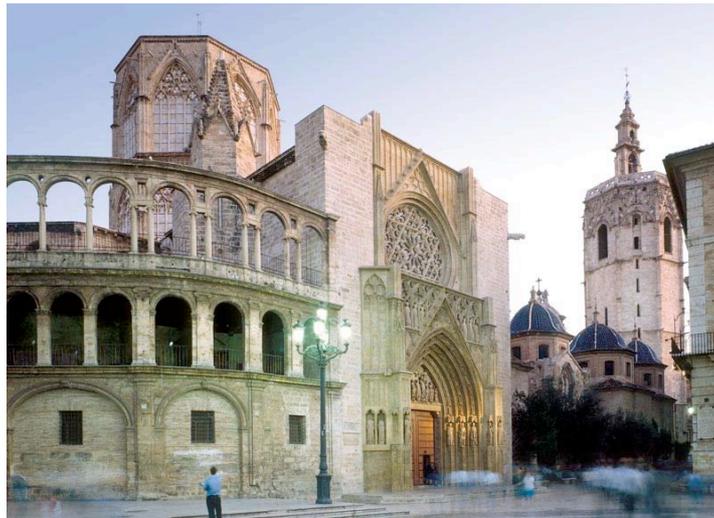
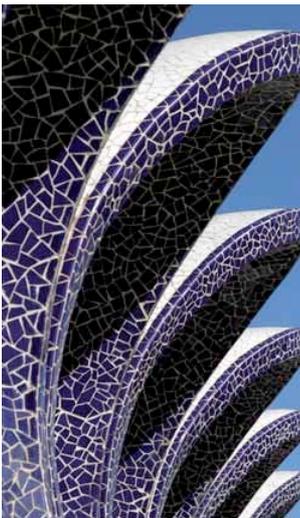
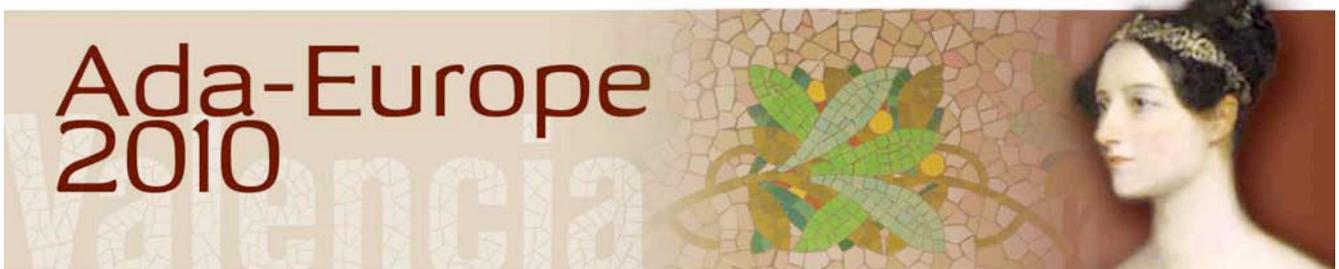




15th International Conference on
RELIABLE SOFTWARE TECHNOLOGIES
ADA-EUROPE 2010



VALENCIA, SPAIN, 14-18 JUNE 2010



In cooperation with
ACM SIGAda

ADVANCE PROGRAM

<http://www.ada-europe.org/conference2010>



UNIVERSIDAD
POLITECNICA
DE VALENCIA

PRELIMINARY PROGRAM

The 15th International Conference on Reliable Software Technologies – Ada-Europe 2010 will take place in Valencia, Spain, on 14-18 June 2010. The conference has established itself as an international forum for providers, practitioners and researchers into reliable software technologies. Following tradition, the conference will span a full week, with a three-day technical program at its centre from Tuesday to Thursday accompanied by vendor exhibitions, and a string of parallel tutorials on Monday and Friday.

Valencia, situated on the Mediterranean coast of eastern Spain and with a population of around 800,000 inhabitants, is the capital city of the autonomous region Comunidad Valenciana. Not many cities are capable of so harmoniously combining a fine array of sights from the distant past with innovative constructions now being erected. Valencia, founded in 138 BC, is one of these fortunate few. From the remains of the Roman forum

located in today's *Plaza de la Virgen* to the emblematic City of the Arts and Sciences, this town has transformed its physiognomy over the years while preserving its monuments from the past.

Sightseeing around the city begins in the old quarter, where the conference venue is located. Still standing as proof of the old defending wall are the graceful *Torres de Serranos*, the spacious *Torres de Quart* and some remains of the apron wall in the basement of the Valencia Institute of Modern Arts. The Gothic building of *La Lonja* was declared heritage of humanity by UNESCO. It features a beautiful columned room where the old tables on which trading transactions were finalized are still in use today. On the old riverbed of the Turia river lie the nursery gardens, along with the Fine Arts Museum and the modern part of the city. Life in the city spreads down to the seafront with the harbor and the beaches of Las Arenas and La Malvarrosa.

