



ACM SIGAda's Annual International Conference:

SIGAda 2004

Doubletree Hotel Atlanta-Buckhead
Atlanta, GA USA
14 - 18 November 2004

Sponsored by ACM's Special Interest Group on the Ada Programming Language,
In Cooperation With
SIGAPP, SIGCAS, SIGCSE, SIGPLAN, SIGSOFT and Ada-Europe

Hosted by
Southern Polytechnic State University, School of Computing and Software Engineering
and the
ACM Student Chapter, TSYS Department of Computer Science, Columbus State University

Advance Program

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**Special
Keynote
Presentations**

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Lockheed Martin Aeronautics Corp.

Watts Humphrey
Fellow and Research Scientist
Software Engineering Institute

Stephen Cross
Vice President
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What's Happening With Ada? Learn the latest developments about Ada and related technologies from the world's leading Ada practitioners, researchers, and educators. The refereed conference program includes experience reports from Ada developers and educators and new findings from the research community. Exciting tutorials, latest products from our vendors, and workshops on Ada-related technologies supplement the program. Continuing an initiative of SIGAda's Education Working Group, we are making a special effort to reach out and involve students and educators, as Ada is taught where software engineering is an important focus.

Ada has always been successful in government and commercial systems worldwide where reliability is essential: aeronautics, air traffic control and aerospace, simulation, shipboard and railway, communications, and many others. Ada is used in these environments ranging from bareboard embedded devices to large-scale distributed real-time systems and in multi-language software interfacing with C, C++, Fortran, Java, and other languages.

For recent updates/schedule changes, please see the SIGAda 2004 Website: www.sigada.org/conf/sigada2004

SIGAda 2004 TUTORIAL PROGRAM

Sunday Full-Day Tutorials (9:00am - 5:30pm)

SF1: An Introduction to Ada 95 for Programmers

David A. Cook, Eugene W.P. Bingue

Level - Beginner, but attendees should have some experience with another programming language.

This tutorial is designed for those who have some familiarity with a programming language, but who are new to Ada. In the morning, we will discuss the basics of programming in Ada, to include typing, packages, syntax rules, and other Ada programming constructs. In the afternoon, we will cover the concepts of object-oriented programming, and show how object-oriented design can easily be implemented using Ada. Simple Ada programs will be constructed during the class, and the attendees will also see how to use various Ada programming environments and tools that can be downloaded for free over the web.

SF2: SPARK, an Intensive Overview

Roderick Chapman

Level - Intermediate. This tutorial is intended primarily for those with current or recent experience of software development in Ada, especially those who will work on or lead safety critical or other high integrity developments.

SPARK is an annotated sub-language of Ada which is unambiguous and suitable for rigorous static analysis. The tutorial, which is extracted from the four-day "Software Engineering with SPARK" course will provide an intensive introduction to SPARK and the static analysis performed by the SPARK Examiner.

Attendees will be encouraged to bring laptop computers on which the SPARK Examiner will be installed.

SF3: Real-Time Java for Ada Programmers

Ben Brosgol

Level - Intermediate. Audience should be familiar with Ada 95 and have a basic knowledge of Java

Although the term "real-time Java" may sound self-contradictory, serious technical activity has been underway since early 1999 on extending the Java platform to satisfy the requirements for real-time systems, and several implementations exist. This work is relevant to the Ada community as both a challenge and an opportunity: on the one hand, it may compete with Ada in the real-time marketplace, but on the other hand some of its ideas may be worthy of consideration in a future version of the Ada language.

This tutorial will focus on the Real-Time Specification for Java ("RTSJ"), which was developed by the Real-Time for Java Expert Group under the auspices of Sun Microsystems' Java Community Process. The tutorial will analyze/critique the Java platform with respect to real-time support, summarize/illustrate the main elements of the RTSJ, and compare/contrast the design with Ada's real-time features (both in Ada 95 and under consideration for Ada 05). The tutorial will also outline the main aspects of the J-Consortium's "Core Extensions" (a competing real-time Java approach), will summarize a proposed high-integrity profile for the RTSJ, and will provide a status update on the real-time Java work and its usage and prospects.

SF4: Introduction to UML 2

Ed Colbert

The Object Management Group's (OMG) Unified Modeling language (UML), v1.x, met the need for a standard notation for object-oriented design; but it lacked adequate semantic definition, was unnecessarily complex, and didn't adequately support advanced concepts like architecture design. UML 2 attempts to solve these problems and others.

