

SIGAda 2004



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Annual International Conference

14 - 18 November 2004

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

The Engineering of Correct and Reliable Software
For Real-Time & Distributed Systems
Using Ada and Related Technologies

FINAL PROGRAM



*Explore
Atlanta / Buckhead*

CONFERENCE KEYNOTE SPEAKERS

Pam Thompson (Lockheed Martin Aeronautics Corp.)

Watts Humphrey (Software Engineering Institute)

Stephen Cross (Georgia Institute of Technology)

Conference at a Glance

Sunday, November 14

9:00 AM – 5:30 PM Tutorials

Monday, November 15

8:30 AM – 5:00 PM Tutorials

7:00 PM – 11:00 PM SIGAda Extended Executive Committee Meeting

Tuesday, November 16

9:00 AM – 6:00 PM Technical Program (see page 6)

10:30 AM – 4:00 PM Exhibits (see Exhibits Guide)

7:00 PM – 9:00 PM Conference Reception

Wednesday, November 17

9:00 AM – 6:00 PM Technical Program (see page 7)

10:30 AM – 2:00 PM Exhibits (see Exhibits Guide)

8:00 PM – 11:00 PM Workshops and BoF sessions

Thursday, November 18

9:00 AM – 12:30 PM Technical Program (see page 7)

SIGAda 2004 Registration

SIGAda 2004 Registration in the Conference Center
Specific Times and Locations are Posted

An hour before opening of Tutorials / Sessions plus other times
Sunday - Thursday: Ballroom Foyer (see page 5)

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Welcome to SIGAda 2004 from the SIGAda, Conference, and Program Committee Chairs



Welcome to the 2004 Annual International Conference of ACM's Special Interest Group on Ada (SIGAda), being held in Atlanta, Georgia, USA. The Buckhead area of Atlanta is also a marvelous place to hold a conference as it has pleasant weather in November facilitating technical discussions in a congenial environment.

We offer you a conference featuring a top-quality technical program focused on important strengths of Ada: distributed, real-time, and embedded systems. The visions of these systems reflected in Ada's original requirements in the 1970s have expanded in almost unimaginable ways with Ada 95 implementations, and continue to be objects of envy by those in the programming language community who understand what the strengths of a language brings to implementers in terms of efficiency, reliability, and effectiveness. Software challenges remain dominant in these domains with rapid hardware advances. Most other languages fail to meet the needs identified as far back as the 1976 Steelman, being able at best to do only $\frac{3}{4}$ of the needed function while Ada performs over 95%. Ada's track record of reliability, efficiency, robustness and all-around success is unparalleled at solving real-time and/or distributed system challenges. Ada is used in space/satellite systems, most modern jetliner avionics, high-speed ground transportation systems, and battle automation systems. As such, it is an important part of the world's economies and defenses.

Three days of technical papers, keynotes, and invited presentations will report how these successes are achieved and where remaining issues are leading. We are fortunate to have leaders in the software engineering community to provide keynote addresses to set the tone for our conference.

We are also fortunate to have special presentations which will give you an opportunity to find out how Ada continues to evolve to meet our future requirements, to result in Ada 2005.

Beyond the formal conference of selected papers and presentations, SIGAda 2004 offers workshops and tutorials with the same duality of on-theme and complementary topics. SIGAda's tutorials provide full-day or half-days on selected topics to enhance one's professional development. SIGAda's workshops allow those working the same issues to share with each other and leverage everyone's accomplishments; workshop products are "delivered" to the community.

The broad offerings of career-enhancing tutorials include basic Ada 95 introductions for software engineers new to Ada, intermediate and advanced Ada topics for practitioners striving to expand their Ada expertise, and several language-independent technology topics. These topics are often coupled with Ada technology because only Ada's full and complete definition allows one to indicate what is expected, and to show that it can be achieved. Join us in understanding how these topics mutually support the disciplined development and evolution of serious, high quality software systems.

Finally, we hope SIGAda 2004 provides you an outstanding opportunity for rewarding affiliation with colleagues in industry, academia, and government - discussions "in the hall," informal meal-time meetings, and even during the more relaxed moments we make for socializing in this wonderful southern city. If you don't realize it already, you will learn that these associations can be as valuable as the technical program at professional conferences, and often extend the experience after you return home.

We take this opportunity to thank our Corporate Sponsors as they participate in this year's SIGAda Conference. Our Platinum sponsors are Microsoft, AdaCore, Green Hills Software, and Aonix. Our Silver sponsors are TNI-Europe, I-Logix, and Artisan Software. Also exhibiting are Praxis High Integrity Systems., PolySpace Technologies, and LDRA Software Technology.

