

SIGAda

The ACM Special Interest Group on Ada

acm

Association for Computing Machinery
1515 Broadway
New York, NY 10036-5701
Phone: +1 (212) 869-7440
Fax: +1 (212) 302-5826

Reply To:

Mr. Currie Colket
Chair ACM SIGAda
The MITRE Corporation
7515 Colshire Drive
McLean, Virginia 22102-7508
Phone: +1 (703) 883-7381
FAX: +1 (703) 883-1339
Email: colket@acm.org



SIGAda Annual Report 1 July 2004 - 30 June 2005

30 June 2005

SIGAda is chartered under ACM as one of approximately 35 Special Interest Groups. This document represents an annual report for the SIGAda Activities for the ACM fiscal year of 1 July 2004 to 30 June 2005.

SIGAda Purpose

The SIGAda Purpose is articulated in our By-Laws. The By-Laws were approved on 18 June 1984 and amended on 23 June 2005 via a ballot of the membership. SIGAda is organized and will be operated exclusively for educational, scientific, and technical purposes in its specialty. Its services will include:

- (a) Collecting and disseminating information in the specialty, through a newsletter and other publications approved by the Publications Board of the ACM;
- (b) Organizing sessions at conferences of the ACM;
- (c) Sponsoring conferences, symposia, and workshops;
- (d) Organizing working groups for education, research, and development;
- (e) Serving as a source of technical information for the Council and other units of the ACM;
- (f) Serving as an external technical representative of the ACM when authorized by the Council or the Executive Committee of the ACM;
- (g) Working with other units of the ACM on technical activities such as lectureships or professional development seminars;
- (h) Determining and representing members' opinions with respect to the specialty; and
- (i) Interacting with non-ACM organizations. Such relationships will be in accordance with ACM guidelines regarding external relationships.



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SIGAda Mission Statement

The SIGAda Mission is updated periodically to reflect SIGAda's mission. It is found in the SIGAda Fact Sheet. The current version is posted online at: http://www.acm.org/sigada/sigada_fact_sheet.html. The Mission Statement reads:

The ACM Special Interest Group on the Ada Programming Language provides a forum on all aspects of the Ada language and technologies, including usage, education, standardization, design methods, and compiler implementation. SIGAda members include practitioners, educators, researchers, and managers from a wide range of organizations in industry, academia, and government. Among the topics that SIGAda addresses are software engineering practice, real-time applications, high-integrity & safety-critical systems, object-oriented technology, software education, and large-scale system development. SIGAda explores these issues through an annual international conference, special-purpose Working Groups, active local chapters, and its Ada Letters publication.

SIGAda Description for ACM Guide

ACM annually publishes a SIG Guide describing all of its SIGs. Updated yearly, the ACM Guide is a valuable tool used to encourage prospective members to join. The current version of the ACM Guide is posted online at: <http://www.acm.org/sigs/guide98.html> (sic). The description of SIGAda in the Guide, which is now identical to the Mission Statement, reads:

The ACM Special Interest Group on the Ada Programming Language provides a forum on all aspects of the Ada language and technologies, including usage, education, standardization, design methods, and compiler implementation. SIGAda members include practitioners, educators, researchers, and managers from a wide range of organizations in industry, academia, and government. Among the topics that SIGAda addresses are software engineering practice, real-time applications, high-integrity & safety-critical systems, object-oriented technology, software education, and large-scale system development. SIGAda explores these issues through an annual international conference, special-purpose Working Groups, active local chapters, and its Ada Letters publication.

SIGAda Executive Committee

The SIGAda Executive Committee (EC) consists of 6 elected officers: the Chair, Vice Chair for Meetings and Conferences, Vice Chair for Liaison, Treasurer, Secretary, and International Secretary. The EC also includes the Past Chair for continuity from one administration to the next. The retiring slate was elected in 2001 for the term 1 July 2001 to 30 June 2003. The time period was extended until 30 June 2005. The retiring slate includes:

Chair:	Mr. Currie Colket
Vice Chair for Meetings and Conferences:	Mr. David Harrison
Vice Chair for Liaison:	Ms. Ann Brandon
Treasurer:	Dr. John McCormick
Secretary:	Mr. Clyde Roby
International Representative:	Dr. Jean-Pierre Rosen
Past Chair:	Dr. Ben Brosgol