OVERVIEW OF THE WEEK

	Morning	Late Morning	Early Afternoon	Afternoon
Monday 14 June Tutorials	Developing High-Integrity Systems with GNATforLEON/ORK+ <i>J. A. de la Puente, J. Zamorano</i>		Hypervisor Technology for Building Safety-Critical Systems: XtratuM <i>I. Ripoll, A. Crespo</i>	
	Software Design Concepts and Pitfalls <i>W. Bail</i>		How to Optimize Reliable Software <i>I. Broster</i>	
	Using Object-Oriented Technologies in Secure Systems <i>J. P. Rosen</i>		Developing Web-aware Applications in Ada with AWS <i>J. P. Rosen</i>	
Tuesday 15 June Sessions & Exhibition	Keynote Talk What to Make of Multicore Processors for Reliable Real-Time Systems? <i>Theodore Baker</i>	Multicores and Ada	Software Dependability	Critical Systems
			Vendor Session	Vendor Session
Wednesday 16 June Sessions & Exhibition	Keynote Talk Control Co-Design: Algorithms and their Implementation <i>Pedro Albertos</i>	Real-Time Systems	Industrial Presentations	Industrial Presentations
Thursday 17 June Sessions & Exhibition	Keynote Talk Ada: Made for the 3.0 World <i>James Sutton</i>	Language Technology	Industrial Presentations	Distribution and Persistency
Friday 18 June Tutorials	MAST: Predicting Response Times in Event-Driven Real-Time Systems <i>M. González-Harbour</i>			
	SPARK: The Libre Language and Toolset for High-Assurance Software <i>R. Chapman</i>			
	C#, .NET and Ada: Keeping the Faith in a Language-Agnostic Environment <i>B. Brosgol, J. Lambourg</i>			

The information in this document is still preliminary – please refer to the conference web site for the latest details.



INVITED SPEAKERS

Three eminent keynote speakers have been selected to open each day of the core conference program:

- **Theodore Baker** (Florida State University, USA), a leading researcher in Ada and Real-Time systems, will examine the state of the art in multiprocessor real-time scheduling in his talk *What to Make of Multicore Processors for Reliable Real-Time Systems?*
- **Pedro Albertos** (Universidad Politécnica de Valencia, Spain), a most authoritative member of the Automatic Control community, will explore the relationship between implementation and performance of control algorithms in a talk entitled *Control Co-Design: Algorithms and their Implementation*.
- **James Sutton** (Lockheed Martin, USA), a worldwide expert in software systems architecture, will explore how Ada is prepared for the so-called 3.0 World, a world that makes peace with complexity and chaos, and learns to use them to its advantage. That will be in his talk entitled: *Ada: Made for the 3.0 World*.

What to Make of Multicore Processors for Reliable Real-Time Systems?



Theodore P. Baker,
Florida State
University, USA

Tuesday 15, 9:30 - 10:30

Now that multicore microprocessors have become a commodity, it is natural to think about employing them in all kinds of computing, including embedded real-time systems. Appealing aspects of this development include the ability to process more instructions per second than is possible with a single processor, and execute more instructions per Watt than with a single fast processor capable of the same net processing speed. However, making effective use of a multicore processor is not simple. Not all problems are amenable to parallel decomposition, and for those that are, designing a correct scalable multi-threaded solution can be difficult. If one is also required to guarantee deadlines will be met, the difficulty becomes much greater.

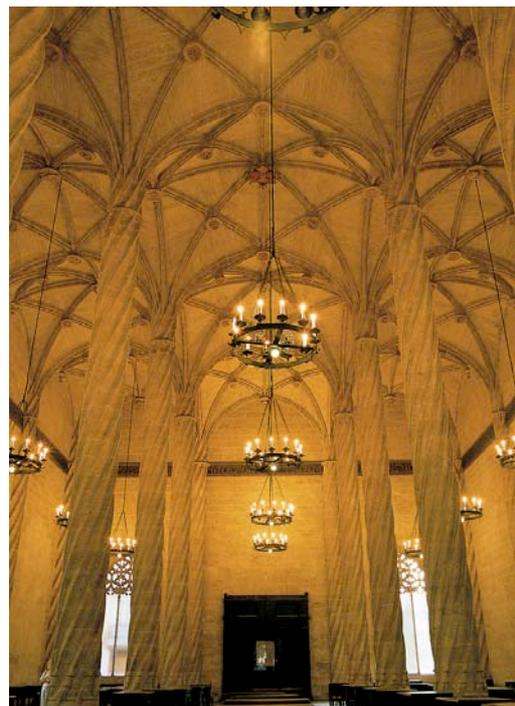
This talk will review some of what is known about multiprocessor scheduling of task systems with deadlines, including recent advances in the analysis of arbitrary sporadic task systems under fixed-priority and earliest-deadline first scheduling policies. It will also examine critically the foundations of these theoretical results, including assumptions about task independence and worst-case execution time estimates, with a view toward their practical applicability.

Presenter

Ted Baker is a professor at the Florida State University. Starting in 1979, he led a group that produced one of the first validated Ada cross-compilers for an embedded microprocessor system. Ted was active in the Ada Runtime Environment Working group and the work-

shops that led to the Ravenscar profile. He served as domain expert for real-time systems and systems programming on the Ada 95 Mapping-Revision Team, and later led the FSU team that developed the first Ada 95 multi-tasking implementation, for GNAT. He chaired the POSIX Ada language binding working group, and led the development of Florist, the first implementation of POSIX 1003.5b-c, including the FSU Pthreads library.

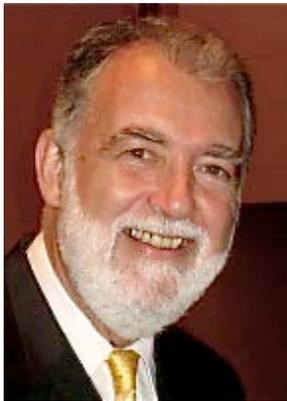
Concurrent with his work on Ada, Professor Baker has done research on real-time scheduling, worst-case execution time prediction, and real-time concurrency control. His contributions include the Stack Resource Protocol and the Deadline Sporadic Server. Ted's recent work has focused on incorporating device drivers into real-time schedulability analysis, and on verifying the ability of task systems to meet deadlines under various scheduling policies on multiprocessor platforms.