ACM SIGAda Chair

Currie Colket

The MITRE Corporation

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Conference Chair

John W. McCormick

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Program Chair

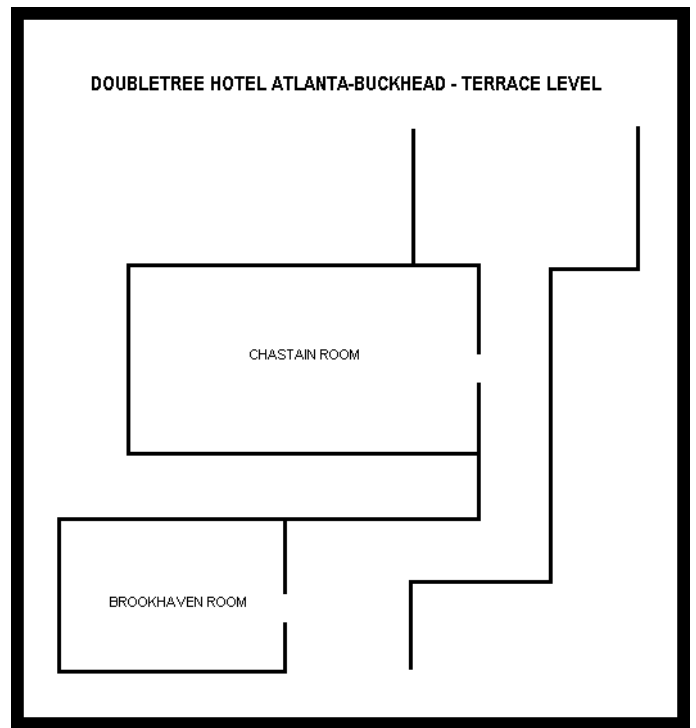
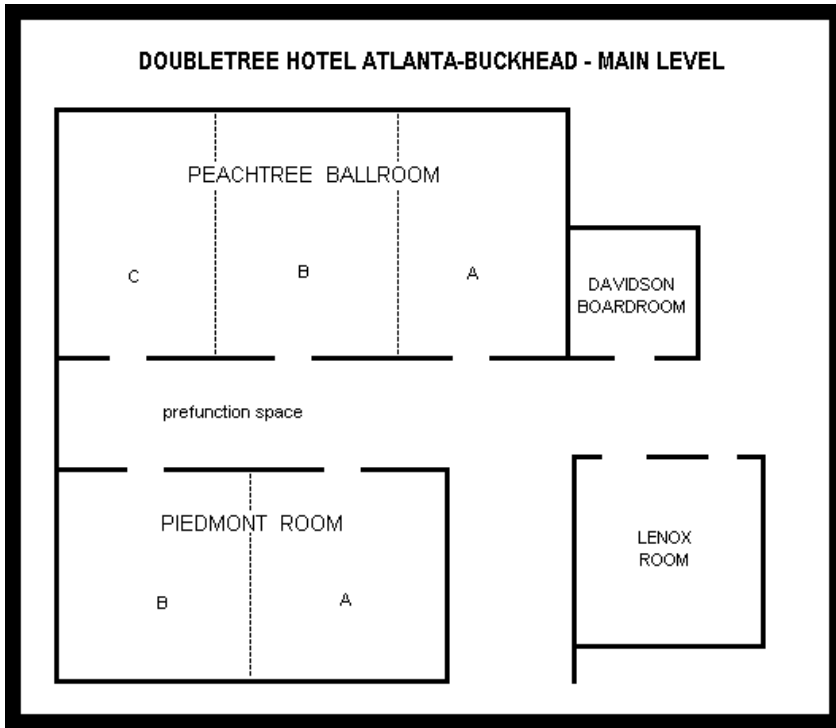
Ricky E. Sward

US Air Force Academy

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Conference Center and Meeting Rooms