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Elections were conducted in spring of 2005. A new slate of officers was elected, with the term of office running from 1 July 2005 until 30 June 2007. Also approved was a new set of Bylaws. These Bylaws added a second non-elected position to the EC, the Editor of the SIGAda Newsletter. The incoming Executive Officers are:

Chair:	Dr. John McCormick
Vice Chair for Meetings and Conferences:	Dr. Ricky E. Sward, Lt. Col. USAF
Vice Chair for Liaison:	Mr. Chris Sparks
Treasurer:	Dr. Martin C. Carlisle
Secretary:	Mr. Clyde Roby
International Representative:	Mr. Dirk Craeynest
Past Chair:	Mr. Currie Colket
Editor of the SIGAda Newsletter	Dr. Alok Srivastava

Our next elections are scheduled for spring of 2007.

ACM SIG Staff Liaison

The ACM SIG Staff Liaison supporting SIGAda is Mrs. Irene Frawley. We have been extremely thankful for the excellent support Mrs. Frawley has provided. We would also like to acknowledge the wonderful support from all of the ACM staff during 1 July 2004 to 30 June 2005.

ACM SIGAda Annual International Conference on the Ada Programming Language (SIGAda 2004) – Our Annual Conference

The ACM SIGAda Annual International Conference on the Ada Programming Language (SIGAda 2004) was held in Atlanta, Georgia from 14-18 November 2004. The conference was successful from a technical and financial perspective. There were 100 attendees (up from 82 attendees in 2003). 13% of the attendees were from overseas, representing the countries of Belgium, Canada, France, Germany, the Netherlands, and the UK. Proceedings were produced as a printed hardcopy, which was distributed at the conference and as an electronic CDROM distributed after the conference. This CDROM has a host of interesting papers and presentations not provided with the hardcopy of the proceedings. In particular, the slide sets from our keynote speakers and invited speakers are available.

Ms. Pam M. Thompson (Lockheed Martin Aeronautics) was the first keynote speaker. She set an excellent tone for the conference with her presentation titled: “Can Ada Stand Up to the Challenges of C/C++ and Java?” She shared some technical and business facts on Ada, mostly from the perspective of Lockheed Martin. From a recent survey of Lockheed Martin companies, she said that 48% believe Ada is the best choice for the development of long-lifetime, high integrity, real time systems.” She presented a number of interesting trade studies and findings with the conclusion: “Yes, Ada can stand up to the challenges of C, C++ and Java when the desire for high quality real time embedded systems is the goal.”

On Tuesday afternoon, Mr. Robert Soricone from Northern Arizona University presented an excellent paper titled “**Comparative Analysis of Genetic Algorithm Implementations.**” He compared implementations of genetic algorithms in Ada 95 and Matlab. He found that genetic algorithms implemented in Ada 95 were better equipped to escape locally optimal solutions. More important, Ada generics facilitated the modeling of chromosome encoding through instantiation in the genetic algorithm. He received the SIGAda 2004 Outstanding Student Paper Award, which included an Xbox video game system, donated by the Microsoft Corporation.



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Also on Tuesday afternoon, Dr. Watts Humphrey from the Software Engineering Institute presented an interesting keynote address titled: "Security Changes Everything". He discussed the security problem and the nature of quality. He presented the defect density of delivered software at each of the Capability Maturity Levels. At Level 5, 1.05 defects per Thousand Lines of Code (KLOC) were reported. Three developmental methodologies that have a very low defect rate are: Clean Room, Correct-By-Construction (CBC) (Ada/SPARK), and Team Software Process (TSP). These methodologies bring defects down to 0.06 defects per KLOC. He suggested that combining methodologies such as CBC and TSP might bring down the defect rate a significant amount. To this end, he will be studying Ada SPARK.

On Wednesday morning, Dr. Stephen Cross from Georgia Tech presented a keynote presentation on "Why Can't Engineering Good Software Be Like Building a House?" He compared the practice of building software systems with building a house. He provided analogies of architecture, standards, construction methods, process, principles, and investment leveraging between the two domains. He even provided a video where a house was built in 2 hours and 45 minutes including all of its building inspections. He concluded with a message that world-class developers should "design in" quality.