This tutorial will look at the new UML 2 standard and how it supports large system development, including profiles for real-time specification and for the Society of Automotive Engineers' (SAE) Architecture Analysis and Design Language (AADL).

Monday Full-Day Tutorials (8:30am - 5:00pm)

MF1: Developing a Web server in Ada with AWS

Jean-Pierre Rosen

Level - Intermediate. Attendees should have some knowledge of Ada programming. No previous knowledge of Web programming or HTML is required.

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 to the more advanced ones. The seminar 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 provides attendees with the information needed to assess whether AWS is appropriate to their needs, and the necessary knowledge to start writing full-scale Web applications.

AWS is a free (GMGPL) software component written by Pascal Obyr and Dmitriy Anisimkov that allows developing Web applications in Ada. Unlike other methods that require a dedicated server (like Apache), AWS provides services to develop applications that act as autonomous Web servers, using the Ada language for the semantic part of the application instead of scripting languages like Perl or Python. AWS is a mature product that can be used for regular Web servers as well Web interface to control more traditional processing functions.

MF2: The Architecture Analysis and Design Language (AADL)

Joyce Tokar, Bruce Lewis

This tutorial will provide an introduction to the AADL language from a textual and graphical perspective. It will also give some guidelines regarding the relationship between existing systems and the generation of AADL models. The tutorial will present several uses of the AADL in the design and analysis of safety-critical real-time systems.

This tutorial is suitable for senior software and systems engineers as an introductory course; the tutorial does not presume prior knowledge of AADL. The course is also useful to software and systems managers responsible for the development and integration of complex critical systems. The attendees should have an understanding of the fundamentals of the development of complex, critical real-time systems.

For more detailed information, select "Tutorials" from <http://www.sigada.org/conf/sigada2004/>

SIGAda 2004 TUTORIAL PROGRAM (cont.)

The Architecture Analysis and Design Language (AADL) is an architecture description language (ADL) that has been developed under the auspices of the International Society of Automotive Engineers (SAE), Avionics Systems Division (ASD) Embedded Computing Systems Committee (AS-2). The AADL was approved as an SAE standard in the fall of 2004.

The language has been defined to provide a consistent and concise notation, both textual and graphical, to be used to develop models of complex, real-time, critical systems such as those used in automotive, avionics, medical, robotic, and space-based systems. The AADL provides the notation to perform various types of analysis of the complex critical systems. In the early stages of design, the AADL enables the definition of the preliminary connectivity between application and execution platform components. As an AADL model is developed, additional components and properties are specified. The properties are the basis of information provided for analysis tools to determine the behavior and performance of the system being modeled. The AADL has been designed to facilitate the development of tools that provide automatic code generation of the system both in terms of the application software components and the underlying execution environment. The AADL may be further used to verify an actual system against the specified model. With automatic code generation, the AADL offers a system model that maintains significant information about a system that is useful throughout the lifetime of the system. Thus, the AADL offers support for all stages of system development.

Monday Morning Tutorials (8:30am - 12:00 Noon)

MA1: Real-time and Parallel Processing in Ada 95

Eugene W.P. Bingue, David A. Cook

Level - Intermediate. This tutorial assumes basic knowledge or experience with the Ada programming language.

This tutorial covers two of the major problems with parallel and real-time programming - time management and storage management. Parallel processing, whether on single-processor machines or multiple processors, has many pitfalls. We will examine these potential pitfalls, and discuss ways to avoid common problems, such as deadlocks and race conditions. We will also discuss how to write code that efficiently passes data with other parallel processes. The basics of parallel processing are covered, leading to a discussion and examples using Ada tasking. In addition, the Ada Real-Time Systems Annex is also covered.

MA2: Microsoft Solutions Framework and the Microsoft Operations Framework

Rick Conn

Level - Beginner. This tutorial compares and contrasts three different approaches to improve the reliability of software-intensive products. The approaches covered by this paper are:

- (1) the Microsoft Solutions Framework and Trustworthy Computing,
- (2) the Software Engineering Institute's Capability Maturity Models, the Team Software Process, and the Personal Software Process, and
- (3) Extreme Programming.