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Summary Conference Schedule

TUTORIAL PROGRAM (SUN – MON)	
<i>All tutorials are in</i>	
<i>Chastain, Piedmont A, Brookhaven, or Piedmont B</i>	
Sunday, November 14	
Full-Day Tutorials (9:00am - 5:30pm)	
SF1:	An Introduction to Ada 95 for Programmers <i>David Cook. (AEGIS Technologies Group, Inc.),</i> <i>Eugene Bingué (Independent Consultant)</i>
SF2:	SPARK, an Intensive Overview <i>Roderick Chapman (Praxis High Integrity Systems.)</i>
SF3:	Real-Time Java for Ada Programmers <i>Ben Brosgol (AdaCore)</i>
SF4:	Introduction to UML 2 <i>Ed Colbert (Absolute Software Co., Inc.)</i>
Monday, November 15	
Full-Day Tutorials (8:30am - 5:00pm)	
MF1:	Developing a Web Server in Ada with AWS <i>Jean-Pierre Rosen (Adalog)</i>
MF2:	The Architecture Analysis and Design Language (AADL) <i>Joyce Tokar (Pyrrhus Software, Inc.),</i> <i>Bruce Lewis (US Army Aviation and Missile Command)</i>
Morning Tutorials (8:30am - 12:00 Noon)	
MA1:	Real-time and Parallel Processing in Ada 95 <i>Eugene Bingué (Independent Consultant),</i> <i>David Cook (AEGIS Technologies Group, Inc.),</i>
MA2:	Microsoft Solutions Framework and the Microsoft Operations Framework <i>Rick Conn (Microsoft)</i>
Afternoon Tutorials (1:30pm - 5:00pm)	
MP1:	High-Integrity Ravenscar using SPARK <i>Brian Dobbins (Praxis High Integrity Systems.)</i>
MP2:	A#: Programming PDAs and .NET devices with Ada <i>Martin Carlisle (USAF Academy)</i>
7:00 - 11:00pm	SIGAda Extended Executive Committee Meeting <i>Currie Colket (MITRE Corp., SIGAda Chair)</i> (Open to all) <i>In Piedmont A</i>

CONFERENCE (TUE – THU)	
<i>All conference sessions are in Peachtree A/B.</i>	
Tuesday, November 16	
9:00-10:30am	Greetings from SIGAda and Conference Officers Introductions of Conference Officers and SIGAda Officers Keynote Address: Can Ada Stand Up to the Challenges of C/C++ and Java? <i>Pam M. Thompson (Lockheed Martin Aeronautics)</i>
10:30 - 11:00am Mid-morning Break - Exhibits Open	
11:00am - 12:30pm	Enforcing Security and Safety Models with an Information Flow Analysis Tool <i>Roderick Chapman & Adrian Hilton (Praxis High Integrity Systems.)</i> A Refactoring Tool for Ada 95 <i>Paul Anderson (GramaTech)</i> Re-engineering Global Variables in Ada <i>Ricky E. Sward & A. Tim Chamillard (USAF Academy and Univ of Colorado, Colorado Springs)</i>
12:30 - 2:00pm Mid-day Break and Exhibits	
2:00 - 3:30 pm	Cheddar : a Flexible Real Time Scheduling Framework <i>F. Singhoff, J. Legrand, L. Nana, L. Marce (Univ of Brest, France)</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>
3:30 - 4:00 pm Afternoon Break & Exhibits	
4:00 - 6:00pm	Keynote Address: Security Changes Everything <i>Watts Humphrey (Software Engineering Institute)</i> AdaCore Vendor Presentation: Ada, GNATurally! <i>Ben Brosgol (AdaCore)</i> Green Hills Vendor presentation: A Safe Tasking Approach to Ada95 <i>Jim Gleason (Green Hills)</i>
6:00 pm Adjourn Day 1 of Conference	
7:00 - 9:00pm	Conference Reception <i>The Three Dollar Cafe</i>

All conference sessions are in the Peachtree A/B.

All conference sessions are in the Peachtree A/B.

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 Mid-morning Break and Exhibits	
11:00am - 12:30pm	Measuring the Effectiveness of ACATS <i>Geoff T. Smith (IBM Rational Software)</i> I-Logix Vendor Presentation: Leveraging Model Driven Development and UML for Ada Applications <i>Ed Maye (I-Logix)</i> TNI Europe Vendor Presentation: State of the Art Software Modeling <i>Tony Elliston (TNI Europe)</i> Artisan Vendor Presentation: A Pragmatic Approach using Ada and UML <i>(Artisan Software)</i>
12:30 - 2:00pm Mid-day Break and Exhibits	
2:00 - 4:00pm	Model Driven Development with Ada <i>Andy Lapping (I-Logix)</i> 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> Aonix Vendor Presentation: Safety Critical Solutions for DO-178B <i>Joe Colloca (Aonix)</i>
4:00 – 8:00pm Adjourn Day 2 of Conference: Evening Break	
8:00 - 11:00pm	Workshops (WS) & Bird-of-a-Feather (BoF) Sessions WS: GNAT Academic Package , 8:30-10:00pm <i>(see page 8)</i> BoF: APIWG plenary , 8:00-8:30pm <i>(see page 8)</i> BoF: APIWG XML subgroup, including XML subgroup , 8:30-10:00pm <i>(see page 8)</i> BoF: ASISWG , 10:00-11:00pm <i>(see page 8)</i> <i>To propose a BOF, see page 8</i>

