

ADA USER JOURNAL

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Editorial Policy for *Ada User Journal*

Publication

Ada User Journal – The Journal for the international Ada Community – is published by Ada-Europe. It appears four times a year, on the last days of March, June, September and December. Copy date is the first of the month of publication.

Aims

Ada User Journal aims to inform readers of developments in the Ada programming language and its use, general Ada-related software engineering issues and Ada-related activities in Europe and other parts of the world. The language of the journal is English.

Although the title of the Journal refers to the Ada language, any related topics are welcome. In particular papers in any of the areas related to reliable software technologies.

The Journal publishes the following types of material:

- Refereed original articles on technical matters concerning Ada and related topics.
- News and miscellany of interest to the Ada community.
- Reprints of articles published elsewhere that deserve a wider audience.
- Commentaries on matters relating to Ada and software engineering.
- Announcements and reports of conferences and workshops.
- Reviews of publications in the field of software engineering.
- Announcements regarding standards concerning Ada.

Further details on our approach to these are given below.

Original Papers

Manuscripts should be submitted in accordance with the submission guidelines (below).

All original technical contributions are submitted to refereeing by at least two people. Names of referees will be kept confidential, but their comments will be relayed to the authors at the discretion of the Editor.

The first named author will receive a complimentary copy of the issue of the Journal in which their paper appears.

By submitting a manuscript, authors grant Ada-Europe an unlimited licence to publish (and, if appropriate, republish) it, if and when the article is accepted for publication. We do not require that authors assign copyright to the Journal.

Unless the authors state explicitly otherwise, submission of an article is taken to imply that it represents original, unpublished work, not under consideration for publication elsewhere.

News and Product Announcements

Ada User Journal is one of the ways in which people find out what is going on in the Ada community. Since not all of our readers have access to resources such as the World Wide Web and Usenet, or have enough time to search through the information that can be found in those resources, we reprint or report on items that may be of interest to them.

Reprinted Articles

While original material is our first priority, we are willing to reprint (with the permission of the copyright holder) material previously submitted elsewhere if it is appropriate to give it a wider audience. This includes papers published in North America that are not easily available in Europe.

We have a reciprocal approach in granting permission for other publications to reprint papers originally published in *Ada User Journal*.

Commentaries

We publish commentaries on Ada and software engineering topics. These may represent the views either of individuals or of organisations. Such articles can be of any length – inclusion is at the discretion of the Editor.

Opinions expressed within the *Ada User Journal* do not necessarily represent the views of the Editor, Ada-Europe or its directors.

Announcements and Reports

We are happy to publicise and report on events that may be of interest to our readers.

Reviews

Inclusion of any review in the Journal is at the discretion of the Editor.

A reviewer will be selected by the Editor to review any book or other publication sent to us. We are also prepared to print reviews submitted from elsewhere at the discretion of the Editor.

Submission Guidelines

All material for publication should be sent to the editor. Electronic submission is preferred – typed manuscripts will only be accepted by the Editor by prior arrangement.

Prospective authors are encouraged to contact the Editor by email to determine the best format for submission. Contact details can be found near the front of each edition.

Example papers conforming to formatting requirements as well as some word processor templates are available from the editor, or at:
www.adauk.org.uk

There is no limitation on the length of papers, though a paper longer than 10,000 words would be regarded as exceptional.

Editorial

This issue is dominated by a news section containing many important announcements and discussions. From Ada tools, Ada resources through to Ada publications, many interesting news postings have been summarised by the News Editor, Dirk Craeynest.

The Forthcoming Events section contains details of the forthcoming Ada-Europe 2002 conference. Invited speakers include Maarten Boasson, Alois Ferscha, Rachid Guerraoui and Mehdi Jazayeri. Tutorial sessions are prominent in the conference, including sessions on software design and patterns in Ada, SPARK Ada, software testing and metrics. The section also includes calls for papers for the Ada UK / Embedded Systems Club Autumn Conference and the SIGAda 2002 conference.

Finally, I draw your attention to the change in the production of Ada User Journal. From this issue onwards, the Journal is being produced wholly by Ada-Europe. Apart from obvious changes to the cover, contacts and Editorial Policy, the impact to the production and contents of the Journal will be minimal.

Neil Audsley

York

March 2002

Email: Neil.Audsley@cs.york.ac.uk

News

Dirk Craeynest (ed)

Offis nv/sa and K U Leuven. Email Dirk.Craeynest@offis.be

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Ada-related Events

[To give an idea about the many Ada-related events organized by local groups, some announcements are included here. If you are organizing such an event feel free to inform us as soon as possible, or if you attended one please consider writing a small report for the Ada User Journal. -- dc]

Dec 4 - Journée Ada-France

*From: Lionel Draghi
<Lionel.Draghi@free.fr>*

Date: Sat, 24 Nov 2001 14:22:13 +0100

*Subject: [Annonce] Journée Ada-France
Newsgroups: fr.comp.lang.ada*

[Extracts translated from French: -- dc]

You are cordially invited to the "Journée Ada-France" which will take place on Tuesday December 4th at the université Paris VI.

[Program:]

- "Le point sur Ada 0Y", by J.P. Rosen
- "Ada-Europe'2003 in Toulouse", by A. Canals
- "Le DLIP", by L. Draghi
- "PolyORB", by L. Pautet
- Results and prize winners of the programming contest, by L. Draghi
- General Assembly of the Ada-France organization

<http://www.Ada-France.org/>

Jan 10 - DC SIGAda Presentation on Ada 95 Bindings for HDF

*From: Currie Colket <colket@mitre.org>
Date: Thu, 3 Jan 2002 17:58:46 -0500*

*Organization: The MITRE Corporation
Subject: DC SIGAda Presentation on
Thursday 10 Jan 2002
To: team-ada@acm.org*

[...] Thursday, 10 January 2002, 7:30 P.M. (Refreshments and Social at 7:00 P.M.) at the Lockheed Martin Corporation in Rockville, Maryland. DC SIGAda and Baltimore SIGAda will feature a presentation titled:

Ada 95 Bindings for the Hierarchical Data Format (HDF) Used for NASA's Earth Observing System (EOS) Data and Information System (EOSDIS)

This presentation describes Ada95 bindings for HDF4 and HDF5, the current versions of the National Computational Sciences Alliance (NCSA) Hierarchical Data Format (HDF). These self-describing file formats are intended for storage of large, diverse collections of scientific data and for retrieving subsets of these data. The libraries also support data compression, chunking of large arrays, and automatic conversion of vendor-specific binary formats for a variety of data types.

HDF files are intended to provide self documenting storage of scientific data. This means that HDF provides structures that allow the file format to contain data about the file structure and descriptive information about the data contained in the file. By reading an appropriate sequence of data structures in the file, a data user can extract the information needed to understand the kind of data in the file, the size, shape, and data type of the arrays in the file, and even documentation about the file contents.

HDF is becoming widely used in scientific data holdings, such as those of NASA's Earth Observing System (EOS) Data and Information System - EOSDIS. At present, EOSDIS is adding about one TB per day to NASA's Earth Science data holdings. In the near future, this rate will increase to about three TB per day. The EOS Project has directed NASA Principal Investigators to use HDF for the data format for all EOS missions. Thus, this data format is very important to the author (he is Instrument Principal Investigator for the investigation of Clouds and the Earths Radiant Energy System: CERES), as well as many of his colleagues.

Dr. Bruce R. Barkstrom is currently Head of the Atmospheric Sciences Data Center at NASA's Langley Research Center in

Hampton, VA. This data center is a scientific digital library that is currently processing, archiving, and distributing about 3 TB/month of data from two instruments on the NASA Terra Spacecraft, in addition to archiving and distributing data from many other data sources. Dr. Barkstrom has been actively engaged in work on NASA's Earth Observing System's Data and Information System (EOSDIS) over the last decade, receiving a NASA Exceptional Achievement Medal for his contributions to the system architecture and cost modeling for this system. [...]

Jeff Castellow, Chair, DC SIGAda

Feb 12 - Baltimore SIGAda Meeting on Fun with Ada

From: "Kester, Rush W."

<Rush.Kester@jhuapl.edu>

Date: Wed, 23 Jan 2002 13:02:08 -0500

Subject: Balt/DC ACM chapters Working with Laurel On-Line

To: team-ada@acm.org

My name is Rush Kester, I'm a Software Systems Engineer at Johns Hopkins Applied Physics Lab in Laurel. I have spoken to most SIGAda 2000 attendees and many Team-Ada members in the past about a project to work with area High School students, sponsored by the Balt and DC Chapters of Association of Computing Machinery's Special Interest Group on Ada (ACM SIGAda).

The project uses fun/affordable stuff like LEGO Mindstorms robots, model trains, games, RC cars, etc. to get students interested in Software Engineering in particular "Real-Time Software Engineering." See our website at: <http://www.adapower.com/lab/adafun.html>

We are planning a special joint meeting of the Baltimore Chapter of ACM SIGAda on Feb. 12 which will feature a number of short presentations from various individuals who are doing fun and interesting stuff Software Engineering things with computer software most written by members of ACM members.