Columned hall in La Lonja building



Control Co-Design: Algorithms and their Implementation



Pedro Albertos,
Universidad Politécnica
de Valencia, Spain

Wednesday 16, 9:00 - 10:00

Traditionally, control designers and real-time computer experts work separately. The former conceive the control algorithms based on the required performance and the process knowledge, regardless of their subsequent implementation. Computer experts instead deal with the control code without paying much attention to the impact of the code execution on the control performance. However both issues are strictly interlaced and both designs should be jointly treated, mainly if the control tasks share resources with some other activities and these resources are limited. In this talk, the real-time control design and implementation will be reviewed from both perspectives.

Global requirements in control applications in time-critical environments, such as automobile, aerospace or flight control, where multiple interactive control loops are implemented, are reviewed. Special attention is devoted to new and widespread control scenarios where the controller is no longer implemented in a fully dedicated computer without resources constraints, but sharing and competing for computing, storage and communication facilities with several other tasks. Embedded control systems, networked control systems and event-based control systems challenge the design of the control and its implementation where architectural

issues play a relevant role in the controlled system performance. In this context, new software development models and middleware paradigms emerge, which strive to assure quality of service of control performance as well as computing, communications and power resources availability. The final goal of this technology is to allow the separation of complex control systems design from the real-time tasks dynamic deployment. Some key concepts interacting with both control performance and control implementation, such as the control effort or the control kernel, are emphasized and some general directions in the co-design are summarized.

Presenter

Pedro Albertos, past president of IFAC (the International Federation of Automatic Control) in 1999-2002, and Senior Member of IEEE, is a worldwide recognized expert in real-time control, leading several projects in the field. Full Professor since 1975, he is currently at the Systems Engineering and Control Department of UPV. He is Doctor Honoris Causa from Oulu University (Finland) and Bucharest Polytechnic (Rumania). Invited Professor in more than 20 universities, he delivered seminars in more than 30 universities and research centers. He authored over 300 papers, book chapters and congress communications, was co-editor of 7 books and is co-author of “Multivariable Control Systems” (Springer 2004) and “Feedback and Control for Everyone” (Springer 2010). He is also associated editor of Control Engineering Practice and Automatica and Editor in Chief of the Spanish journal RIAI. His research interests include multivariable control and non-conventional sampling control systems, with focus on time delays and multirate sampling patterns, being involved in the ARTIST2 Network of Excellence on Embedded Control Systems.



Palau de la Música from the Turia gardens



Ada: Made for the 3.0 World



James Sutton,
Lockheed Martin, USA
Thursday 17, 9:00 - 10:00

The best days of Ada are ahead... if we, her friends, will embrace the world that is and let go of the world we loved for so long.

Ada was created 30 years ahead of her time. In the 1.0 World in which Ada

was created people still believed you could attain certainty in systems development. The big challenge was to find the right corner to look around to find the certainty one just knew would be waiting there. Once the certainty was found, you would be able to exploit it to develop successful systems.

However, around every next corner was... nothing certain, and little even useful. Eventually people walked away; first from the search, and finally from the idea itself that certainty was attainable in systems development.

But people still developed systems and had to do something; so, they leapt off a cliff and embraced uncertainty. Service-Oriented Architectures, social networking, mash-ups, and the like are 2.0 manifestations of this leap. We have not yet landed, though where we are headed is finally coming into focus in the mists ahead.

It is the 3.0 World. The 3.0 World makes peace with complexity and chaos, and learns to use them to its advantage. Principles, strategies, and statistics replace rules, procedures, and lists. Lean overturns Mass production and Systems Engineering displaces canned processes. The Cynefin Framework, a way of conceptualizing problem solving that suggests solution strategies for all kinds of situations from simple to chaotic, provides navigation beacons for the unknown. Most of these things are beginning to show up already in software development, and in this world Ada can finally and fully come into her own.

Early Ada advocates spoke to the 1.0 World in 1.0 terms, and appropriately so. “Ada is the best way to implement assured processes.” “Ada provides consistent object functionality regardless of compiler.” These Ada strengths appeal to 1.0 values, but they are not Ada’s only or even greatest virtues. In this talk we will explore the demands of uncertainty, and ways in which Ada’s greatest strengths address them. More importantly, we will lay out a path for how you the Ada community can make people understand that Ada is the most relevant language available today.

As you engage this 3.0 World and make it understand Ada in 3.0 terms, we will see the best days of Ada ahead.

Presenter

James Sutton’s passion is for unleashing the power and joy of human creativity in the development of systems. A current focus is helping preserve the middle class from the migration of well-paying white-collar engineering jobs to lower status and pay through the misapplication of antiquated and counterproductive business models like the Unit-Cost Equation.

James is a chief software-systems architect whose development programs have quadrupled productivity compared to company and industry norms, and at the same time experienced ten-times fewer defects than are typical in industry. His book “Lean Software Strategies” won the 2007 Shingo Prize, which Business Week has called “The Nobel Prize of Manufacturing.” He is an INCOSE (International Council on Systems Engineering) CSEP (Certified Systems Engineering Professional), with a Master’s degree in Systems Engineering from Southern Methodist University.

Most recently, in 2009 he joined with software luminaries such as David Anderson, Dean Leffingwell, Alan Shalloway and Don Reinertsen in co-founding the Lean Software and Systems Consortium. The LeanSSC is dedicated to facilitating the adoption of 3.0-World approaches and mindset in organizations that develop significant software-intensive systems.



La Malvarrosa beach

TUTORIALS

The conference schedule includes 2 full days of tutorials running on 3 parallel tracks on Monday and Friday. The program this year features 6 half-day tutorials on Monday plus 3 full-day tutorials on Friday. All of them are delivered by recognized domain experts addressing a variety of topics within the general scope of the conference.