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



Conference Reception
7-9 PM Tuesday
 @
The Three Dollar Cafe
3002 Peachtree Road
Atlanta, GA 30305
404-266-8667

(About 1.3 miles from the Hotel)

SIGAda 2004 Exhibits are in Peachtree Ballroom C Tuesday: 10:30am – 4:00pm Wednesday: 10:30am – 2:00pm <i>See separate "Exhibits Guide"</i>
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Workshops/Birds of a Feather/Working Group Meetings

While there is no charge to attend **Workshops**, all participants must be registered for at least one full day of the conference. Listed below are Workshops already organized at SIGAda 2004.

Conference attendees interested in forming a **Birds of a Feather** (BOF) get-together with colleagues or who would like to organize a **Working Group** meeting with those who share an interest, should post BOF proposals on the main conference bulletin board, stating topic, objective or issues, and organizer's name. Schedule and time/room assignments will be finalized Wednesday afternoon.

Please check bulletin boards and registration materials at the conference for late additions/changes to this list, including possible BOFs.

Day	Time	Workshop	Room	Organizer
Wednesday	8:00 pm – 9:30 pm	SPARK, Birds of a Feather	Piedmont A	Rod Chapman
	9:30 pm – 10:00 pm	Ada APIWG plenary (including XML subgroup), Birds of a Feather	Brookhaven	Clyde Roby
	8:00 pm – 10:00 pm	AdaCore's GNAT Academic Package, Workshop	Lenox Room	Ed Schonberg
	10:00 pm – 11:00 pm	ASISWG / ASISRG, Workshop	Piedmont A	Currie Colket

A Deep Appreciation to the 2004 Program Committee

Ben Brosgol
AdaCore

Martin C. Carlisle
USAF Academy

A. Tim Chamillard
University of Colorado, Colorado Springs

David Cook
AEgis Technologies Group, Inc

James F. Davis
University of Maryland

Franco Gasperoni
AdaCore

Greg Gicca
Aonix

Dick Hull
Lenoir-Rhyne College

S. Ron Oliver
caress Corporation

Juan A. de la Puente
Universidad Politécnica de Madrid

Jean-Pierre Rosen
Adalog

Ricky E. Sward
USAF Academy

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A hearty “Thank You” to the 2004 Conference Committee

<i>Conference Chair,</i> John W. McCormick University of Northern Iowa McCormick@CS.UNI.Edu		<i>Program Chair,</i> Ricky E. Sward US Air Force Academy ricky.sward@usafa.af.mil	
<i>Exhibits Chair,</i> Greg Gicca, Aonix gicca@aonix.com	<i>Local Arrangements Chair,</i> Richard Conn Microsoft RConn@Microsoft.Com		<i>Registration Chair,</i> Thomas A. Panfil, US Department of Defense TAPanfil@IEEE.org)
<i>Treasurer,</i> Hal Hart, Northrop Grumman Mission Systems Hal.Hart@ACM.ORG	<i>Publicity Chair,</i> Mark Glewwe, Goodrich Aerospace, Sensor Systems m.glewwe@acm.org		<i>Education Working Group Chair,</i> Michael Feldman George Washington University MFeldman@ GWU.Edu
<i>Workshops Chair,</i> Alok Srivastava Northrop Grumman / FAA Alok.Srivastava@NGC.Com	<i>Tutorials Chair,</i> David Cook Aegis Technologies Group, Inc. dcook@aegistg.com		<i>SIGAda Vice Chair for Meetings and Conferences,</i> David Harrison, Northrop Grumman IT dharrison@ACM.org
<i>Webmaster,</i> Clyde Roby, Institute for Defense Analyses ClydeRoby@ACM.org	<i>Proceedings Chair,</i> Clyde Roby, Institute for Defense Analyses ClydeRoby@ACM.org		<i>SIGAda Chair,</i> Currie Colket, The MITRE Corporation colket@acm.org

Keynote Speakers:

Pam Thompson

Director of Software Engineering
Lockheed Martin Aeronautics Corp.

Watts Humphrey

Fellow and Research Scientist
Software Engineering Institute

Stephen Cross

Vice President
Georgia Institute of Technology

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Check the SIGAda website at any time for
SIGAda activities, resources, and future conference plans

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