There is much interest in the new Ada language amendment, called Ada 2005. Thursday was devoted to an Ada 2005 Panel chaired by Dr. Pascal Leroy, the Chair of the WG9 Ada Rapporteur Group and panelists: Mr. S. Tucker Taft, Dr. John Barnes, and Dr. Alan Burns. The panel was extremely well received. We appreciate the efforts of the ARG in bringing us the latest on Ada 2005. Thank you.

Very special thanks to Dr. John McCormick (General Chair), Lt. Col. Ricky E. Sward (Program Chair), Mr. Greg Gicca (Exhibit Chair), Mr. Mark Glewwe (Publicity Chair), Mr. Clyde Roby (Webmaster and Proceedings Chair), Mr. Hal Hart (Treasurer), Dr. David Cook (the Tutorials Chair), Dr. Alok Srivastava (Workshops Chair), Mr. Tom Panfil (Registration Chair), Dr. Michael Feldman (Education Working Group Chair), Dr. Rick Conn (Local Arrangements Chair) and Mr. David Harrison (Vice Chair for Meetings and Conferences) for an excellent conference. Every conference we have conducted since 1999 has been financially successful.

We would like to thank our Platinum Corporate Sponsors: Microsoft, Ada Core Technologies, Green Hills Software Inc., and Aonix; and our Silver Corporate Sponsors: TNI Europe, I-Logix, and Artisan Software. We would specially like to thank Microsoft for donating a copy of Visual Studio .NET to each conference attendee. This will allow attendees to program Personal Digital Assistants (PDAs) in A# (an Ada environment for programming the Windows .NET and .NET Compact Frameworks.) Thank you for helping make SIGAda 2004 successful.

Our next conference will be at Atlanta, Georgia from 13-17 November 2005. The venue will be at the DoubleTree Atlanta Buckhead Hotel, the same venue as SIGAda 2004. It is right next door to a MARTA station, making it convenient for recreational and sight-seeing attractions throughout Atlanta. For more information, please see: <http://www.acm.org/sigada/conf/sigada2005> (or <http://www.sigada.org/conf/sigada2005/>). Dr. John McCormick, University of Northern Iowa, is the Conference Chair; Dr. Leemon Baird, US Air Force Academy, is the Program Chair.

Ada Letters, SIGAda's Quarterly Newsletter

In the recent past, SIGAda published 4 newsletters on an annual basis. At the SIGAda Extended Executive Council Meeting on 15 November 2004, we voted to reduce the number of newsletters to 3 newsletters on an annual basis. We are in the process of transitioning from producing Ada Letters from quarterly to triannually. The newsletter provides an excellent means to stay current in the Ada community. Dr. Martin C. Carlisle, USAF Academy, had been the Managing Editor for the last 5 years. Starting with



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the March 2005 issue, the Managing Editor is now Dr. Alok Srivastava of Northrop-Grumman. The Technical Editor is Mr. Pat Rogers of Software Arts and Sciences. All have done an excellent job in producing a key resource to our SIGAda membership. It should be noted that ACM sets deadlines for newsletter submissions. SIGAda has a reputation at ACM for always being on time. The 4 newsletters published from 1 July 2004 – 30 June 2005 are summarized as:

Issue	Dated	Major Contents
Volume XXIV Number 3	September 2004	<ul style="list-style-type: none"> • Charles: An STL for Ada 95 – Matthew Heaney • Introduction to Stephe’s Ada Library – Stephen Leake • The PragmAda Reusable Components – Jeffrey Carter • Reusable Software Components – Trudy Levine
Volume XXIV Number 4	December 2004	<ul style="list-style-type: none"> • Proceedings of the SIGAda 2004 held in Atlanta, Georgia from 14-18 November 2004.
Volume XXV Number 1	March 2005	<ul style="list-style-type: none"> • SIGAda Bylaws Proposed Changes • SIGAda Awards • Priority Inversion in Multi Processor Systems Due to Protected Actions – Gustaf Naeser • Tasking Deadlocks in Programs with the Full Ada 95 – Y. Tojo, S. Nara, Y. Goto, J. Cheng • Reusable Software Components – Trudy Levine
Volume XXV Number 2	June 2005	<ul style="list-style-type: none"> • SIGAda Annual Report – Currie Colket • On Dynamic Plug-in Loading with Ada 95 and Ada 2005 - Cyrille Comar, Pat Rogers • Windows Disk Drive Recovery with Ada 95 - An Application Note - Karl Nyberg • Reusable Software Components – Trudy Levine