If you are interested or would like additional information, please contact me at RWKester@aol.com or Rush.Kester@jhuapl.edu.

Rush Kester, Pres. Balt SIGAda, Software Systems Engineer, AdaSoft at

Johns Hopkins Applied Physics Lab,
11100 Johns Hopkins Road, Laurel, MD
20723-6099, voice 240-228-3030, fax
240-228-6779,
[http://hometown.aol.com/rwkester/
myhomepage/](http://hometown.aol.com/rwkester/myhomepage/)

Feb 20 - Ada-Belgium Hosts Aonix Technology Update

From: Dirk Craeynest
<Dirk.Craeynest@cs.kuleuven.ac.be>
Date: Thu, 7 Feb 2002 23:17:04 +0100
(MET)
*Subject: Ada-Belgium - "Aonix Technology
Update" - Wed 2002-02-20 20:00*
To: ada-belgium-info@cs.kuleuven.ac.be
Ada-Belgium Special Evening Event:
Aonix Technology Update
[http://www.cs.kuleuven.ac.be/~dirk/ada-
belgium/events/local.html](http://www.cs.kuleuven.ac.be/~dirk/ada-belgium/events/local.html)

Ada-Belgium is pleased to announce a
technical presentation by Pierre Morere
of Aonix France, on Wednesday,
February 20, 2002, 20:00 at the U.L.B.,
Department of Computer Science, [...],
Brussels (after the Ada-Belgium 2002
General Assembly at 19:00) [...]

Overview "Aonix Technology Update"

- Aonix Policy (20 min): Product
evolution
- VectorCast (20 min): Test tool for Ada
- AdaNav (20 min): Generality about
ASIS; An Ada Tool based on ASIS:
Call Tree & Profiling
- Q&A

More information

- Aonix products: [http://www.aonix.com/
content/products.html](http://www.aonix.com/content/products.html)
- VectorCast:
<http://www.vectorcast.com/vcada.pdf>
- ASIS: [http://www.acm.org/sigada/
wg/asiswg/asiswg.html](http://www.acm.org/sigada/wg/asiswg/asiswg.html)

Dirk Craeynest, Vice-President Ada-
Belgium

Mar 6-8 - Ada Germany Conference 2002

From: Carsten Freining
<freining@informatik.uni-jena.de>
Date: Fri, 08 Feb 2002 16:21:22 +0100
*Organization: Friedrich-Schiller-University
Jena, Germany*
Subject: Ada Germany Conference 2002
Newsgroups: comp.lang.ada

Call for Participation - Ada Germany
Conference 2002

Friedrich Schiller University, Jena,
Germany, March 6.-8. 2002

For further details please visit:
[http://psc.informatik.uni-jena.de/
Themen/Ada-DE-2002-engl.pdf](http://psc.informatik.uni-jena.de/Themen/Ada-DE-2002-engl.pdf)

From: "Hubert B. Keller"
<keller@iai.fzk.de>
Date: Tue, 19 Feb 2002 13:57:25 +0100
*Subject: Ada Deutschland Tagung, 6. - 8.
März 2002, Jena*
*To: "Ada, Liste" <[ada-list@ada-
deutschland.de](mailto:ada-list@ada-deutschland.de)>*

[Extracts translated from German: -- dc]

Call for Participation, GI FG 2.1.5

Ada Deutschland Tagung 2002 6-8
March 2002 Friedrich-Schiller-
Universität, Jena

<http://www.ada-deutschland.de/>

Organizers: Ada-Deutschland /
Fachgruppe 2.1.5 Ada der Gesellschaft
für Informatik; Förderverein Ada
Deutschland e.V.

Program [extracts]:

Wednesday, March 6, 2002

- A. Schürr: Object-oriented
Development of Embedded (Real-
Time) Systems with UML
- F. Thom: Conformity! A Practical
Integration of Standards: A Case for
using the Unified Modelling Language
(UML) with the Ada Programming
Language
- Tools Session: ARTiSAN
- Tools Session: Polyspace
- Meeting of the members of
Förderverein Ada Deutschland e.V.

Thursday, March 7, 2002

- F. Huber: Model-based Software
Engineering and Ada: Synergies for the
Design of Safety Critical Systems
- K. Wachsmuth: UML Design Samples
for Safety Critical Systems
- Tools Session: Aonix
- S. Montenegro: BOSS/Ada: An Open
Source Ada 95 Safety Kit
- A Dependable Open Source Embedded
Operating System for Ada/GNAT
- Tools Session: ACT
- Tools Session: Rational

- Panel Discussion: E. Plödereder, J.
Winkler, H. Keller: Development of
Reliable Software in the 21st Century
(Ada and Design Patterns, Frameworks,
SW from Components, UML, Code
Generation, IEC 61508, ...)

- Meeting of Fachgruppe GI-FG 2.1.5
Ada

Friday morning, March 8, 2002

- E.Plödereder: Code Analysis
- J. Winkler: A Comparison of the
Program Provers FPP, NPPV and
SPARK
- R. Siara: Ada meets Algebra
- Closing Session and Best Paper
Presentation Awards

Mar 14 - Joint Ada UK / Embedded Systems Club Conference

*From: John Robinson <[john@
JohnRobinsonAndAssociates.com](mailto:john@JohnRobinsonAndAssociates.com)>*
Date: Mon, 18 Feb 2002 14:04:24 +0000
Organization: John Robinson & Associates
*Subject: ANN: Ada UK Technology Update
conference & exhibition*
Newsgroups: comp.lang.ada

The Ada UK User Group are pleased to
announce a joint Ada UK/Embedded
Systems Club conference to be held on
March 14th 2002 in Swindon, UK.

Attendance for members will cost 50
GBP (82 Euro).

A full programme and registration forms
can be found on the following web sites:
<http://www.AdaUK.org.uk>;
<http://www.EmbeddedSystemsClub.com>

Papers with Ada content include:

- Does Software Engineering Have a
Future? - Raven in Space
- Conformity! A Practical Integration of
Standards: A case for using UML
with Ada 83 & Ada 95
- Have the Cake & Eat it Too: A State-of-
the-art GNU IDE for Ada 95
- Designing for Testability: Testing an
Ada "Stack" Class
- SPARK - What Does the 'R' Stand For?
- Real Time Operating Systems for use in
Safety Critical Systems
- Developing High Integrity Systems
with VxWorks and ACT GNAT Ada
- Helping You to Deliver Ada
Applications to Your Customer's
Requirements and Quality Standards

The keynote presentation, given by
Kevlin Henney of Curbralan, will pose
the question:

- "Are Agile Methods Applicable to
Embedded Systems?"

Other papers include:

- Proposed HOOD to UML Migration
Process
- HOOD and UML: You Can Use Both!
- Managing Safety Requirements: A Use
Case Driven Approach
- Modern RTOS Architecture: Meeting
Today's Demands
- Dynamic Storage Allocation with C++
in Embedded Systems
- Right on Target: Target Testing Past,
Present & Future
- Putting Design Patterns to Use in a
Real-Time, Embedded Design
- UML 2.0 - The Next Step in the
Embedded Development Mega-Trend?

For full details of the 18 papers and two panel sessions, either visit the websites or contact the Club & Event Manager Hazel Lawton at <mailto:Hazel@Adaxia.com>.

John Robinson, Conference Director

International Events

*From: Clyde Roby <roby@ida.org>
Date: Mon, 4 Feb 2002 08:01:11 -0500
Subject: ASISWG and Conferences reminder*

To: SIGADA-ASIS@acm.org

[See also elsewhere in this AUJ issue. -- dc]

Don't forget about our upcoming Ada-related conferences [including – dc]:

o Ada-Europe'2002 -- 7th International Conference on Reliable Software Technologies: Vienna, Austria, 17-21 June 2002 <http://www.ada-europe.org/conference2002.html>

o SIGAda 2002 -- Houston, Texas, USA 8-12 December 2002 -- <http://www.acm.org/sigada/conf/sigada2002>

[...]

Clyde Roby, (ASISWG/ASISRG)

Ada Semantic Interface Specification (ASIS)

Transitioning an ASIS Application from Ada 83 to Ada 95

*From: "Sergey I. Rybin" <rybin@gnat.com>
Date: Tue, 11 Dec 2001 23:29:22 +0300
Subject: Re: ASIS 1.2 & 2.0
To: SIGAda-ASIS@acm.org*

> Trying to port legacy tools from ASIS 1.2 / Ada 83 to ASIS 2.0 / Ada 95. Any major gotchas to watch out for?

I would recommend you to have a look into the paper "Transitioning an ASIS application: Version 1 to Ada 95 2.0" presented by Joseph Wisniewski at SIGAda'99 conference. The paper describes the kind of experience you are going to get :)

[Available online at <http://www.acm.org/sigada/conf/sigada99/proceedings/p53-wisniewski.pdf>. -- dc]

I myself (as ACT ASIS consultant) was in some extend involved in the ASIS83 - > ASIS95 transition described by Joseph, and I may say, that such a transition is a challenge. Conceptually ASIS83 and ASIS95 are very similar, but Ada 83 and Ada 95 are different languages, so first of all you have different Element classification hierarchies. Then, you have different sets of structural and semantic Element queries - in ASIS95 you have

less number of queries doing more work (just because Ada95 is bigger, then Ada83).