Developing High-Integrity Systems with GNATforLEON/ORK+



Juan Antonio de la Puente,
Juan Zamorano,
Technical
University of
Madrid, Spain
(T1: Monday 14 June, morning)

The tutorial will focus on the use of the Ada Ravenscar profile, as well as some other basic real-time facilities available in Ada 2005, to develop high-integrity real-time systems. Programming patterns for analyzable real-time systems will be described, including timing error detection techniques based on execution-time clocks and timers. ORK (Open Ravenscar Kernel) is a free real-time kernel that supports the execution of Ravenscar programs on LEON-based computers. A tailored version of GNAT running on ORK+ will be used to support programming examples, including a comprehensive case study. The use of static analysis tools in conjunction with the compilation chain will be described in the framework of an integrated approach to embedded real-time software development.

Expected attendees are software engineers interested in developing high-integrity embedded real-time applications. Although some of the examples are drawn from the aerospace domain, the approach is also applicable to other industrial domains with high-integrity requirements. Participants should have a working knowledge of Ada. Previous experience in real-time systems development will be useful, but not required.

Presenters

Juan Antonio de la Puente is a professor at the Technical University of Madrid (UPM). He has been teaching Ada and Real-Time systems for more than 20 years. As the head of the real-time systems group at UPM, he has led the development and evolution of ORK for the last 10 years. He is Vice-President of Ada-Spain.

Juan Zamorano is an associate professor at UPM, with more than 20 years experience in teaching Real-Time systems and systems architecture. He is the technical manager of ORK, and is responsible for its maintenance at UPM. He is a member of the Ada-Spain Board.

Software Design Concepts and Pitfalls



William Bail,
The MITRE Corporation, USA
(T2: Monday 14 June, morning)

The tutorial will present a perspective of design and provide the framework within which software design efforts can be formed. Software design forms the core of all software development. It is the follow-on to, and tightly intertwined with the requirements engineering process. Understanding its concepts and principles is essential to being able to develop large, dependable software systems.

This tutorial will examine the concepts of software design and architecture, explain its relationship with requirements engineering, discuss those design quality attributes necessary to ensure dependable behavior, and provide an overview of different design approaches. Without going into a detailed description of each technique, it will provide some practical tradeoffs in selecting design techniques. It will differentiate between architecture and design, describe examples of good and faulty design, and present a variety of design challenges that are commonly encountered. It will provide practical guidance on how to approach a design effort, and will give insight into detecting design qualities. The tutorial will also discuss unsolved areas of design and areas where research is needed to fill in gaps in knowledge. The tutorial will describe the SWEBOK view of design and how it relates to the information being presented.

Presenter

Dr. Bail received a BS in Mathematics from Carnegie Institute of Technology, and an MS and PhD in Computer Science from the University of Maryland. Since 1990, he has worked for The MITRE Corporation in McLean VA, a not-for-profit corporation chartered to provide systems engineering services to the U.S. Government. Dr. Bail's technical areas of focus include dependable software design and assessment, error handling policies, techniques for software specification development, design methodologies, metric definition and application, and verification and validation. Since 1989 he has served as a part-time Adjunct Professor at the University of Maryland University College.



Using Object-Oriented Technologies in Secure Systems



Jean-Pierre Rosen,
Adalog, France
(T3: Monday 14 June, morning)

This tutorial presents the new challenges brought by the advent of object-oriented technologies into the realm of secure systems. For a long time, OOP was deemed too

dynamic a model for highly secure systems, although DO178B in itself does not preclude the use of any technology. The FAA sponsored OOTiA (Object-Oriented Technology in Aviation), a handbook intended to identify and address these issues. This handbook is a major input for the upcoming revision of DO178B (DO178C).

The tutorial provides an overview of standards for secure systems (DO178B in airborne systems, EN5018 for railway systems). Based on the extensive work of the OOTiA, it explains the issues of object-oriented technologies in secure systems, and how such technologies can be used while ensuring the high degree of control, review, and testing mandated by these systems. Finally, it shows how Ada's object-oriented model differs from the traditional model, and brings better solutions for introducing OOP to secure systems.

This tutorial is intended for those involved in high security systems that want to assess the possibility of using OO techniques in this context. Regular familiarity with the Ada language, and especially Ada's OO model is the only prerequisite.

Presenter

Jean-Pierre Rosen is a professional Ada trainer and consultant, teaching Ada (since 1979, it was preliminary Ada!), methods, and software engineering. He runs Adalog, a company specialized in providing training, consultancy, and services in all areas connected to the Ada language and software engineering.

Jean-Pierre is chairman of AFNOR's (French standardization body) Ada group, AFNOR's spokesperson at WG9, member of the Vulnerabilities group of WG9, and chairman of Ada-France. He is a consultant for companies involved in secure systems, like Ansaldo for Railway systems and Thales Avionics for Airborne/OO systems.



Modernist detail at *Estación del Norte*

Hypervisor Technology for Building Safety-Critical Systems: XtratuM



Ismael Ripoll,
Alfons Crespo,
Universidad
Politécnica de
Valencia, Spain
(T4: Monday 14
June, afternoon)

Platform virtualization is a versatile technology with multiple applications. In servers, it optimizes resources, simplifies management, reduces power consumption and costs, etc. In desktop computers, it allows execution of legacy code and multiple OSs. In critical systems, it can be used to build a MILS architecture (Multiple Independent Levels of Security/Safety). Under real-time requirements, not all virtualization techniques are appropriate. The use of bare-machine hypervisors is the most efficient technology in the absence of hardware virtualization mechanisms to obtain a partitioned architecture.