Ada Advocacy

Since 1994 SIGAda has conducted an "Ada Awareness Initiative". Its centerpiece has been our SIGAda professional booth display unit in exhibition halls at important software engineering conferences. This lets folks know that Ada is very much alive and a sound part of any software engineering effort having real-time, high integrity, high-assurance, and highly distributed requirements. We typically go to about two to four conferences a year. Via this exhibiting, SIGAda sustains Ada visibility ("name recognition"), provides various Ada-advocacy materials such as dozens of "Ada Success Stories" and the Walnut Creek Ada CD-ROM, and makes available Ada experts (our booth staff volunteers) who can intelligently answer questions, provide pointers and help, and debunk the misinformation about Ada that many attendees at these shows have. This program has been extremely successful and viewed as a highly important thrust in a recent fall 2002 survey of the SIGAda membership. We thank Mr. Hal Hart and Ms. Ann Brandon for leading this important effort. SIGAda graciously acknowledges and thanks the Ada Resource Association (ARA), a consortium of Ada vendors, for their financial support of SIGAda's Ada Awareness Initiative and our booth activities. The shows supported from 1 July 2004 to 30 June 2005 included:



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Dates	Location	Conference
20-23 September 2004	Boston, Massachusetts	Software Development Conference and Exposition (East)
23-27 February 2005	St. Louis, Missouri	SIGCSE 2005: SIGCSE 2005 Symposium
18-21 April 2005	Salt Lake City, Utah	System & Software Technology Conference (SSTC 2005)

SIGAda Awards

Started in 1994, the ACM SIGAda Awards recognize individuals and organizations that have made outstanding contributions to the Ada community and to SIGAda. The two categories of awards are:

Outstanding Ada Community Contribution Award

For broad, lasting contributions to Ada technology & usage.

ACM SIGAda Distinguished Service Award

For exceptional contributions to SIGAda activities & products.

The ACM SIGAda Award Committee (volunteers who have previously won an award) selects recipients from nominations submitted by SIGAda membership and other members of the Ada community.

SIGAda awards, in the form of the statuette of Lady Lovelace, are typically presented at the SIGAda conference each fall, with nominations closing approximately one month before the conference.

Awards presented during 1 July 2004 to 30 June 2005 were:

The SPARK Team - Outstanding Ada Community Contribution Award
Dr. Martin C. Carlisle - SIGAda Distinguished Service Award

Please see <http://www.acm.org/sigada/exec/awards/awards.html> for additional details on the awards.

Liaison With ISO/IEC JTC 1/SC 22 WG9

ISO/IEC JTC1/SC22 WG9 is that body of international representatives responsible for the maintenance and evolution of the Ada International Standard. The National Bodies represented on WG9 are Canada, France, Germany, Italy, Japan, Switzerland, the United Kingdom, and the United States.

WG9 is planning to produce an Amendment to the existing Ada standard, ISO/IEC 8642:1995 in lieu of developing a major revision as was done in 1995. In 2000, the Ada International Standard was updated with a Technical Corrigendum 1 (COR.1:2000). This Technical Corrigendum provided some needed maintenance corrections to the Ada language. However, it was limited to making corrections only. Either an Amendment or a Revision is required to keep the language up to date by supporting new programming usage and paradigms. An Amendment could be written so that it incorporates noticeable changes intended to add value to the Ada community. These changes could be significant improvements intended to stimulate interest in both the current Ada community and potential users in the software engineering community. WG9 is planning to update the Ada International Standard using the Amendment approach.