These approaches have emerged over time from several different

sources (Microsoft, the Software Engineering Institute, and the Extreme Programming community) driven by different needs and requirements in different application domains and different development and user cultures. There are many similarities to these approaches - primary of which is the fundamental need to produce reliable software products that provide a useful, often vital, function in the real world. This tutorial provides brief overviews of each approach, comparing and contrasting these approaches. It will also discuss how Ada fits into each of the approaches. In addition, each attendee will be provided with a CD containing the white papers and other documentation on the various frameworks.

Monday Afternoon Tutorials (1:30pm - 5:00pm)

MP1: High-Integrity Ravenscar using SPARK

Rod Chapman

Level - Intermediate. This tutorial would be suitable for those with an interest in using the Ravenscar Profile in a high integrity system that requires static verification of deterministic and error-free behavior. The tutorial assumes a reasonable but not expert knowledge of sequential SPARK. Suitable preparation could include:

1. Attendance at a previous one-day SPARK tutorial (see SF2 held on Sunday) or full 4-day SPARK course.
2. Use of SPARK on a project.
3. Reading "High Integrity Software - the SPARK approach" by John Barnes, and experimenting with its demo tools.

SPARK is a well-established, unambiguous and fully-analyzable annotated subset of Ada. In its original form SPARK excluded all forms of concurrency because weaknesses in the Ada tasking model made it incompatible with the design goals of SPARK. The advent of the Ravenscar Profile has provided an opportunity to extend SPARK to include concurrency and to enable the SPARK Examiner to analyze concurrent programs.

The tutorial will describe the way SPARK has been extended to include the Ravenscar Profile and how static analysis techniques can eliminate all of the erroneous behavior, bounded errors and implementation-defined behavior that remain in the concurrency model defined by the Profile.

MP2: A#: Programming PDAs and .NET Devices with Ada

Martin Carlisle

Level - Intermediate. Attendees should be familiar with Ada 95. Preferable to have a basic knowledge of C# or Java.

This tutorial describes A#, an Ada environment for programming the Windows .NET and .NET Compact Frameworks. Attendees will learn how to create Ada applications that take advantage of the rich set of libraries available with the .NET Framework, and also how to deploy Ada applications onto PDAs using the .NET Compact Framework.

Attendees will also learn how to create Multilanguage applications combining both C# and Ada. In particular, attendees will learn how to create a user interface with Visual Studio, .NET, and use Ada for the computation behind this interface.

This tutorial will be very hands-on. Attendees should bring laptop computers on which A# will be installed.

Summary Conference Schedule

Sunday, November 14		Tuesday, November 16	
TUTORIAL PROGRAM			
Full-Day Tutorials (9:00am - 5:30pm)			
SF1: An Introduction to Ada 95 for Programmers <i>David Cook (AEGIS Technologies Group, Inc.), Eugene Bingue (Independent Consultant)</i>		9:00-10:30am	Greetings from SIGAda and Conference Officers Keynote Address: Can Ada Stand Up to the Challenges of C/C++ and Java? <i>Pam M. Thompson (Lockheed Martin Aeronautics)</i>
SF2: SPARK, an Intensive Overview <i>Roderick Chapman (Praxis Critical Systems, Ltd.)</i>		10:30 - 11:00am Morning Break - Exhibits Open	
SF3: Real-Time Java for Ada Programmers <i>Ben Brosgol (Ada Core Technologies)</i>		11:00am - 12:30 pm	Enforcing Security and Safety Models with an Information Flow Analysis Tool <i>Roderick Chapman & Adrian Hilton (Praxis Critical Systems)</i> A Refactoring Tool for Ada 95 <i>Paul Anderson (GrammaTech)</i> Re-engineering Global Variables in Ada <i>Ricky E. Sward & A. Tim Chamillard (USAF Academy and Univ of Colorado, Colorado Springs)</i>
SF4: Introduction to UML 2 <i>Ed Colbert (Absolute Software Co., Inc.)</i>			
Monday, November 15		12:30 - 2:00pm Mid-day Break and Exhibits	
Full-Day Tutorials (8:30am - 5:00pm)			
MF1: Developing a Web server in Ada with AWS <i>Jean-Pierre Rosen (Adalog)</i>		2:00 - 3:30 pm	Cheddar : a Flexible Real Time Scheduling Framework <i>F. Singhoff, J. Legrand, L. Nana, L. Marce (Univ of Brest)</i> Comparative Analysis of Genetic Algorithm Implementations <i>Robert Soricone and Melvin Neville (Northern Arizona Univ)</i> Microsoft Vendor Presentation: Microsoft with Ada in the Embedded World <i>Rick Conn (Microsoft)</i>
MF2: The Architecture Analysis and Design Language (AADL) <i>Joyce Tokar (Pyrrhus Software, Inc.), Bruce Lewis (US Army Aviation and Missile Command)</i>		3:30 - 4:00 pm Afternoon Break & Exhibits	
Morning Tutorials (8:30am - 12:00 Noon)		4:00 - 6:00pm	Keynote Address: Security Changes Everything <i>Watts Humphrey (Software Engineering Institute)</i> AdaCore Vendor Presentation <i>Ed Schonberg (Ada Core Technologies)</i> Green Hills Vendor presentation
MA1: Real-time and Parallel Processing in Ada 95 <i>Eugene Bingue (Independent Consultant), David Cook (AEGIS Technologies Group, Inc.),</i>		6:00 pm Adjourn	
MA2: Microsoft Solutions Framework and the Microsoft Operations Framework <i>Rick Conn (Microsoft)</i>		7:00 - 9:00pm	Conference Reception
Afternoon Tutorials (1:30pm - 5:00pm)			
MP1: High-Integrity Ravenscar using SPARK <i>Roderick Chapman (Praxis Critical Systems, Ltd.)</i>			
MP2: A#: Programming PDAs and .NET devices in Ada <i>Martin Carlisle (USAF Academy)</i>			
Evening Activities (7:00pm - 11:00pm)			
7:00 - 11:00pm	SIGAda Extended Executive Committee Meeting <i>Currie Colket (MITRE Corp., SIGAda Chair)</i> (Open to all)		