Of course, a lot depends on the tool and on the style the tool is coded, but I'm almost sure, that you'll get lots and lots of small situations where you can not just map ASIS83-based code onto ASIS95, and you will have to recode. Anyway - good luck :-)

Ada and Education

IO and Token Processing Demonstration Code

*From: lutz@iks-jena.de (Lutz Donnerhacke)
Date: Fri, 23 Nov 2001 16:45:15 +0000 (UTC)
Organization: IKS GmbH Jena
Subject: [Ada95] Small demonstration code for Text_IO and simple Token processing
Newsgroups: de.comp.lang.misc,comp.lang.ada*

First a simple recursive collector: http://www.iks-jena.de/mitarb/lutz/ada/reverse_line_tokens__adb.htm

And a more elaborate iterative processor overcoming the storage problems of the former one: http://www.iks-jena.de/mitarb/lutz/ada/shuffle_text_tokens__adb.htm

The first file was generated in order to instruct a colleague in Ada programming. The versions evolved over two hours (adding features like random shuffling and full text processing) teaching. A final test with a larger file shut down the whole system with memory shortage. Some instructive (algorithm discussing) debugging results in the final iterative version.

Course: Developing Software that Matters

*From: Franco Gasperoni <gasperon@act-europe.fr>
Date: Fri, 4 Jan 2002 15:34:10 +0100
To: ada-france@ada-france.org*

[Extracts translated from French: -- dc]

We are putting (technical) documents explaining "why Ada" on our libre.act-europe.fr site. There are in particular transparencies of the course I teach at the ENST "Building Software that Matters".

I am currently working on it (title of the lecture: "Programming in the Small: Common C/C++/Java Pitfalls & How Ada Avoids them"). [...]

[URL: http://libre.act-europe.fr/Software_Matters/ -- dc]

Franco Gasperoni, ACT Europe, 8 rue de Milan, 75009 Paris, France, tel: +33 1 49 70 67 16, fax: +33 1 49 70 05 52

Examples of Ada Software using OO-features

*From: Pascal Obry <p.obry@wanadoo.fr>
Date: Mon, 7 Jan 2002 21:03:33 +0100
Subject: Re: [Ada-Comment] OT: Request for articles for the AdaIC site.
To: "Ada-Comment List" <ada-comment@ada-auth.org>*

> [...] a few students of mine have been seaching the net for Ada Software that uses tagged types, i.e. the OO-features of Ada and haven't been very successful. Any pointers that you might have ?

[...] There is plenty of them, your students certainly did not look very hard :) Look for XmlAda, GtkAda, AWS, POV-Ada, AUnit... just to name a few :)

Pascal Obry, Team-Ada Member, 45, rue Gabriel Peri, 78114 Magny Les Hameaux, France, <http://perso.wanadoo.fr/pascal.obry>

*From: "Randy Brukardt" <Randy@RRSoftware.Com>
Date: Mon, 7 Jan 2002 15:14:32 -0600
Subject: Re: [Ada-Comment] OT: Request for articles for the AdaIC site.
To: "Ada-Comment List" <ada-comment@ada-auth.org>*

Well, there are two programs on the net that I'm responsible for:

The Claw Introductory Edition is O-O code using tagged types (<http://www.rrsoftware.com/html/prodinf/claw/clawintro.html>).

Also, the ARM formatting program uses tagged types to provide different output formats (no inheritance, though) (<http://www.ada-auth.org/arm.html>). [...]

Tutorials and Documentation in French

*From: Zaffalon Luigi <zaffalon@eig.unige.ch>
Date: Wed, 16 Jan 2002 17:11:39 +0100
Subject: Re: Support de formation à Emacs-Ada et GVD
To: ada-france@ada-france.org*

[In response to a request for French documentation on Ada tools: -- dc]

C'est un peu contextuel, mais si cela peut vous aider: http://eig.unige.ch/lii/LII_Ada95.htm [...]

Luigi Zaffalon, Laboratoire d'informatique industrielle, Ecole d'ingénieurs de Genève HES-SO, 4, rue de la Prairie, 1202 Genève, Suisse, Voice: +41 22 338 0 552, E-mail: zaffalon@eig.unige.ch, <http://eig.unige.ch/lii>

[The libre.act-europe.fr site mentioned above contains an Ada Course in French as well. URL: http://libre.act-europe.fr/french_courses/ -- dc]

Ada Training

[This information is included as examples of public Ada training courses: many are being organized regularly. For more, see also pointers in several previous AUJ issues. -- dc]

*From: John Robinson <john@JohnRobinsonAndAssociates.com>
Date: Wed, 9 Jan 2002 12:27:18 +0000
Organization: John Robinson & Associates
Subject: ADV: Ada Training Course, UK, 25th February to 1st March
Newsgroups: comp.lang.ada*

John Robinson And Associates Ltd will be running a public Ada Programming Course in the week beginning 25th February. The course will have an Ada 83 and an Ada 95 stream. [...]

*From: Ed Colbert <colbert@abssw.com>
Organization: Absolute Software Co., Inc.
Subject: [Announcing] Public Ada 95 & 83 Classes During Weeks of 25 February & March 2002 in Carlsbad CA
To: team-ada@acm.org*

[Extracted from postings on Wed, 16 Jan 2002 and Wed, 23 Jan 2002. -- dc]

Absolute Software will be holding a public Ada 95 class on the week of 25 February 2002, and a public Ada 83 class on the week of 25 March 2002, [both] in Carlsbad, CA. You can find a full description and registration form on our web-site, www.abssw.com. Click the Public Courses button in the left margin. (We also offer classes on object-oriented methods and other object-oriented languages.) [...]

Ada-related Resources

Web Site for Libre Software Developers

*From: Arnaud Charlet <charlet@gnat.com>
Date: Fri, 23 Nov 2001 18:26:55 +0100
Subject: Re: Gtkada-Prob
Newsgroups: comp.lang.ada*

[...] I'd also recommend looking at all the good stuff available from <http://libre.act-europe.fr>, including several software packages (Ada Web Server, GVD, GtkAda, XMLAda, etc...) and where we regularly add new sections, like the students & teachers corner that will include Ada materials like courses.

New Ada Information Clearinghouse Web Site Launched

*From: "Ann S. Brandon" <abrandon@sover.net>
Date: Mon, 03 Dec 2001 16:14:28 -0500
Subject: New AdaIC Website Launched
Newsgroups: comp.lang.ada*

The AdaIC Web site has been revamped. Some of you might have tried our Beta version, which had some browser compatibility problems. As far as I know, they've been corrected. If you run into any further problems, please let me know. And, of course, I always welcome suggestions for improvement.

<http://www.adaic.org>

Ann Brandon, Communications Director, Ada Resource Association, Onyons, Inc., P.O. Box 294, Randolph Center, VT 05061, USA, (802) 728-9947

Request for Articles for the AdaIC Site

*From: Randy Brukardt <Randy@rrsoftware.com>
Date: Mon, 3 Dec 2001 17:38:52 -0600
Subject: Request for articles for the AdaIC site
To: team-ada@acm.org*

We're looking to beef up the technical overviews/articles of Ada on the AdaIC web site. We'd like to bridge the gap between experience reports ("Ada at Work") and the heavy technical material (like the Ada Reference Manual). We have a few pages like this (some of which are pretty old), but we'd like to find more.

The purpose of the AdaIC web site is to provide a place to find positive information about Ada, in order to encourage both new and existing users of Ada.

Some of the topics that I'd like to have more articles on include:

- An overall overview of Ada. (We have an overview of the Ada 95 features, but we really need an overview of the language as a whole.)
- Comparative pieces (and experience): Ada vs. C; Ada vs. C++; Ada vs. Java.
- Overviews of using Ada in a Java environment (Applets, other apps, either using JGNAT or AdaMagic).
- And anything else that someone interested in using Ada (and coming from another language) might like to know.

We're interested both in articles that we can post on the AdaIC, and links that we can make to other web sites. Please nominate articles/links by sending them and a brief description to us at webmaster@adaic.com. [...]

Articles ought to be available in electronic form, and should be available for free access. You can nominate articles you've written, or those that you like. (Feel free to nominate articles found on the AdaIC archive site, too; it will help us determine what to work on.) We'd prefer that articles be generic (that is, not specific to any particular product or

implementation), but that is not an absolute requirement. (It would be hard to say anything useful about making Applets, for instance, without referring to a particular implementation.)

Randy Brukardt, co-webmaster, AdaIC, webmaster@adaic.com

Ada Jobs Web Pages

*From: "Kester, Rush W." <Rush.Kester@jhuapl.edu>
Date: Tue, 4 Dec 2001 10:30:00 -0500
Subject: Re: Future with Ada
To: team-ada@acm.org*

Ann Brandon said [about the AdaIC job web page at <http://www.adaic.com/jobs/jobs.html> -- dc]:

> I like keeping the jobs up for more than a few months just to give people a sense of what the "climate" is: where people are hiring, any patterns, etc. [...]