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Please note that SIGAda will be playing a prominent role in the evolution of the Amendment. To achieve such a role, a formal liaison has been established between SIGAda and WG9. Mr. James W. Moore, Chair of WG9, has invited ACM SIGAda to become a Category C Liaison with WG9. Category C liaisons are liaisons to organizations that make an effective technical contribution and participate actively at the WG level. A formal Liaison request titled: ***Request for Establishment of Category C Liaison between SC 22/WG 9 and the Association for Computing Machinery's Special Interest Group on Ada (SIGAda)*** has been formally approved by the SIGAda Executive Committee and the ACM Executive Committee (EC). This document was published in the June 2002 Ada Letters and has been embodied in WG9 document N407. At the 21 June 2002 WG9 meeting, the request was formally approved unanimously as Resolution 42-5. It reads: ***“In accordance with 3.3.1.1 of the JTC1 Directives, ISO/IEC JTC1/SC22/WG9 confirms the Category C liaison request of ACM SIGAda contained in N407 and forwards the request to SC22 for its consideration and any actions needed to effect approval of the liaison.”*** The liaison agreement has now been approved by ISO. Mr. Keith Brannon from the ISO/IEC Information Technology Task Force sent SIGAda a letter stating: *“With reference to your request to ISO/IEC JTC 1/SC 22 for the establishment of Category C liaison with SC 22/WG 9, after consulting ISO/IEC JTC1 we can confirm that Category C liaison has now been officially established between ISO/IEC 1/SC22/WG9 and your organization.”* The letter is dated 5 November 2002. The text of the Liaison Agreement is published in the December 2002 issue of Ada Letters and provided via the SIGAda Home page.

The benefits to SIGAda are identified in the liaison agreement. In addition, this will also provide extra value to a SIGAda membership, in that:

- SIGAda members will be allowed to see the draft WG9 documentation for the next Ada Standard in its early stages. This documentation has not been made available to us before.
- SIGAda members will be allowed (collectively) to comment on the draft WG9 documentation, thus potentially impacting the standard;
- SIGAda members will have an important role in the management of Ada Application Program Interfaces (APIs); and
- SIGAda members (collectively) can play a more active role in the evolution of the Ada standard should they choose to do so.

SIGAda has already been the beneficiary of this agreement as WG9 provided valuable information on the future of Ada during both the WG9 Forum at SIGAda 2002, the SIGAda 2003 Conference with three significant presentations, and a three hour Ada 2005 Panel at SIGAda 2004. Conference attendees provided input to proposed changes to the Ada language. SIGAda views this role to be of great value to its membership and extremely important to the Ada community. WG9 is already planning to put on an event at SIGAda 2005 in November 2005.

SIGAda is extremely pleased that ISO/IEC JTC1/SC22 WG9 has honored us by requesting that it become a Category C Liaison. This is a strong indication of ACM SIGAda's value to the international Ada community. Such a liaison will be valuable to SIGAda's membership and potentially attract new members.

New SIGAda Working Group Proposed

In conjunction with our new role as Category C Liaison with WG9, SIGAda has initiated a program to manage Ada Application Program Interfaces (APIs). Management of APIs could be an important step towards the eventual standardization of APIs through ISO/IEC JTC 1/SC22 WG9. At SIGAda 2002 and again at SIGAda 2003 and SIGAda 2004, Mr. Clyde Roby chaired a workshop to address a ***Plan for Ada Application Program Interfaces (API) Management***. The Workshops were extremely well received.



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Valuable input was made to the plan. The intent is that Ada-Europe, SIGAda, and WG9 can work together to provide a valuable service to the Ada community for managing Ada bindings to APIs. The revised plan is significantly improved and available on line from the SIGAda Home Page for the API Working Group at <http://www.acm.org/sigada/wg/apiwg/>. Mr. Geoff Smith of IBM has volunteered to lead this effort. APIWG will soon be chartered as part of this plan.

In Cooperation With (ICW) Ada-Europe

Ada-Europe is an international organization set up to promote the use of Ada. It aims to spread the use and the knowledge of Ada and to promote its introduction into academic and research establishments. Above all, Ada-Europe intends to represent European interests in Ada and Ada-related matters.

In its current form, Ada-Europe was established in 1988. As there is no European legal framework to govern such organizations, it was established according to Belgian Law. Currently, the member organizations are: Ada-Belgium, Ada-Denmark, Ada-Deutschland, Ada-France, Ada-Spain, Ada in Sweden, Ada in Switzerland and Ada UK. The best-known of Ada-Europe's activities is its annual conference, the International Conference on Reliable Software Technologies, which provides the European forum for researchers and users of Ada and other technologies geared towards reliable systems.

For many years, SIGAda and Ada-Europe have maintained an ICW relationship with each other. This year SIGAda supported three Ada-Europe VIPs to our SIGAda 2004 Conference in Atlanta, Georgia: Dr. Erhard Ploedereder, Dr. Alan Burns, and Mr. Dirk Craeynest. In exchange, Ada-Europe supported three SIGAda VIPs to their Ada-Europe 2005 conference in York, UK from 20-24 June 2005: Mr. David Harrison, Ms. Ann Brandon, and Dr. Alok Srivastava. The exchange has proven to be valuable to both organizations and the international Ada community.