For more detailed information on speakers and their abstracts, visit: www.sigada.org/conf/sigada2004/

For more detailed information, select "Tutorials" from www.sigada.org/conf/sigada2004/

Wednesday, November 17	
9:00- 10:30am	Announcements SIGAda Awards Keynote Address: Why can't engineering good software be like building a house? <i>Stephen Cross (Georgia Tech Research Institute)</i>
10:30 - 11:00am Morning Break and Exhibits	
11:00am - 12:30pm	Measuring the Effectiveness of ACATS <i>Geoff T. Smith (IBM Rational Software)</i> Model Driven Development with Ada <i>Andy Lapping (I-Logix)</i> Aonix Vendor Presentation
12:30 - 2:00pm Mid-day Break and Exhibits	
2:00 - 3:30pm	Information Systems Security Engineering: A Critical Component of the Systems Engineering Lifecycle <i>James F. Davis (Univ of Maryland)</i> Teaching Graphics Using Ada <i>C. Wayne Brown (USAF Academy)</i> Invited Paper: GNAT: On the Road to Ada 2005 <i>Javier Miranda (University of Las Palmas de Gran Canaria) and Edmond Schonberg (New York University)</i>
3:30 - 4:00pm Afternoon Break	
4:00 - 6:00pm	TNI Europe Vendor Presentation Vendor Presentations
6:00 - 8:00pm Evening Break	
8:00 - 11:00pm	Workshops: (<i>see page 6</i>) Birds-Of-a-Feather (BOF) sessions (<i>contact Workshops Chair to propose a BOF, see page 6</i>)

For more detailed information on Workshops and BOFs, visit:
www.sigada.org/conf/sigada2004/

"SIGAda 2004 will be an essential conference to attend if you want to learn about Ada 2005."

S. Tucker Taft
President, SofCheck, Inc.

Thursday, November 18	
9:00- 10:30am	Ada 2005 Panel <i>Pascal Leroy (IBM Rational)</i>
10:30 - 11:00am Morning Break	
11:00 - 12:30pm	Ada 2005 Panel (continued) <i>Pascal Leroy (IBM France)</i>
12:30pm Closing Comments & Adjourn	

Ada 2005 Panel

The ISO technical group responsible for the Ada standards is the ISO/IEC JTC1/SC22 WG9. WG9 is currently working to amend the Ada language to support the evolving needs of the user community. In 2000, the WG9 ARG started looking into possible changes for the next revision of the standard. An Amendment to the Ada 95 Standard (ISO/IEC 8652:1995) incorporating these changes is expected to be approved by ISO in late 2005. This revision is a great opportunity to further enhance Ada by providing new capabilities for embedded and high-reliability applications (the Ravenscar Profile, new scheduling algorithms, new predefined package Ada.Execution_Time); by integrating new programming practices (Safety in the Object Oriented Programming (OOP) area, Access Type improvements); by including new Interfaces (container library, incorporation of advanced arithmetic facilities, adopting a practical international character set, Unchecked C Unions), and by addressing other issues encountered by Ada 95 users. This will be a substantive and important revision to the Ada Programming Language.