Randy Brukardt wrote:

> To expand on Ann's reply. I occasionally see job postings here [the Team-Ada mailing list] and on CLA [the comp.lang.ada newsgroup] that aren't also forwarded to joblistings@adaic.com. Should we spend time trying to get permission from the poster to add it to the AdaIC jobs board? And why wouldn't someone post them there anyway - it gets thousands of views every month - potentially reaching more people than Team-Ada, for instance. [...]

IMO, it is more important to communicate that there is Ada work and where it is. Those who post job announcements elsewhere are in many cases simply ignorant of the specialized Ada job sites. Had they known, they may very well have posted at Ada IC or GWU's (for ACM SIGAda) Ada job sites [URL for the latter: <http://www.seas.gwu.edu/~adajobs/> -- dc].

It's a matter of advertising. Monster, HotJobs, etc. spend much more time and money advertising their presence than does the Ada community. Please don't let criticism or concern for whether the original poster "would have" stop you. I wouldn't waste my time even checking. The job poster wants their job filled. They don't care how the job seeker finds out.

My vote, Ann and Randy, is to keep up the good work. I would like to see others when they see Ada jobs posted on other forums or by other means to post them on Team-Ada, the Ada IC, AND the GWU Job site. THEY SHOULD BE BROADCAST ON ALL AVAILABLE CHANNELS!!!! In this way people will know what the true Ada job market is

like, not just the subset they see/hear about through typical channels.

[See also "ACM SIGAda Job Registry" in AUJ 22.1 (March 2001), pp.7-8, and "Ada Jobs Web Pages" in AUJ 21.2 (July 2000), pp.97-98. At URL <http://www.cs.kuleuven.ac.be/~dirk/ada-belgium/jobs/> Ada-Belgium maintains web-pages with Ada-related job offers for Belgium. -- dc]

What's New on the AdaIC Web Site

From: Randy Brukardt
<Randy@rrsoftware.com>

Date: Tue, 4 Dec 2001 16:03:35 -0600
Subject: Re: AdaIC Website revamped
To: team-ada@acm.org

[On the suggestion to create an AdaIC announcement email list for visitors who want to keep informed of updates to the AdaIC site. -- dc]

We'll consider the mailing list idea. In the mean time, however, the site has a "What's New" page (recently restored to the site; the old site had one); it's easy to find (just click on the "What's New" button on the home page). It's a little short at the moment (we didn't keep track of changes during the redesign phase, and there were many), but it will grow quickly.

From: Randy Brukardt
<Randy@rrsoftware.com>
Date: Mon, 17 Dec 2001 22:46:04 -0600
Subject: AdaIC News introduced
To: team-ada@acm.org

You asked for it, we bring it to you...

The AdaIC introduces AdaIC News, a free subscription service for Ada users. When new or updated material is available on the AdaIC website, AdaIC News sends a brief email message to subscribers. This is a great way to keep up on Ada news and developments. Details at <http://www.adaic.org/site/newslist.html>.

Another service brought to you by the Ada Resource Association.

AdaIC Web Site Updates

From: Editorial Webmaster
<webmaster@adaic.com>
Date: Sun, 27 Jan 2002 21:38:56 -0500
Subject: [AdaIC] Technical Articles and Trainers page added to AdaIC Website
To: AdaIC News List
<announce@adaic.com>

1) A link we gave you in the last announcement to the free textbook page has changed to:
<http://www.adaic.org/free/freebook.html>

2) We've added an Ada Trainers page to the menu (it used to be a stealth page), and Ada Solutions, Inc., has been added

to the list:
<http://www.adaic.org/learn/training.html>

3) Several new companies have been added to the Ada Recruiters page: Alexander Mann, BAE Systems, Elite Placement Services, Inc., Sysdyne Corporation.
<http://www.adaic.org/jobs/recruit.html>

4) Several additions have been made to the "news" and "learn Ada" pages and menus: (a) Absolute Software's March and February public courses in Advanced Ada83 & Ada95, respectively; (b) AdaGIDE (GNAT Integrated Development Environment) for Windows 95/NT new release; (c) Several technical Ada articles for which we've received requests; those that fall under "Ada vs. C/C++" we've summarized; (d) David A. Wheeler's Lovelace Tutorial.
<http://www.adaic.org/news/index.html>;
<http://www.adaic.org/learn/index.html>

5) A general overview of Ada95 is now available. <http://www.adaic.org/standards/articles/95overvw.html>

6) We've reorganized the menu and have changed the name of "Classes and Conferences" to "Learning Ada," which we moved to a more left-hand position on the menu bar. Not only have we added the above items -- Trainers, Technical Articles, and Overview -- to "Learning Ada," we've also moved some General Information items, such as the FAQs, under "Learning" from "Why Ada."
<http://www.adaic.org/learn/index.html>

Ada-related Tools

ASCL - Ada Standard Component Library

From: "Nick Roberts" <nickroberts@adaos.worldonline.co.uk>
Date: Sun, 2 Dec 2001 05:56:57 -0000
Subject: ASCL project on AdaPower.net
Newsgroups: comp.lang.ada

I'm delighted to announce that a nascent ASCL (Ada Standard Component Library) project has been set up at: <http://www.adapower.net/ascl/>
Many thanks to David Botton.

I'd like this to be the 'home' of the project for the foreseeable future, and I'd like to extend an invitation to anyone who wishes to contribute: designs (unit specs and /or documentation); implementations (unit bodies and/or documentation); general ideas, comments, kudos, etc.; anything else relevant.

If so, please e-mail me:
nickroberts@adaos.worldonline.co.uk

The issue of licence comes up again: I suggest that everything put onto the ASCL site is published under the GPL/LGPL/GMGPL/GPDL. (The ACL seems a possible alternative.)

[See also same topic in AUJ 20.3 (October 1999), p.178. -- dc]

SAL - Stephe's Ada Library

From: Stephen Leake
<stephen.a.leake.1@gsfc.nasa.gov>
Date: 11 Dec 2001 13:43:53 -0500
Organization: NASA Goddard Space Flight Center
Subject: SAL 1.3 released
Newsgroups: comp.lang.ada

This release of SAL does three things:

(1) It fixes the missing Endianness package (now properly named SAL.Endianness).

(2) It adds my quaternion library; actually, a complete Cartesian math library for representing positions, rotations, and masses in Cartesian space (yes, I am a physics nerd :).

(3) Provides some missing tests and other minor clean up.

I followed my release process rigorously this time, so there are no hidden compilation problems (with GNAT). So if you've downloaded SAL 1.2, please go back and get 1.3.

<http://users.erols.com/leakstan/Stephe/Ada/sal.html>

[See also same topic in AUJ 22.4 (December 2001), p.198. -- dc]

Booch Components - A Case Study

From: ninhowl@yahoo.com (Mt. Nyiragongo)
Date: 30 Nov 2001 21:04:36 -0800
Subject: Booch Components
Newsgroups: comp.lang.ada

Who would be willing to help a newbie figure out how to use the wonderful Booch components for Ada95? [...] This is not a class project. I have a small one person project, but a quite serious project, that must be converted from another language into Ada. [...]

From: Simon Wright
<simon@pushface.org>
Date: 01 Dec 2001 08:02:38 +0000
Subject: Re: Booch Components
Newsgroups: comp.lang.ada

Please look at <http://www.pushface.org/components/bc/case-study.html> -- if it doesn't help, ask me again! (and please also note the advice to use Collections instead of Lists)

From: ninhowl@yahoo.com (Mt. Nyiragongo)
Date: 1 Dec 2001 19:21:10 -0800
Subject: Re: Booch Components
Newsgroups: comp.lang.ada

[...] Your case study page is quite a big help in getting started. What a herculean effort writing those components must have been. [...]

Booch Components

*From: Simon Wright
<simon@pushface.org>
Date: 19 Jan 2002 07:11:17 +0000
Subject: Booch Components 20020117
Newsgroups: comp.lang.ada*

This release has been uploaded to <http://www.pushface.org/components/bc/> and is mirrored at <http://www.adapower.net/booch/>.

There was an unannounced release 20011011.

Significant features since 20010819:
Interface:

The Containers that don't provide structural sharing (Bags, Collections, Dequeues, Maps, Queues, Rings, Sets and Stacks) now support Streams ('Input', 'Output'). Unfortunately, GNAT 3.13p doesn't support this for dynamic or unbounded forms (runtime errors), while ObjectAda fails at runtime when the Item type is a discriminated record (OK for tagged types, though). Walking on broken glass here.

The way Storage Management is specified has changed significantly: you now supply a single generic parameter of type System.Storage_Pools.Root_Storage_Pool'Class. This will be painful to start with, but should simplify matters in the long run.

You couldn't override equality for a Map's Key.

Contributions: Pat Rogers has added a storage manager for real-time applications.

GNAT for Mac OS X/Darwin

*From: jim hopper
<hopperj@macconnect.com>
Date: Tue, 25 Dec 2001 19:55:42 -0500
Subject: Ada of Mac OS X
To: team-ada@acm.org*

Just trying to get the word out. A group of us have been working on getting gnat to work with OS X. Alan and Andrew Reynolds made big progress last week. The compiler bootstraps and builds tools and libs. It has some problems that we have been working hard on. Biggest is that exceptions don't work. They compile fine, but if one is raised the program segfaults. But some people like to live on the edge and so we have put up a web page thanks to david bottom and adapower at

www.adapower.net/macoss that walk you through bootstrapping the compiler starting from a bare gnat1 and gnatbind on the web page and the FSF sources (page tells how to get them). In addition it tells how to join our Mac OS

discussion list where we make announcements and take bug reports etc.