In this tutorial, we will first analyze the ARINC 653 standard and extract the main aspects of this approach. We will then review the technologies available to build time- and space-partitioned systems. After that, we will describe in detail the main features and design criteria of the hypervisor XtratuM, which has been specifically designed to achieving temporal and spatial requirements for safety critical systems. Finally, we will discuss the scheduling issues around partitioned systems and provide a use example of XtratuM.

This introductory-level tutorial is intended for those interested in complex, highly critical applications that impose hard real-time restrictions. No previous experience with safety-critical standards is required. Some familiarity with XML and C would be useful.

Presenters

Ismael Ripoll is a professor at Universidad Politécnica de Valencia (UPV) since 1996. His work has focused on Real-Time scheduling (dynamic priorities), Real-Time operating systems design (RTLlinux), and dynamic memory allocation under hard real-time constraints. Ismael is currently involved in the design and development of the XtratuM hypervisor.

Alfons Crespo is a full professor at UPV since 1992, where he leads the Real-Time systems group. His research areas include real-time scheduling, OSs, languages and other aspects such as integration of scheduling and control. He has led the participation of the group in European research projects such as OCERA, FRESCOR and TECOM-ITEA. His group is responsible for the development of XtratuM.



How to Optimize Reliable Software



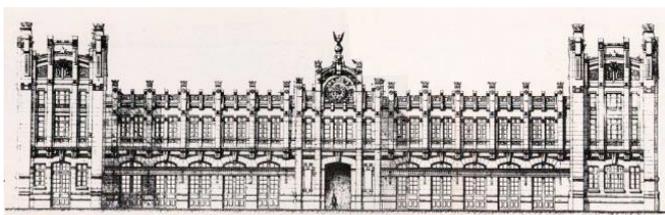
Ian Broster,
Rapita Systems Ltd, UK
(T5: Monday 14 June, afternoon)

Optimizing real-time software to ensure that timing requirements are met can be both costly and time consuming. The tutorial examines common misconceptions and pitfalls in approaches to solving timing problems that can consume effort and resources while failing to address the underlying issues. An effective process and techniques are then presented which avoid these pitfalls. This process identifies code that contributes the most to the overall worst-case execution time, asks questions about the outcome of optimization, and targets optimization effort where it will have the maximum benefit for the minimum cost. The tutorial closes with a summary of the results of case study, applying this process to a large Ada project. There will be an opportunity for hands-on work, including a competition and prize for the best optimization.

This tutorial will benefit embedded software developers and managers who need to engineer reliable, embedded software. Today, software timing analysis does not have to be guesswork. The presentation covers two key aspects of real-time systems performance: (1) how to gain a clear, detailed, and accurate understanding of the execution time behavior of embedded software, (2) how to target optimization effort precisely where it will have the maximum benefit in improving system timing behavior (eliminating timing failures and creating headroom for new functionality) for the minimum cost.

Presenter

Dr. Ian Broster is a founder and Director of Rapita Systems Ltd, a company specializing in software timing analysis, worst-case execution time and profiling. He is an experienced, lively lecturer who has given numerous training courses, lectures and presentations on this and other topics. He has been involved with Ada for several years. He earned his PhD at the Real-Time Systems Research Group of the University of York.



A section of *Estación del Norte*

Developing Web-Aware Applications in Ada with AWS



Jean-Pierre Rosen,
Adalog, France
(T6: Monday 14 June, afternoon)

This tutorial describes AWS, the Ada Web Server, and how to use it for the development of web applications. It describes the principles of AWS, from the most basic functionalities (HTTP server, mail) to the more advanced ones (authentication, SOAP interface, WSDL, LDAP, JABBER, AJAX, session management, hotplugs, multi-server applications, etc.)

The tutorial emphasizes practical usage of AWS, and presents design patterns that have proved effective for developing existing applications. It compares the development process with AWS to other techniques.

The tutorial will provide attendees the information needed to assess whether AWS is appropriate to their needs, and the necessary knowledge to start writing full-scale Web applications. This tutorial is intended for Ada developers who want to incorporate web services in their applications, or use a browser as a user interface. Regular familiarity with the Ada language is required, but experience in Web techniques is not a prerequisite.

Presenter

Jean-Pierre has developed a complete application with AWS for Adalog's internal usage (a paper on that development was presented at the SIGAda 2003 conference).

See further author's information in the description of Tutorial T3.



Baroque façade of *Palacio Marqués de Dos Aguas*



MAST: Predicting Response Times in Event-Driven Real-Time Systems



Michael González-Harbour,
Universidad de Cantabria,
Spain

(T7: Friday 18 June, full day)

This tutorial is focused on modeling the timing behavior of event-driven real-time systems and on the methods used to guarantee the predictability of their response times. We will start by looking at simple, single processor systems scheduled with fixed priorities, and we will then progress through dynamic scheduling and distributed systems. The tutorial will give a practical introduction to the use of the MAST modeling and analysis tools for schedulability analysis. We will also review new features that are being added to MAST such as hierarchical partitioned scheduling and advanced flexible scheduling techniques that allow protection among different components of a complex application.

The tutorial is addressed to practitioners of real-time systems interested in learning about advanced modeling and analysis techniques for these systems. It will provide practical experience with using the MAST toolset. Some basic knowledge on developing software systems is recommended for attending this tutorial.

Presenter

Michael González-Harbour is a Professor in the Department of Mathematics, Statistics and Computer Science at the University of Cantabria. He works in software engineering for real-time systems, and particularly in modeling and schedulability analysis of distributed real-time systems, real-time operating systems, and real-time languages.