The technical work for the Ada 2005 Amendment is carried out by the Ada Rapporteur Group (ARG) under the auspices of WG9. Key ARG members will participate in a 3-hour panel on the significant improvements that WG9 has approved for inclusion in the Ada 2005 Amendment. The Panel will be chaired by IBM's Pascal Leroy, Chair of the WG9 ARG. The panel will consist of a number of mini-briefings presented by members of the ARG. Some of the mini-briefings currently planned are:

- Real-time
- Numerics Packages
- Interfaces
- Mutually Dependent Types
- Exceptions
- Character Sets
- Miscellaneous Enhancements

Additional mini-briefings may be added. The ARG members who will be participating in the panel include: John Barnes, Alan Burns, and Pascal Leroy. Other presenters will be added.

CONFERENCE COMMITTEE

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EXHIBITORS

SIGAda 2004 will include vendor participation, featuring presentations on their products and services. For specific information, please contact the Exhibits Chair: **Greg Gicca**, Aonix, 10 Northwood Drive, Merrimack, NH 03053, +1 603-429-3415, E-mail: gicca@aonix.com or see:

www.sigada.org/conf/sigada2004/exhibits.html

CONFERENCE VENUE & HOTEL

We are very pleased to hold the SIGAda 2004 Conference at the DoubleTree Hotel Atlanta-Buckhead. The Doubletree Hotel is located in the heart of Buckhead, Atlanta's most vibrant district. Additional information on the Doubletree Hotel can be found on the Registration Form on page 7 and on the Conference Website:

www.sigada.org/conf/sigada2004/

Please identify your affiliation with "ACM" to obtain the Conference Rate. This rate is available until 25 October 2004. The conference home page has a link to on-line reservations at SIGAda conference rates.

GRANTS TO EDUCATORS

As in past years, SIGAda is offering grants to educators to attend the conference. Grants cover the registration and tutorial fees; travel funds are not available. Details on the grant program are available from: **Prof. Michael B. Feldman**

E-mail: mfeldman@gwu.edu or see: www.sigada.org/conf/sigada2004/

Applications are due by e-mail (preferred), fax, or regular mail (postmarked) by October 1, 2004.

WORKSHOPS / BOFS

Focused workshops are important in evolving Ada technology to better meet the needs of the Ada community. Workshops are free for those registered for the conference. The following workshops are planned for SIGAda 2004:

1. **APIWG plenary, Birds of a Feather**, Clyde Roby
Wednesday, November 17
2. **APIWG XML subgroup, Birds of a Feather, including XML subgroup lead by Robert Leif**
Wednesday, November 17
3. **AdaCore's GNAT Academic Program, Workshop, Ed Schonberg**
Wednesday, November 17
4. **Ada Semantic Interface Specification (ASIS), Workshop**, Currie Colket
Wednesday, November 17

Workshop descriptions will be on the SIGAda 2004 Home Page when they are available. Additional workshops or Birds-of-a-Feather (BOF) are welcome. Workshops have a focused objective and result in a report to be published in Ada Letters. BOFs are informal discussion groups. If you would like to propose a Workshop or BOF, please contact the Workshops Chair, **Alok Srivastava**, E-mail: Alok.Srivastava@NGC.Com

Atlanta - Buckhead

The Doubletree Hotel is located in the heart of Buckhead the true center of Atlanta, which boasts the best selection of dining and entertainment venues in Atlanta. Only 1 1/2 blocks from Lenox Mall/Phipp's Plaza - the best shopping in the Southeast, surrounded by Atlanta's best selection of restaurants and nightlife. The Conference Hotel is only 25 minutes from Hartsfield Jackson International Airport and 150 yards from the Buckhead MARTA Rail Station on a direct Airport rail line. Taking the MARTA is a 15-30 minute train ride from the Atlanta Airport and only costs \$1.75. Those with a lot of luggage might desire the Hotel Shuttle costing \$20.00 one-way. The hotel is located in the Tower Place complex in the heart of Buckhead's dynamic Financial District.