So if you like living on the edge check it out and pass the info along to any Mac OS folks who you think might be interested. [...]

[See also "GNAT for Mac OS X" in AUJ 22.4 (December 2001), p.200. -- dc]

*From: jim <jim_evar@yaho.com>
Date: Thu, 27 Dec 2001 00:33:23 -0500
Subject: Gnat for OS X announcement
Newsgroups: comp.lang.ada*

There are directions for building gnat from the FSF gcc sources as well as preliminary (very preliminary) binaries for gnat1 and gnatbind on www.adapower.net/macoss/.

This is VERY bleeding edge stuff so its not yet for the faint of heart. By tomorrow the run time system stuff should be there. The compiler has some problems but it will build itself and bootstrap as well as the non-tasking examples. There is info on the site as well as to how to subscribe to the public gnat for macosx mailing list where we will be making announcements and trying to help people who want to give it a try.

Anyone who thinks they can get the darwin gdb working with ada extensions would be welcomed with open arms ;-) We havent gotten around to that yet but we really need it (grin)

The Gnat for Mac OS X team

*From: Andrew Reynolds
<drewr@bellatlantic.net>
Date: Wed, 30 Jan 2002 03:16:17 GMT
Subject: ANN: GNAT for Mac OS X/Darwin
Newsgroups: comp.lang.ada*

I am pleased to announce that the FSF-GCC version of GNAT-5.0w has been ported to Mac OS X/Darwin. This is a beta version that includes GNU pth tasking. The binaries and a patch file are available at: <http://adapower.net/macoss>

There is a mailing list available for users of the software (see link on page).

Compaq Ada on VAX or Alpha

*From: Kilgallen@SpamCop.net (Larry Kilgallen)
Date: 9 Jan 2002 12:23:56 -0600
Organization: LJK Software
Subject: Re: Ada on the VAX?
Newsgroups: comp.lang.ada*

[In reply to a request on how to get an Ada compiler for a VAX: -- dc]

The documentation for Compaq Ada (nee DEC Ada (nee VAX Ada)) is the same for either VAX or Alpha. It is available in PDF form at:

<http://www.openvms.compaq.com/commercial/ada/documentation.html>
For software and licensing information,

see: http://www.openvms.compaq.com/wizard/openvms_faqs.html#VMS9

[See also "Ada compilers for VMS" in AUJ 22.4 (December 2001), p.198. -- dc]

GNAT 3.14p for DOS

*From: "Victor Shkammerda"
<vvs@auto.bnm.org>
Date: Mon, 04 Feb 2002 09:24:57 +0200
Subject: ANNOUNCE: GNAT 3.14p for DOS now available
To: "GNAT Discussion List"
<gnatlist@lyris.seas.gwu.edu>*

You can download it from <http://prdownloads.sourceforge.net/gnuada/gnat314b.zip> or <ftp://download.sourceforge.net/pub/sourceforge/gnuada/gnat314b.zip>. The source patches will follow eventually. [...]

Quaternion and Matrix Library

*From: "Gautier Write-only-address"
<gautier_niouzes@hotmail.com>
Date: Wed, 21 Nov 2001 10:38:02 +0000
Subject: Re: standard library and 3D math library?
Newsgroups: comp.lang.ada*

> Do anyone know of a good 3D math library that support quaternions and matrix operation?

No quaternions, but a full autonomous 3D math library, yes: see [Camera_3D.ads.adb](http://www.mysunrise.ch/users/gdm/gsoft.htm) in [paqs.zip](http://www.mysunrise.ch/users/gdm/gsoft.htm) on <http://www.mysunrise.ch/users/gdm/gsoft.htm>

*From: Stephen Leake
<stephen.a.leake.1@gsfc.nasa.gov>
Date: 21 Nov 2001 12:47:31 -0500
Organization: NASA Goddard Space Flight Center
Subject: Re: standard library and 3D math library?
Newsgroups: comp.lang.ada*

I have a complete quaternion library. [...] I wrote it while doing robots, and I've reused it in a satellite simulator. It supports quaternions, conversions between quaternions and 3x3 orthonormal matrices, and operations with 3D vectors.

[See also "SAL - Stephe's Ada Library" earlier in this AUJ issue. -- dc]

Support for NaN and Inf Semantics

*From: "Steven Deller"
<deller@smsail.com>
Date: Sat, 22 Dec 2001 11:56:46 -0500
Subject: Math Update for Ada 2005
Newsgroups: comp.lang.ada*

All the email about Math libraries reminded me of one of Ada 95's shortcomings.

The IEEE math definitions have included NaN and Inf semantics for quite some time. Many (if not all) native platforms and many embedded platforms can support this. I have run into C++ and C code that uses these. Ada 95 does NOT support these. Interfacing Ada with C or C++ code that uses these can be quite a pain.

How could we add these semantics into Ada 2005 without breaking past code and without *forcing* platforms to support this (if they don't do so easily). [...]

From: dewar@gnat.com (Robert Dewar)
Date: 23 Dec 2001 07:13:52 -0800
Subject: Re: Math Update for Ada 2005
Newsgroups: comp.lang.ada

Ada 95 was carefully designed so that support can be added for infinities and Nan's without in anyway violating the RM semantics, and in fact GNAT does support the use of Inf and Nan semantics in full generality, though it does not provide all the IEEE facilities for manipulating such values.

These facilities can be added with external packages. For an *extensive* discussion of this entire issue see Sam Figueroa's thesis (NYU, Robert Dewar thesis advisor). This thesis addresses the entire issue of floating-point evaluation schemes in high level languages from an IEEE point of view, and specifically proposes a package and other facilities (pragmas attributes etc) for full support of the IEEE model in Ada 95 in an upwards compatible manner.

At least start from Sam's work, don't reinvent the wheel :-)

From: Brian Rogoff
<bpr@bpr.best.vwh.net>
Date: Sun, 23 Dec 2001 22:43:39 GMT
Subject: Re: Math Update for Ada 2005
Newsgroups: comp.lang.ada

Excellent advice, thanks. I'll answer the next question for the clueless:
http://www.cs.nyu.edu/csweb/Research/Theses/figueroa_sam.pdf

Mersenne Twister MT19937 Pseudo Random Number Generator

From: byhoe@greenlime.com (Adrian Hoe)
Date: 28 Jan 2002 00:43:35 -0800
Subject: Ada implementation of Mersenne Twister (MT19937)
Newsgroups: comp.lang.ada

I could not find an Ada implementation of MT19937 pseudo random number generator by searching CLA. So, I decided to port Makoto Matsumoto and Takuji Nishimura's work to Ada.

Thought someone might be interested to use MT19937. You can download the source from my web site at <http://greenlime.com/users/adrian.hoe>

From: Adrian Hoe
<byhoe@greenlime.com>
Date: Tue, 05 Feb 2002 18:24:05 +0800
Organization: Lexical Integration (M) Sdn Bhd <http://greenlime.com>
Subject: Improved version (2002/1/26) of MT19937 PRNG
Newsgroups: comp.lang.ada

I have implemented the latest revised (2002/1/26 by Makoto and Takuji) version of MT19937 PRNG with improved initialization by array.

This is a simple and straight-forward implementation. I am currently working on a version which allows multiple streams of generator. A comparison output can be downloaded from Makoto's website.

It can be downloaded from my website [see above].

From: Hugo Pfoertner
<hugo.pfoertner@talknet.de>
Date: Tue, 05 Feb 2002 22:35:46 +0100
Subject: Re: Improved version (2002/1/26) of MT19937 PRNG
Newsgroups: comp.lang.ada

[...] For information on this very powerful Pseudo Random Number Generator see the "Mersenne Twister Home Page":
<http://www.math.keio.ac.jp/~matumoto/emt.html> [...]

Graph - Multi-system Graphics Package

From: "Gautier de Montmollin"
<gdemont@hotmail.com>
Date: Tue, 27 Nov 2001 22:43:47 +0000
Subject: Ann: Graph, not only for DOS
To: "GNAT Discussion List"
<gnatlist@lyris.seas.gwu.edu>

Just a word to announce a multi-system version of Graph, an old package of mine inspired by the one of Borland Pascal. Now it features DOS, Windows, and a version is OS-independent (no display to screen of course).

Graph is rather a "high-level" graphics layer that can display on several devices, use floating-point coordinates on a virtual plane as well as integer ones on a page. Lines are clipped, vectorial fonts are part of the Ada sources and can be displayed with any angle, and bla bla bla. Shortly: aimed for scientific plotting - E.g. I'm using it for it :-). More @ <http://www.mysunrise.ch/users/gdm/graph.htm>

Loading Images in Applications

From: "Gautier Write-only-address"
<gautier_niouzes@hotmail.com>
Date: Tue, 18 Dec 2001 09:27:33 +0000
Subject: Re: Loading bitmap as texture in OpenGL

Newsgroups: comp.lang.ada

> Does anyone have a good suggestion how to load a bitmap (possibly xbm format) from a file and add it as a texture in OpenGL? I have tried to use a pixmap as texture parameter, but haven't succeeded (yet).