Their next conference (the 11th International Conference on Reliable Software Technologies - Ada-Europe 2006) is scheduled for 5-9 June 2006 in Porto, Portugal.

In Cooperation With (ICW) Ada Resource Association

The Ada Resource Association is an industry consortium with the mission: "To ensure continued success of Ada users and promote Ada use in the software industry." The ARA member companies are Ada Core, Aonix, IBM, PolySpace Technologies, Praxis Critical Systems Limited, and SofCheck. Historically the ARA has been a good friend of SIGAda. This year the ARA went one step further by becoming an ICW Sponsor of the SIGAda Conferences. We welcome the ARA in this new spirit of cooperation.

SIGAda Home Page

One of the important means of providing up-to-date accurate information to our membership is the SIGAda Home Page. Located at <http://www.acm.org/sigada/> or <http://www.sigada.org>, the home page has major sections on Ada Advocacy, the Ada Community, Ada Frequently Asked Questions (FAQs), Basic Ada Information, Creating Ada Software, Joining SIGAda or ACM, SIGAda Conferences, SIGAda Organizational Information, and SIGAda Working Groups.

We also have approximately 25 maillists to support a variety of communication needs. In the past, most of the lists had been open subscription and open posting. We had been targeted by spammers and began a campaign to tighten up the maillists by eliminating html and other attachments, requiring editor subscriptions, blind reviews of list members, and in some cases moderated postings. This effort has significantly eliminated spam returning the functionality and value of the lists back to SIGAda. We have not eliminated all spam, but we have the problem very much under control. We are grateful to have a very



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skilled webmaster, Mr. Clyde Roby, who keeps a vast amount of information on the SIGAda Home Page relevant to our membership.

SIGAda Local Chapters

In its heyday, SIGAda had 14 local chapters. Only five of these chapters are semi-active today: Baltimore SIGAda Chapter, San Diego SIGAda Chapter, Los Angeles SIGAda Chapter, Twin Cities SIGAda Chapter, and DC SIGAda Chapter. In general, each chapter conducts local meetings, serves as a source of local expertise in Ada, and supports the local Ada community. These local chapters have been extremely valuable to ACM SIGAda by serving as hosts for our SIGAda conferences. All local chapters are managed separately under ACM. If you have a local chapter, we encourage you to support it.

SIGAda Working Groups

SIGAda charters Working Groups to focus on a variety of technical interests of importance to our membership. These working groups have played a significant role in shaping the Ada standard by addressing issues that later became standardized via the ISO process. Such Working Groups include: the Ada Language Issues Working Group (ALIWG), Performance Issues Working Group (PIWG), Numeric Working Group (NUMWG), Ada Run Time Environment Working Group (ARTEWG), and Ada Semantic Interface Working Group (ASISWG). The Education Working Group (EDUWG) played a significant role in educating the Ada community and addresses academic issues for each of our annual conferences. Currently the active Working Groups include ASISWG and EDUWG. As noted earlier, the Ada Applications Programming Interfaces Working Group (APIWG) is forming.

Conclusion

SIGAda has served a valuable role to the international Ada community during the 1 July 2004 to 30 June 2005 time frame. It has done so through a number of important activities to include our annual conference, our quarterly newsletter, our Ada Advocacy Initiative, our liaisons with ISO/IEC JTC 1/SC 22/WG9, the ARA, and Ada-Europe, our SIGAda home page, our SIGAda Working Groups, and our SIGAda Local Chapters. We are extremely fortunate to have a large number of dedicated volunteers who want to be part of the larger picture. We believe that there are ongoing requirements for languages that support industrial strength engineering solutions. The Ada language meets the requirements that it was originally designed to satisfy large-scale, long-lived, high-integrity, real-time embedded applications. Ada survived the period when it was most at risk during the 1997-98 time period when the Ada Joint Program Office (AJPO) closed. Ada usage now appears to be on the rise and Ada is expanding into new domains. We believe that ACM SIGAda, Ada-Europe, the ARA, and ISO/IEC JTC 1/SC 22 WG9 are cooperative forces providing important benefits to the international Ada community.

Sincerely yours,



Currie Colket
Chair ACM SIGAda

