his current role, Mr. Jacobs was vice president of Product Management for the Server

Technologies Division, where he managed a team responsible for product management and marketing for the Oracle7 database server and related technologies. Mr. Jacobs joined Oracle in July 1981 and has held a variety of positions with technical, managerial and marketing responsibilities in field and corporate roles. Mr. Jacobs has contributed to several industry-wide activities including the development of the SQL database language. For many years, he served as Oracle's representative on the American National Standards Institute (ANSI) SQL Committee, the technical committee on databases (X3H2). He also initiated and led efforts to enhance the security features of the Oracle database server, working with the National Computer Security Center and other key government agencies. Mr. Jacobs has also represented Oracle at the Transaction Processing Performance Council. Mr. Jacobs received a bachelor's degree from Oberlin College and performed graduate work in computer science at George Washington University.

### **Keynote Speech 2: The Microsoft Repository**

*Thursday, August 28, 17:45 - 18:45, Congress Hall*

Speaker: Philip A. Bernstein, Microsoft

**Session chair:** Klaus Dittrich (Switzerland)

An object-oriented repository has many of the same features as an object-oriented database, but extends the latter with built-in information models and often more functionality. New standards, trends in document management, and new products are making repositories a more important segment of the database market. This talk will describe these developments and then focus on details of one new product -- the Microsoft Repository shipping with Visual Basic 5.0. -- emphasizing how it integrates with the COM/ActiveX object model and the benefits that derive from this integration.

PHILIP A. BERNSTEIN is Repository Architect at Microsoft Corporation. He was formerly an architect at Digital Equipment Corp., a professor at Harvard University, VP Software at Sequoia Systems, and Professor at Wang Institute of Graduate Studies. Dr. Bernstein has published widely on database systems, was codesigner of several distributed database systems and of the STDL language standard for transaction processing. His latest book is "Principles of Transaction Processing" (Morgan Kaufmann Publishers, 1996).

### **10 YEAR AWARD TALK: Multidimensional Access Methods: Trees Have Grown Everywhere**

*Friday, August 29, 10:15 - 11:15, Congress Hall*

**Session chair:** Matthias Jarke (Germany)

Speaker: Timos Sellis, National Technical University of Athens

This year's winner of the 10-year Award is: "The R+-Tree: A Dynamic Index for Multidimensional Objects", by T. Sellis, N. Roussopoulos and C. Faloutsos.

Multi-dimensional search trees and Spatial Access Methods, in general, were designed to handle spatial objects, like points, line segments, polygons, polyhedra etc. The applications are numerous, including traditional database multi-attribute indexing, Geographic Information Systems and spatial database systems, and indexing multimedia databases by content. This talk will first summarize variations of multi-dimensional search trees and algorithms that have been devised to answer point/range queries. It will also discuss numerous proposals for using such structures in other than the traditional spatial database applications they were initially proposed for, such as active database systems, multimedia databases, OLAP and DataCube processing, and indexing time sequences. Finally, it will touch on issues of further interest, including benchmarking and performance evaluation of access methods, and query optimization strategies.

## **Social Events**

### **Conference Welcome Reception**

*Tuesday, August 26, 20:00 - 23:00, The Pergola*

### **Conference Banquet**

*Thursday, August 28, 20:00 - 23:00, The Pergola*

## General Information

### Registration/Information Desk

The Registration/Information desk will be located in front of the Congress Hall and will be open:

Monday, August 25:	16:00 - 20:00
Tuesday, August 26:	08:00 - 21:00
Wednesday, August 27:	08:00 - 18:00
Thursday, August 28:	08:00 - 17:00
Friday, August 29:	08:00 - 15:00

### Exhibition & Computer-Demo Room

The exhibition will be located in Banquet Hall B. Several publishing companies and other organizations will have stands in this room. A number of computer terminals will be also available for use by the participants (Internet access, etc).

### Name Badge

Your name badge serves as a pass for all tutorials, research and panel sessions, exhibition, coffee breaks and lunch, as well as for all social events. **Please wear it all times while being in the conference area.**

### Coffee and Refreshment Breaks

During the breaks, refreshments and coffee will be available in the Blue Salon.

### Lunches

All lunches will be served at the Banquet/Aithrio area (Arion Hotel). Lunch coupons are necessary.

### Message Center

The message center is located near to the registration area. A bulletin board will be provided for personal messages. Announcements and changes in the program scheduling will be posted there as well.

### Newsletter

A newsletter will be distributed every day. Announcements and changes in the program scheduling will be included in the newsletter and also posted at the bulletin board.

### Copying Services

Copying services can be purchased from the hotel reception. We may also have a copier available. Check with the registration desk.

### Tutorial Notes

You will receive a copy of the Tutorial Notes which is included in your conference fee. Extra copies may be purchased at the Registration/Information Desk for 3,000 GRD (Greek Drachma) or US \$10. After the conference, copies (if available) may be purchased for 4,000 GRD or US \$15 by writing to VLDB Secretariat (c/o Prof. Timos Sellis), Department of Electrical and Computer Engineering, National Technical University of Athens, Zografou 15773, Athens, GREECE.

### Conference Proceedings

You will receive a copy of the Conference Proceedings which is included in your conference fee. Extra copies (limited number) will be on sale at the Morgan Kaufmann stand in Banquet Hall B. After the conference, copies can be purchased from: Morgan Kaufmann Publishers, Inc., 340 Pine St., 6th Floor., San Francisco, CA 94104, USA. Tel: 800-745-7323 (from within US & Canada), +1-415-392-2665 (otherwise), Fax: +1-415-982-2665. Email: orders@mkp.com. WWW: <http://www.mkp.com>

### Bus Schedules

For those participants staying in Glyfada hotels, conference buses may be used for transportation from their hotels to the conference location and vice versa. The schedule of the buses is:

Tuesday, August 26:	08:00, 08:30, 19:30 (to conference hotel) 18:00, 22:00, 23:00 (to hotels)
Wednesday, August 27:	08:00, 08:30 (to conference hotel) 18:00 (to hotels)
Thursday, August 28:	08:30, 19:30 (to conference hotel) 19:15, 23:00 (to hotels)

Friday, August 29:       08:00 (to conference hotel)  
                                  14:30 (to hotels)

## **Social Events**

### *Welcome Reception*

On Tuesday evening, a welcome reception will take place at The Pergola (Nafsika Hotel) from 20:00 to 23:00. Fruit punch and light food will be offered. Complimentary coupons are included in your registration package. Cash bars will also be open during the reception.

### *Conference Banquet*

On Thursday evening, participants will experience a magnificent festive of Greek food, and folklor/popular music and dance. The event will take place at The Pergola from 20:00 to 23:00. Admission is by ticket (included in your registration package). Extra banquet tickets for accompanying persons will be on sale for 12,000 GRD or US \$45 at the registration desk **until the Wednesday afternoon coffee break.**

## **Disclaimer**

We are putting our best efforts into organising VLDB '97, to make it an enlightening and enjoyable experience for participants. However, neither the VLDB endowment nor the local organisers take any responsibility for any damage, loss or inconvenience participants might incur in connection with the conference. We also cannot be held responsible for the correctness or appropriateness of the contents of the talks and papers included in this conference.

In particular, changes to the published conference program or cancellations of parts thereof do not entitle participants to a refund of the conference fee or parts thereof.

Names/addresses of attendees will be electronically processed and included in a participants list that may be posted/distributed during and in connection with the conference.

By registering for the conference, participants express their agreements with these regulations.

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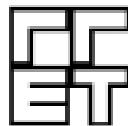
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