You may want to adapt methods from the source there
http://romka.demonews.com/opengl/demos/glut_eng.htm
 (and around). It seems portable...

From: Joachim Schröer
<joachim.schroer@dornier.eads.net>
Date: Tue, 08 Jan 2002 16:18:55 +0100
Subject: Re: Loading bitmap as texture in OpenGL
Newsgroups: comp.lang.ada

Look at the OpenGL framework in <http://www.adapower.com/schroer/> To download the first zip give: <http://www.adapower.com/schroer/lib-src.zip> (the current url is false). Look into <http://www.adapower.com/schroer/ogl-src.zip>. The package Opengl.Bitmaps is Win32 specific but may be ported to Linux. The package Opengl.Earth uses a bitmap of the earth to generate a rotating globe using 2D-textures.

[See also "OpenGL Bindings and Demos" in AUJ 22.2 (June 2001), pp.72-73. -- dc]

From: Bruce or Tracy Jacobs
<bljacobs2@home.com>
Date: Fri, 11 Jan 2002 02:57:52 GMT
Subject: Re: Graphics
Newsgroups: comp.lang.ada

> Somebody knows of some package that allows to load images standard formats (gif, jpeg, bmp...). Which is the best graphic package "Adagraph, Gwindows..." ????

Check with Stephen Leake <stephen.a.leake.1@gsfc.nasa.gov>. He has Windex package that will read BMP, possibly GIF, too.

[See also "Windex 1.04 - Thick Binding to Win32" in AUJ 21.1 (April 2000), p.30. -- dc]

(Want to have some fun? Read the GIF specs and write a program to read a GIF image. Been there, done that. Am trying with JPEG, but it appears to be even more difficult.)

From: "Gautier Write-only-address"
<gautier_niouzes@hotmail.com>
Date: Fri, 11 Jan 2002 05:47:13 +0000
Subject: Re: Graphics
Newsgroups: comp.lang.ada

If it can help, there are GIF and BMP decoder there http://www.mysunrise.ch/users/gdm/e3d_html/svg-io__ads.htm

[On the "best graphic package": -- dc]

It depends on the direction it should be "best" - speed, vectorial graphics,... Of course for the latter I couldn't recommend

but this: <http://www.mysunrise.ch/users/gdm/graph.htm> ;-)

From: "Beard, Frank"
<beardf@spawar.navy.mil>
Date: Fri, 11 Jan 2002 11:50:50 -0500
Subject: RE: Graphics
Newsgroups: comp.lang.ada

If you have the Win32 binding, you can use Win32.Winuser.LoadBitmapFile. If I remember correctly, it will load all three of the ones you listed.

From: Stephen Leake
<stephen.a.leake.1@gsfc.nasa.gov>
Date: 11 Jan 2002 15:01:37 -0500
Organization: NASA Goddard Space Flight Center
Subject: Re: Graphics
Newsgroups: comp.lang.ada

Necros <necros@navegalia.com> writes:

> I'm programming a Concurrency game in Ada95, and i would want to be able to generate the initial graphic elements from external program (Paint Shop Pro, Corel Draw)... it would only [load] them in virtual memory to begin, and it would create miscelenea later with them... In language C is easy,

You must mean "using this wizzy graphics package I have that has a C interface, it is easy".

> in Ada, I don't Know for where to begin...

Write a binding to the wizzy graphics package, and do the same things you were doing in C. Then publish the binding, so the rest of us can do the same :).

> The game is a practice, PCMAN Vs Monsters.

I'd like to see that, enough that I'll offer to help. I wrote Windex, an Ada binding to Win32. If you don't mind being restricted to Windows, it's a good way to go (see <http://users.erols.com/leakstan/Stephe/Ada/windex.html>). I can help you write the binding to the wizzy graphics package, or just use Windex straight.

From: David Botton <David@Botton.com>
Date: Sun, 13 Jan 2002 11:00:30 -0500
Subject: Re: Graphics
Newsgroups: comp.lang.ada

Since this is a Windows program. I would suggest converting your graphics in to BMPs and putting them in to you resources. This way you get one EXE with everything in it. If size is a factor, you can use UPX to compress your exe.

GWindows (<http://www.adapower.com/gwindows>) is currently the best Modified GPL (ie. Free as in liberty) library available (I wrote it, so I am biased of course :-)

[See also "GWindows - Ada 95 Win32 RAD Framework" in AUJ 22.4 (December 2001), pp.212-213. -- dc]

I am currently working on completing GTK+ bindings that will be integrated with GWindows that will allow for all the whiz bang stuff that MS has been pumping about XP's graphics (loading, modifying and savings of most graphic types, Alpha channels etc.) on Win98/ME/NT/2K/XP).

Any library you would use from C/C++ to load in GIF's, etc. can be used with Ada also. Take a look at the way I build the thick GWindows bindings, in particular how each function is bound in the body of the procedure and makes far more use of the excellent design of Ada's ability to bind to C then thin bindings do. I would also recommend looking at Windex to get a handle on thin binding as well.

Engine_3D v.014 - 3D Graphic Engine

From: gautier_niouzes@hotmail.com
(Gautier)
Date: 15 Jan 2002 14:35:59 -0800
Subject: Ann: Engine_3D v. 014
Newsgroups: comp.lang.ada

What's new:

- reaction against objects (Engine_3D.Physics)
- bump mapping for textures
- support for animated textures
- Demo_3D_01 improved (sounds, a bit of interaction)

Engine_3D is pure software real-time 3D renderer: it doesn't use any 3D hardware of the graphics cards - an OpenGL variant is foreseen. It features texture mapping and rendering of an "universe" by the portal technique. Note that it is a 3D engine, not a 2.5D like the ancestors DOOM or Duke Nukem.

[See also "3D Graphic Engine" in AUJ 21.2 (July 2000), p.104. -- dc]

Beside the package itself comes a library allowing game control and sound effects. You can see it in action in demo #01 (demos.exe) from the eng3d014.zip archive.

Programming language: Ada95 for all components.

Requirements: HW: a PC with a VESA-compliant graphics card; OS: DOS or most Virtual DOS Machines like provided by Windows 95/98/ME, Windows NT/2000/XP, DR-DOS (multi), Linux's DOSEMU

URL: <http://www.mysunrise.ch/users/gdm/e3d.htm>

Graphics Packages

From: "chris.danx"
<chris.danx@ntlworld.com>
Date: Tue, 29 Jan 2002 18:23:12 -0000

Subject: Re: Graphics in GNAT for Windows, how?

Newsgroups: comp.lang.ada

> An example, please.

DirectX, AdaGraph, JEWL, Gwindows, GtkAda, Opengl...? [...]

From: Stephen Leake
<stephen.a.leake.1@gsfc.nasa.gov>
Date: 29 Jan 2002 13:29:38 -0500
Organization: NASA Goddard Space Flight Center
Subject: Re: Graphics in GNAT for Windows, how?
Newsgroups: comp.lang.ada

The recently posted Othello game is a good example of graphics in Ada for MS Windows or X Windows: <http://greenlime.com/users/adrian.hoe/>

[See also "AdaOthello - Another GtkAda-based Game" further in this AUJ issue. -- dc]

Here's a Windex application with bitmapped graphics in Ada: <http://users.erols.com/leakstan/Stephe/Ada/mandelplot.html>

From: "David Botton"
<David@Botton.com>
Date: Tue, 29 Jan 2002 22:31:56 -0500
Subject: Re: Graphics in GNAT for Windows, how?
Newsgroups: comp.lang.ada

GWindows - <http://www.adapower.com/gwindows>
 About 20 examples here tutorial style - http://www.adapower.com/gwindows/user_guide.html Many more inside the package.

From: John English <je@brighton.ac.uk>
Date: Wed, 30 Jan 2002 10:22:13 +0000
Organization: University of Brighton
Subject: Re: Graphics in GNAT for Windows, how?
Newsgroups: comp.lang.ada

Have a look at <http://www.it.bton.ac.uk/staff/je/jewl/>. In particular, look at <http://www.it.bton.ac.uk/staff/je/jewl/docs/windows.htm#5>

[See also "JEWL 1.4 - John English's Window Library for MS Windows" in AUJ 22.1 (March 2001), p.18. -- dc]

John English, Senior Lecturer, Dept. of Computing, University of Brighton, je@brighton.ac.uk, <http://www.it.bton.ac.uk/staff/je>

From: "Randy Brukardt"
<randy@rrsoftware.com>
Date: Wed, 30 Jan 2002 14:07:35 -0600
Subject: Re: Graphics in GNAT for Windows, how?
Newsgroups: comp.lang.ada

The Claw Introductory version works with GNAT, and contains a variety of examples. Get it at <http://www.rrsoftware.com/html/prodinf/claw/clawintro.html>.