Michael is a co-author of *A Practitioner's Handbook on Real-Time Analysis*. He has been involved in several industrial projects using Ada to build real-time controllers for robots.

Michael has participated in the real-time working group of the POSIX standard for portable operating system interfaces. He is one of the principal authors of the MAST suite for modeling and analyzing real-time systems.

SPARK: The Libre Language and Toolset for High-Assurance Software



Roderick Chapman,
Altran Praxis Ltd., UK

(T8: Friday 18 June, full day)

SPARK is a contractualized sub-language of Ada which is unambiguous and suitable for rigorous static analysis. It has been extensively used in industrial applications where safety and security are paramount.

The tutorial will cover the rationale and design goals of SPARK, the core SPARK language, and SPARK analyses including information flow, exception freedom, and formal verification.

Practicing software engineers, programme managers, and those involved with procurement of high-integrity software systems might attend this tutorial. Some background in the development of safety- or security-critical software might be useful, but not essential.

Presenter

Rod is a well-known conference speaker. He has presented papers, tutorials and workshops at many international events including STC, NSA HCSS, and ACM SIGAda. He was the opening keynote speaker at Ada Europe 2006.

Rod has been involved with the design of both safety- and security-critical software with Praxis for many years, including significant contributions to many of Praxis' keynote projects such as SHOLIS, MULTOS CA, Tokeneer, and the development of the SPARK language and verification tools.

Rod is a Chartered Engineer, a Fellow of the BCS, and an SEI-certified PSP Instructor.



Fishing boats in the Natural Park of La Albufera



C#, .NET and Ada: Keeping the Faith in a Language-Agnostic Environment



**Benjamin Brosgol,
Jérôme Lambourg,
AdaCore,
USA**

(T9: Friday 18 June, full day)

In this tutorial we will describe the main elements of the C# programming language and the Common Language Infrastructure (whose implementation by Microsoft is known as .NET), and explain how Ada fits into this framework. The C# discussion will focus on that language's distinctive features —is it simply Microsoft's response to Java, or is there more to it?— through examples and comparisons with other languages. We will summarize the main elements of the .NET technology (intermediate language, type system, run-time environment) and explain why it is referred to as "language agnostic". We will show how Ada development is supported on .NET, and conclude with a demonstration using GNAT Pro for .NET.

This is an intermediate-level tutorial. Attendees should be familiar with a language such as Ada, Java or C++ and should also understand the basics of object-oriented programming. No previous experience with C# or .NET is required. For the last section of the tutorial, which focuses on how Ada fits into .NET, some familiarity with Ada is assumed.

Presenters

Dr. Benjamin Brosgol is a senior member of AdaCore's technical staff in the US. He has over 30 years of experience in the computer software industry, with a focus on programming languages (Ada and Java in particular), software development methods, safety and security, and real-time systems.

Dr. Brosgol has been directly involved with the Ada language development effort since its inception, and participated in both the initial language design and the Ada 95 revision. Dr. Brosgol has delivered presentations and tutorials at many Ada-Europe and SIGAda conferences, and has been conducting professional Ada courses for more than 20 years.

Jérôme Lambourg is a member of AdaCore's technical staff in the EU. He has 10 years of experience in the computer software industry, with a focus on software architecture and mission-critical systems across a broad range of domains. He is currently participating in several product developments including GNAT for .NET, the GNAT Programming Studio (GPS) IDE, and the AUnit test framework.

Before joining AdaCore, Mr. Lambourg was a software architect at a technology consulting company, which entailed assignments at General Electric Medical Systems, Sagem Mobile and Thales Naval. He has also worked for Canal+, in the domain of digital television back-office servers.



Popular mosaic about *La Peixca del Bou* (Bull Fishing), a traditional fishing art, from the popular fishing neighborhood of *El Cabanyal*, Valencia

TUTORIAL SCHEDULE

Monday 14 June	T1	Morning	Juan Antonio de la Puente, Juan Zamorano <i>Developing High-Integrity Systems with GNATforLEON/ORK+</i>
	T2	Morning	William Bail <i>Software Design Concepts and Pitfalls</i>
	T3	Morning	Jean-Pierre Rosen <i>Using Object-Oriented Technologies in Secure Systems</i>
	T4	Afternoon	Ismael Ripoll, Alfons Crespo <i>Hypervisor Technology for Building Safety-Critical Systems: XtratuM</i>
	T5	Afternoon	Ian Broster <i>How to Optimize Reliable Software</i>
	T6	Afternoon	Jean-Pierre Rosen <i>Developing Web-Aware Applications in Ada with AWS</i>
Friday 18 June	T7	Full day	Michael González-Harbour <i>MAST: Predicting Response Times in Event-Driven Real-Time Systems</i>
	T8	Full day	Roderick Chapman <i>SPARK: The Libre Language and Toolset for High-Assurance Software</i>
	T9	Full day	Benjamin Brosgol, Jérôme Lambourg <i>C#, .NET and Ada: Keeping the Faith in a Language-Agnostic Environment</i>

Morning tutorial sessions will start at 9:30 and end at 13:00. Afternoon sessions will start at 14:30 and end at 18:00. Coffee breaks will be at 11:00 - 11:30 and at 16:00 - 16:30.

EXHIBITION

The exhibition will open at the morning break on Tuesday and run continuously until the end of the afternoon break on Thursday. It will take place in the area near the main conference room. The coffee breaks are held in the exhibition area. The breaks on Tuesday to Thursday span one hour so as to allow the attendees comfortable time to visit the exhibition.