SIGAda 20
04

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Special Interest Group on the
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ACM SIGAda Annual International Conference

Atlanta, Georgia USA -- 14-18 November 2004

SIGAda 2004 Advance Registration Form

For On-Line Registration, see www.sigada.org/conf/sigada2004/

Name (First, Middle Initial, Last): _____
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You must provide your membership number to qualify for a discount. If you are not a member, join SIGAda and/or ACM now, and save money. Please check the box immediately following any information which we should ***NOT*** publish in the On-Site Conference Attendee Listing: Name[], Organization[], E-mail Address[], Postal Address[], Phone / Fax Numbers[]. Please check the following box if we should ***NOT*** publish your Name, Organization, and Country in the Post Conference CD-ROM: []

Registration Procedure:

Mail form with payment to:
ACM SIGAda 2004
C/O Thomas A. Panfil
Registration Chair
PO Box 5210
Laurel, MD 20726-5210
Or fax to: +1-301-498-7313
Reg'n Form: AP

Cancellation Policy:

Registrants who cannot attend and do not send a substitute are entitled to a refund of fees paid (less a \$50 processing charge) if a written request is received on or before **25 October 2004**. Registrants are liable for their full fees after that date.

ACM & SIGAda Membership:

Professional Membership:
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Conference & Tutorial Rates:	Member		Non-Member		Student	
	On/Before 25 Oct	After 25 Oct	On/Before 25 Oct	After 25 Oct	On/Before 25 Oct	After 25 Oct
Conference All 3 Days	\$495	\$645	\$645	\$795	\$50	\$50
Conference One Day	\$295	\$295	\$295	\$295	\$50	\$50
Tutorial 2 Days	\$575	\$695	\$795	\$895	\$50	\$50
Tutorial 1 Day	\$400	\$500	\$500	\$600	\$25	\$25

Conference: All Conference Sessions, Exhibits, Tuesday Dinner, & Proceedings (Hard Copy & CD-ROM)
Conference - Any 1 Day: Conference Sessions, Exhibits, Tuesday Dinner, & Proceedings (HC & CD-ROM)
Tutorials - Two Days: Tutorial Sessions totaling 2 days, Exhibits, & Full Tutorials CD-ROM
Tutorials - One Day: Tutorial Sessions one full-day (or two half-days), Exhibits, & Full Tutorials CD-ROM

Tutorial Selections:

For a list of tutorials available, visit the tutorials section of the registration web-site. Write the code for your selected tutorials on the appropriate lines.

Sunday Full Day _____
 Monday Full Day _____
 Monday Morning _____
 Monday Afternoon _____

Special Requirements (if any):

Payment Computation

Conference Fee: \$ _____
 Tutorials Fee: \$ _____
 Membership Dues: \$ _____
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 Hard Copy: ___ copies x \$50 \$ _____
Tuesday Evening:
 ___ Additional tickets x \$30 \$ _____
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Toll-Free Phone: +1-800-222-TREE (USA/Canada Only).
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SIGAda 2004: ACM SIGAda Annual International Conference

SIGAda ²⁰04

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GOOD REASONS WHY YOU SHOULD COME TO SIGADA 2004

- Find** out late-breaking news on the features being considered for the next version of Ada, and how they will affect your use of the language
- Participate** in workshops that will influence Ada technology
- Hear** recognized speakers on Ada and software engineering issues relevant to your organization
- Consider** how Ada may be employed to meet Information Assurance requirements expressed in Common Criteria Language
- Meet** others addressing the same software engineering problems facing your organization
- Learn** how Ada is being used successfully in application areas where Fortran, C, C++ and even Java were previously chosen
- Explore** for yourself how Ada compilers and tools are becoming more powerful and cost effective
- See** how Ada is being used to support the development of distributed, real-time, highly-reliable systems
- Realize** the growing number of tools and third-party libraries available to Ada programmers
- Discover** that Ada is easy to learn and is used by many colleges and universities in introductory computer science courses
- Take** tutorials that will advance your career professionally

ADVANCE PROGRAM

Register early
save up to
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See page 7 for details