[See also "Claw Introductory Edition - High Level Binding for Microsoft Windows" in AUJ 22.1 (March 2001), p.18. -- dc]

From: tmoran@acm.org
 Date: Thu, 31 Jan 2002 06:14:07 GMT
 Subject: Re: Graphics in GNAT for Windows, how?
 Newsgroups: comp.lang.ada

There are also example programs on www.adapower.com that use the intro version of Claw in several different type of graphics:

<http://www.adapower.com/os/orbitals.html>; <http://www.adapower.com/os/windmine.html>;
http://www.adapower.com/lang/diners_src.zip and [diners_exe.zip](http://www.adapower.com/lang/diners_exe.zip)

From: Preben Randhol
 <randhol+abuse@pvv.org>
 Date: Thu, 31 Jan 2002 09:02:16 +0000 (UTC)

Organization: Norwegian university of science and technology
 Subject: Re: Graphics in GNAT for Windows, how?

Newsgroups: comp.lang.ada

> What's the best graphics package to generate a game with bitmaps and image scrolls??? Thanks,

SDL is used a lot. <http://www.libsdl.org/>.
 Ada binding to SDL:
<http://sourceforge.net/projects/adasdl/>

[See also "AdaSDL - Binding to Simple DirectMedia Layer (SDL)" in AUJ 22.3 (September 2001), p.141. -- dc]

Preben Randhol, «For me, Ada95 puts back the joy in programming.»

From: "David Botton"
 <David@Botton.com>
 Date: Thu, 31 Jan 2002 15:28:09 -0500
 Subject: Re: Graphics in GNAT for Windows, how?
 Newsgroups: comp.lang.ada

A combination of GWindows for your windows and DirectX and if you need it OpenGL. There is an example of doing OpenGL with GWindows on the GWindows page -
<http://www.adapower.com/gwindows>

From: dennison@telepath.com (Ted Dennison)
 Date: 31 Jan 2002 11:39:03 -0800
 Subject: Re: Graphics in GNAT for Linux, how?
 Newsgroups: comp.lang.ada

Why not just make it yourself? Bindings aren't all that tough, particularly when they are "semi-thick" bindings and you already have thin bindings to work off of. You'd only need to make ones for the routines you use. [...]

T.E.D., <http://www.telepath.com/dennison/Ted/TED.html>

GNU.PDF - Portable Document Format Library Binding

From: Paul Pukite <puk@umn.edu>
 Date: Fri, 28 Dec 2001 01:18:06 -0600
 Subject: NEW Ada PDF library binding (GNU.PDF)
 To: "GNAT Discussion List"
 <gnatlist@lyris.seas.gwu.edu>

This message is to announce the availability of a new binding implemented for the GNU/Ada library hierarchy: GNU.PDF

PDF refers to the Portable Document Format. The PDF library enables one to generate PDF files or data streams on the fly. The binding I created copies the style of an OpenGL programming interface. If you know how to handle context scopes, etc. you should feel at home using it. The binding is small but packs a wallop: fonts, rotations, skewing, filling, URL links, and lots of other features.

Navigate to this URL to download the binding: <http://umn.edu/~puk>

[And from another message: -- dc]

[GNU.PDF] can be linked against the following library:
<http://www.pdfplib.com/pdfplib>. The library archive is named `libpdf.a`

OS File System Bindings

From: "Andreas Valdusson"
 <e9valdus@etek.chalmers.se>
 Date: Thu, 17 Jan 2002 12:21:24 +0100
 Organization: Chalmers University of Technology
 Subject: Directory listings and path names
 Newsgroups: comp.lang.ada

If I have the name of a directory, and want Ada to get the names of all sub-directories of this one, how do I do? How do I get the contents of a specific directory (ie. the names for all subdirectories and files) and how do I know which of these that are sub-directories and which are files?

From: "M. A. Alves" <maa@liacc.up.pt>
 Date: Thu, 17 Jan 2002 14:26:18 +0000 (GMT)
 Subject: Re: Directory listings and path names
 Newsgroups: comp.lang.ada

See also GNAT.Directory_Operations.

Mario Amado Alves, LIACC, Rua Campo Alegre, 823, P-4150 Porto, Portugal, tel 351+226078830, ext 121, fax 351+226003654, mob 351+939354002

From: Joachim Schröer
 <joachim.schroer@dornier.eads.net>
 Date: Fri, 18 Jan 2002 14:09:12 +0100
 Subject: Re: Directory listings and path names

Newsgroups: comp.lang.ada

You may download
<http://www.adapower.com/schroer/lib-src.zip>

Look into package `portable.operating_system`, function `all_entries` and set the parameters as you like. The package is implemented on top of the Ada posix-binding for win32. In the body some win32 features are called directly. Simply comment them out if you need the function for another OS than win32.

From: "Jean-Pierre Rosen"
 <rosen@adalog.fr>
 Date: Wed, 23 Jan 2002 14:47:52 +0100
 Organization: Adalog
 Subject: Re: Directory listings and path names
 Newsgroups: comp.lang.ada

> [...] it would be a good idea for Ada to provide a semi-standard interface to an OS file system. It would necessarily be reduced to the least common denominator

Not necessarily. Have a look at package `OS_Services` from Adalog's component page (<http://www.adalog.fr/compo2.htm>) for a system that allows a lot of flexibility. It achieves the following goal: - if functionality XYZ is provided, it works independently of the OS - if functionality XYZ is *not* provided (and you need it), it doesn't compile.

In short, a program will work on any platform that supports the functionalities needed by the program.

From: Georg Bauhaus <sb463ba@11-hrz.uni-duisburg.de>
 Date: Sat, 19 Jan 2002 14:20:44 +0000 (UTC)
 Subject: Re: Directory listings and path names
 Newsgroups: comp.lang.ada

> True, but Ada should provide the support out of the box.

[...] the pointer might still be useful:

From <http://www.ada-auth.org/AI-SUMMARY.HTML>:
 AI95-00248-01/04 2002-01-02 --
 Directory Operations; Priority: Medium;
 Difficulty: Medium; Class: Amendment;
 Status: Work Item 00-11-28; RM
 References: A.15 (00)

From: Robert A Duff
 <bobduff@shell01.TheWorld.com>
 Date: Sat, 19 Jan 2002 14:28:22 GMT
 Organization: The World Public Access
 UNIX, Brookline, MA
 Newsgroups: comp.lang.ada
 Subject: Re: Directory listings and path names

[...], the ARG is working on a directory operations package. [...], any interface-to-OS package has to be somewhat "least-

common-denominator"-ish, if it is to be portable.

From: "Nick Roberts" <nickroberts@adaos.worldonline.co.uk>
Date: Sat, 19 Jan 2002 23:02:43 -0000
Subject: Re: Directory listings and path names
Newsgroups: comp.lang.ada

> It would also be nice to provide more specific packages, like, say, Windows, Unix/Posix, Mac (and also rans like VMS, BeOS, Amiga,... :).

The proposed package will allow implementation-defined children which provide extra functionality specific to a particular OS or execution environment.

On Databases and Ada

From: Preben Randhol <randhol+abuse@pvv.org>
Date: Wed, 28 Nov 2001 22:21:47 +0000 (UTC)
Organization: Norwegian university of science and technology
Subject: Re: Using MySQL from Ada program
Newsgroups: comp.lang.ada

> Hello, I want to access a MySQL database from my Ada program. What is the best way? Anyone who can give me an example?

Check the GNADE Project:
<http://gnade.sourceforge.net/>

[See also "GNADE - GNU Ada Database Environment" in AUJ 22.3 (September 2001), p.144. -- dc]

[And from a later message: -- dc]

From
<http://gnade.sourceforge.net/#status>:
 Binding to MySQL which is intended to provide access to the non ODBC features of the MySQL data base. License: GMGPL

From: "M. A. Alves" <maa@liacc.up.pt>
Date: Fri, 30 Nov 2001 16:19:22 +0000
Subject: Re: Using MySQL from Ada program
Newsgroups: comp.lang.ada

Yes, GNADE seems very nice now. Very recent developments. Finally one application is announced, GSQL. I'll check it out. Thanks.

From: "Juergen Pfeifer" <juergen.pfeifer@gmx.net>
Date: Sun, 2 Dec 2001 02:09:18 +0100
Subject: Re: Using MySQL from Ada program
Newsgroups: comp.lang.ada

[In response to "the impression GNADE is not working anywhere outside its foundry." -- dc]

Well, from time to time I try to build GNADE on machines where I only have GNAT and the required basic GNU tools and it usually builds without problems. I

do this of course to ensure that it builds outside its foundry ;-)

Please note that the current focus of GNADE is the implementation of an embedded SQL precompiler that is reasonable close to the ISO92 specs. All the native bindings for MySQL or PostgreSQL are more or less placeholders for future efforts. The ESQL preprocessor is built on the ODBC binding and this was a good decision because we were able to interface with a variety of different databases on different platforms without changing a single line of source code.

Nevertheless ESQL is not the most elegant way to integrate generic database support with Ada95, although it is a reasonable approach for smaller apps. And ODBC is fine as long as you don't have to scale for thousands of simultaneous connections to your backend. But the GNADE project is open for the discussion of better approaches.