Companies that already booked their exhibition space include, in alphabetical order: AdaCore; Altran Praxis; Atego; Ellidiss Software. Others have shown interest. Exhibitors will also deliver a presentation in the vendor session.

SOCIAL PROGRAM

Reception

The social program will open with a welcome reception on Tuesday at the *Jardí Botànic*. This botanical garden was founded by the University of Valencia in 1567. In 1802 it was installed in its current location, within a walking distance from the conference venue.

The garden has gone through moments of splendor and decadence. It was destroyed when Napoleon's troops invaded Valencia in 1812 and suffered the devastating effects of the flood in 1957. Today, ten years after its most recent refurbishment, it offers a splendid, open-air, green atmosphere for a relaxed gathering.

Conference Banquet

Following a well established and appreciated tradition of the conference, there will be a banquet dinner on Wednesday evening. We will be visiting a beautiful Valencian *Masía* (country house and farm) built in the 19th century and kept in perfect condition for the celebration of this kind of events.

A bus service hired for the occasion will take us to *Masía Xamandreu* in a short trip of about 30 minutes from the conference venue. Access to the *Masía* is through a straight road flanked by palm trees, with orange trees and Mediterranean gardens surrounding the house. Altogether, the place has a marked Valencian character. In addition, *Masía Xamandreu* has gained a reputation for its creative cuisine, close to tradition and using excellent quality ingredients, many of them grown in the property. Further information about the place is available at www.masiaxamandreu.com (in Spanish).

Additional tickets

For the welcome reception on Tuesday 15 and for the banquet on Wednesday 16 additional tickets can be purchased when you register online, or alternatively on site at the registration desk until the day before the event.

CONFERENCE SCHEDULE

	Tuesday 15 June	Wednesday 16 June	Thursday 17 June
9:00 – 9:30	Welcome and Opening Address		
9:30 – 10:30	Keynote Talk What to Make of Multicore Processors for Reliable Real-Time Systems? <i>Theodore Baker</i> Florida State University, USA	Keynote Talk Control Co-Design: Algorithms and their Implementation <i>Pedro Albertos</i> Universidad Politécnic de Valencia, Spain	Keynote Talk Ada: Made for the 3.0 World <i>James Sutton</i> Lockheed Martin, USA
10:30 – 11:30	Coffee & Exhibition	Coffee & Exhibition	Coffee & Exhibition
11:30 – 13:00	Multicores and Ada Dispatching Domains for Multiprocessor Platforms and their Representation in Ada <i>A. Burns, A. Wellings</i> Implementing Multicore Real-Time Scheduling Algorithms Based on Task Splitting Using Ada 2012 <i>B. Andersson, L. M. Pinho</i> Preliminary Support of Ada 2012 in GNU/Linux Systems <i>S. Sáez, A. Crespo</i>	Real-Time Systems Towards the Definition of a Pattern Sequence for Real-Time Applications using a Model-Driven Engineering Approach <i>J. Pastor, P. Sánchez, D. Alonso, B. Álvarez</i> Scheduling Configuration of Real-Time Component-Based Applications <i>P. López, L. Barros, J. M. Drake</i> The Evolution of Real-Time Programming Revisited: Programming the Giotto Model in Ada 2005 <i>A. Wellings, A. Burns</i>	Language Technology AdaStreams: A Type-based Programming Extension for Stream-Parallelism with Ada 2005 <i>G. Hong, B. Burgstaller, J. Blieberger</i> A Comparison of Generic Template Support: Ada, C++, C#, and Java <i>B. Brosgol</i> Towards Ada 2012: An Interim Report <i>E. Schonberg</i>
13:00 – 14:30	Lunch & Exhibition	Lunch & Exhibition	Lunch & Exhibition

	Tuesday 15 June		Wednesday 16 June	Thursday 17 June
14:30 – 16:00	<p>Software Dependability</p> <p>Practical Limits on Software Dependability: A Case Study <i>P. Graydon, J. Knight, X. Yin</i></p> <p>Program Verification in SPARK and ACSL: A Comparative Case Study <i>E. Brito, J. Sousa Pinto</i></p> <p>Static Versioning of Global State for Race Condition Detection <i>S. Keul</i></p>	<p>Vendor Session</p> <p>TBA</p>	<p>Industrial Presentations</p> <p>HRT-UML and Ada Ravenscar Profile: A Methodological Approach to the Design of Level-B Spacecraft Software <i>R. López, A. I. Rodríguez</i></p> <p>Applying Model-Driven Architecture and SPARK Ada - a SPARK Ada Model Compiler for xtUML <i>E. Wedin</i></p> <p>Ada 95 Usage within the Airbus Military Advanced Refuelling Boom System <i>I. Lafoz</i></p> <p>Ada 95 Usage within the Airbus Military Generic Test Environment System <i>B. Lozano</i></p>	<p>Industrial Presentations</p> <p>Future Enhancements to the U.S. FAA's En-Route Automation Modernization (ERAM) Program and the Next Generation Air Transportation (NextGen) System <i>J. O'Leary, A. Srivastava</i></p> <p>System Architecture Virtual Integration Case Study <i>B. Lewis</i></p> <p>Lessons Learned from the First High Assurance (EAL 6+) Common Criteria Software Certification <i>D. Kleidermacher</i></p> <p>An Introduction to ParaSail: Parallel Specification and Implementation Language <i>S. T. Taft</i></p>
16:00 – 17:00	Coffee & Exhibition		Coffee & Exhibition	Coffee & Exhibition
17:00 – 18:00	<p>Critical Systems</p> <p>Using Hardware Support for Scheduling with Ada <i>R. White</i></p> <p>Cache-aware Development of High-Integrity Systems <i>E. Mezzetti, A. Betts, J. Ruiz, T. Vardanega</i></p> <p>Preservation of Timing Properties with the Ada Ravenscar Profile <i>E. Mezzetti, M. Panunzio, T. Vardanega</i></p>	<p>Vendor Session</p> <p>TBA</p>	<p>Industrial Presentations</p> <p>Implementing Polymorphic Callbacks for Ada/C++ Bindings <i>M. Sobczak</i></p> <p>A Reusable Work Seeking Parallel Framework for Ada 2005 <i>B. Moore</i></p> <p>Database Programming with Ada <i>F. Piron</i></p>	<p>Distribution and Persistency</p> <p>Managing Transactions in Flexible Distributed Real-Time Systems <i>D. Sangorrín, M. González-Harbour, H. Pérez, J. J. Gutiérrez</i></p> <p>An Efficient Implementation of Persistent Objects <i>J. S. Andersen</i></p>
18:00 – 18:30				Closing Address and Best-Presentation Award
From 18:30	Ada-Europe General Assembly		Banquet and Best-Paper Award	
From 19:30	Welcome Reception			

REGISTRATION AND ACCOMMODATION

Conference Registration

The registration fee for the three days of the technical program (June 15-17) includes one copy of the proceedings, coffee breaks, lunches, welcome reception on Tuesday 15 June evening, and banquet on Wednesday 16 June evening. The registration fee for a single day of the technical program includes one copy of the proceedings, two coffee breaks, and the lunch on the day of the registration.

	Member of Ada-Europe or ACM SIGAda		Non-member		Student ^(*)
	Academia	Non academia	Academia	Non academia	
Early registration (payment by 24 May)	480 €	540 €	540 €	600 €	400 €
Late/on-site registration (payment after 24 May)	600 €		660 €		440 €
Day registration (single day)	300 €		330 €		200 €

^(*) Student rate

Please check the Registration page at <http://www.ada-europe.org/conference2010> for the eligibility conditions to student rates.

Registration Form

The preferred registration method is on-line by following the link provided in the Registration page at <http://www.ada-europe.org/conference2010>. If for any reason you need to register via fax or email, please ask for a registration form by contacting the registration team at congresos@cfp.upv.es.

Tutorial Registration

The fee is per tutorial, including tutorial notes and coffee breaks. Lunches are only included when registered for a full day tutorial or two half day tutorials on the same day.

	Half day	Full day or two half days
Early registration (payment by 24 May)	130 €	260 €
Late/on-site registration (payment after 24 May)	145 €	290 €

No registration request will be confirmed until the payment has been processed. Substitutions will be accepted. To save on administrative costs and postage, receipts will be handed out at the conference. Cancellation must be always confirmed in writing: don't forget to include all your banking information. Refund of fees, with deduction of € 25.00 for administrative duties, will be made for cancellations received before 24 May 2010. After that date, no refunds will be possible. Refunds will be processed and paid after the Conference.

For latest information, see <http://www.ada-europe.org/conference2010>. For additional registration-related information, please contact the registration team at congresos@cfp.upv.es.

Accommodation

There are a number of hotels near the conference venue. The web page of the conference lists a few hotels with which an arrangement has been made to hold a certain number of rooms for conference attendees. Please find the details in the conference web page about these hotels and others in the vicinity of the conference venue.

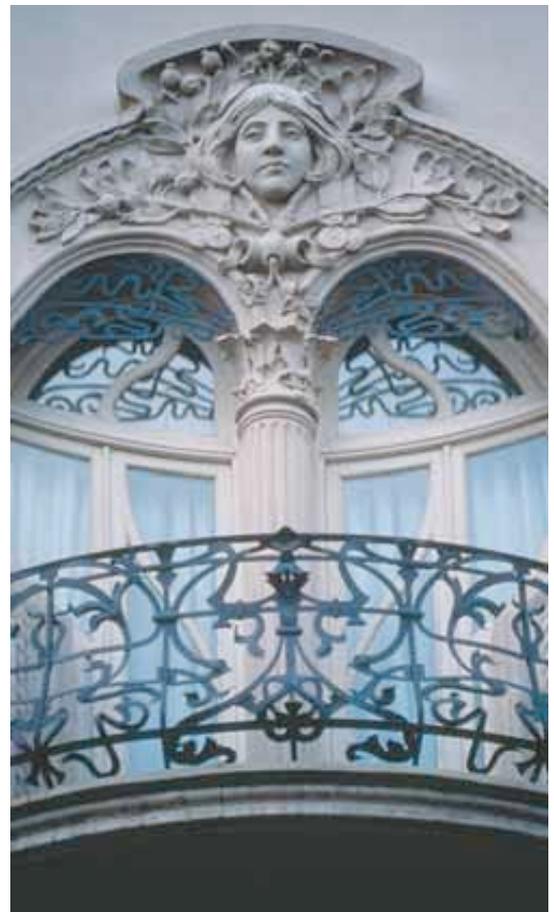
Valencia is a tourist attraction at all times, and there are also other events taking place on the same dates as the conference. Therefore we recommend booking your accommodation as soon as possible.

PROGRAM COMMITTEE

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FURTHER INFORMATION

The conference web site at <http://www.ada-europe.org/conference2010> gives full and up to date details of the program. The web site also provides details of the venue, including travel advice, instructions to reserve hotel accommodation nearby the conference venue, maps and a list of hotels close by.

For Exhibiting and Sponsoring details please contact the Exhibition Chair, Ahlan Marriott. A sliding scale of sponsorship provides a range of benefits. All levels include display of your logo on the conference web site and in the program. The lowest level of support is very affordable.

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