Personally my favourite scenario is still to have a GNAT.NET compiler for the .NET platform and then simply to reuse the very rich ADO.NET architecture for data access from Ada. My 2c :-)

From: Pascal Obry <p.obry@wanadoo.fr>
Date: 29 Jan 2002 18:30:26 +0100
Subject: Re: travailler sur une base de données en ada
Newsgroups: fr.comp.lang.ada

[Extracts translated from French: -- dc]

> [...] I'd like to know how to work with databases using Ada, and whether it's possible to use SQL as in C or C++.

No, no!! For that see the GNADE project, which is a complete binding + Embedded SQL (a la Pro*Ada) for GNAT. GNADE works with MySQL, Postgres and all DBs that support ODBC.
<http://gnade.sourceforge.net/>

GSQL 0.6 - GNADE SQL Client

From: Michael Erdmann <michael.erdmann@snafu.de>
Date: Fri, 21 Dec 2001 11:42:18 +0100
Organization: http://purl.org/NET/michael.erdmann
Subject: Early prerelease of GSQL 0.6
Newsgroups: comp.lang.ada

The prerelease of the GNADE SQL client is available. The basic features are: creating/editing and execution of SQL queries; support of table creations. Not yet implemented but soon: import/export features.

The client is completely based upon ODBC which means its functionality should be available with all DBCS which support ODBC.

This package requires the GNADE code version 1.2.0. Both are available via:
<http://gnade.sourceforge.net/>

Call for Review: Database API for the GNADE Project

From: Michael Erdmann <michael.erdmann@snafu.de>
Date: Sat, 29 Dec 2001 22:19:12 +0100
Organization: http://purl.org/NET/michael.erdmann
Subject: Call for review: Database API for the GNADE Project
Newsgroups: comp.lang.ada

Since the GNADE project provides a stable data base interface on ODBC and embedded SQL bais it is time to make a new step. In the past very often the request for a data base API was issued. This API shall allow to connect to multiple data bases either via ODBC or any native bindings without major changes in the application code.

I like to invite every body to review the early draft version of API description [...] located at:
<http://gnade.sourceforge.net/ado.html>.

Windmine - Windows Version of Mine Detector Game

From: tmoran@acm.org
Date: Tue, 18 Dec 2001 02:16:29 GMT
Subject: Windows-ish Mine Detector, was Re: Ada IDE
Newsgroups: comp.lang.ada

> It may sound strange, but when I pointed Jeffrey Carter's Mine Detector Game to some of my friends (who are just typical computer users and have nothing common with operating systems other than Windows), they said, that they felt very strange and have troubles to get familiar with GTK look. [...]

[See also "Mine Detector Game" in AUJ 22.4 (December 2001), p.205. -- dc]

As an exercise I modified the user interface package user_if.ad? to create a Windows-ish version. Windmine, a version using the free introductory version of Claw, has been kindly posted by David Botton at www.adapower.com Search for "Mine Detector". No changes were required in the game logic packages.

AdaOthello - Another GtkAda-based Game

From: byhoe@greenlime.com (Adrian Hoe)
Date: 28 Jan 2002 00:39:19 -0800
Subject: Othello game written in Ada
Newsgroups: comp.lang.ada

I have written an Othello program in Ada. It is called AdaOthello. You can

download from my website at
<http://greenlime.com/users/adrian.hoe>.
 Enjoy!

From: Stephen Leake
<stephen.a.leake.1@gsfc.nasa.gov>
Date: 28 Jan 2002 09:50:08 -0500
Organization: NASA Goddard Space Flight
Center
Subject: Re: Othello game written in Ada
Newsgroups: comp.lang.ada

Cool. Have you attempted to get this working on GtkAda for Windows?

I wouldn't mind spending some time on that.

From: Jeffrey Carter <jrcarter@acm.org>
Date: Tue, 29 Jan 2002 05:39:34 GMT
Subject: Re: Othello game written in Ada
Newsgroups: comp.lang.ada

Adrian Hoe wrote:

> It should work on Windows. I would appreciate if someone compile it on Windows and let me know the outcome so that I can update in my web site. I trashed Windows years ago. :)

I was able to compile and run it on Win98 with GNAT 3.13p and GtkAda 1.3.12 without modification.

The Fodderbot Project - an Empire AI Client

From: dennison@telepath.com (Ted Dennison)
Date: 31 Jan 2002 07:26:16 -0800
Subject: Re: Graphics in GNAT for Linux, how?
Newsgroups: comp.lang.ada

[...] Why not just make [the bindings] yourself? [...]

I'm not just saying this; I've done it. I had an AI class that was using the PD CLIPS AI shell, and like you I was given my choice of language to use. The project I made is here -
<http://www.telepath.com/dennison/Ted/Fodderbot/Fodderbot.html>, and the semi-thick CLIPS bindings I made for it are here -
<http://www.telepath.com/dennison/Ted/AdaClips/AdaClips.html>.

[From the URL above: "The purpose of the Fodderbot Project is to create an AI player for the game Empire. Empire is a multiplayer wargame and empire simulation. It is typically played over the internet, with a server handling all the game maintenance and actions, and clients acting as the player's user interface and transmitting commands to the server." -- dc]

AdaGOOP - Ada Generator of Object-Oriented Parsers

From: Carlisle Martin C Dr USAFA/DFCS
<Martin.Carlisle@usafa.af.mil>

Date: Wed, 19 Dec 2001 09:02:31 -0700
Subject: Re: Generator of parsers for Ada ?
To: team-ada@acm.org

> We are looking for tools like LEX/YACC which can generate Ada lexer/parser. According to our wishes, these tools should generate GOOD Ada code, i.e. it shouldn't be C code which can be compiled by Ada compiler but real good style Ada code.

There is also AdaGOOP, a tool which sits on top of aflex and ayacc, which is at <ftp://ftp.usafa.af.mil/pub/dfcs/carlisle/usafa/adagoop/index.html>. This automatically fills in actions for lex/yacc so that an object-oriented parse tree is built.

Martin C. Carlisle, PhD, Associate Professor of Computer Science, Advisor in Charge, United States Air Force Academy

More Parser Generators for Ada

From: Pascal Obry <p.obry@wanadoo.fr>
Date: Wed, 19 Dec 2001 15:49:58 +0100
Subject: Re: Generator of parsers for Ada ?
To: team-ada@acm.org

Yep. There is [...] Ted Denisson's OpenToken.
<http://www.telepath.com/dennison/Ted/OpenToken/OpenToken.html> [...]

[See also "OpenToken 3.0b - Token Analysis and Parsing Package" in AUJ 21.3 (October 2000), pp.165-166. -- dc]

From: Terry Westley <twestley@acm.org>
Date: Wed, 19 Dec 2001 13:22:26 -0500
Subject: Re: Generator of parsers for Ada ?
To: team-ada@acm.org

Look at AdaScript and BUSH:
<http://www.vaxxine.com/pegasoft/bush-down.html>.

BUSH is an interactive shell for Linux with both Bourne and Ada syntax. AdaScript is a subset of the Ada 95 language with additional features specifically for interactive shell sessions.

The BUSH distribution includes the scanner and parser source code. Whether or not it is based on lex/yacc or alex/ayacc, I don't know.

[See also "BUSH 0.8 - AdaScript Shell" in AUJ 22.4 (December 2001), pp.205-206. -- dc]

From: Christoph & Ursula Grein <Christ-Utsch.Grein@t-online.de>
Date: Sun, 13 Jan 2002 14:08:23 +0100
Subject: Re: Generator of parsers for Ada ?
To: team-ada@acm.org

Additionally to Ted Denisson's OpenToken (of which Pascal Obry has informed you already), which has an Ada lexer written by me, François Fabien (mail: fr.fabien@infonie.fr) is working on a parser based on OpenToken. Please contact him directly for more

information. He has to modify the OpenToken parser at several places until it worked.

Christoph Grein, Member of Ada Germany, <http://www.ada-deutschland.de>, <http://home.T-Online.de/home/Christ-Utsch.Grein>

Aflex and 8-bit Characters

From: "Gautier Write-only-address"
<gautier_niouzes@hotmail.com>
Date: Fri, 18 Jan 2002 08:45:56 +0000
Subject: Re: Aflex and ASCII-8 characters
Newsgroups: comp.lang.ada

> I wanted to know if someone has modified Aflex source so as to parse ASCII-8 characters.

The Aflex version in newp2ada.zip [...] is able to parse 8-bit characters.
<http://www.mysunrise.ch/users/gdm/gsoft.htm>

From: Pascal Obry <p.obry@wanadoo.fr>
Date: 18 Jan 2002 18:41:55 +0100
Subject: Re: Aflex and ASCII-8 characters
Newsgroups: comp.lang.ada

There is one version available on my homepage. It is a port to GNAT and can be used with ASCII-8 characters. Direct link (the Web pages are in French): <http://perso.wanadoo.fr/pascal.obry/contrib.html>

Computing with SI-units

From: lutz@iks-jena.de (Lutz Donnerhacke)
Date: Wed, 28 Nov 2001 11:11:10 +0000 (UTC)

Organization: IKS GmbH Jena
Subject: Computing with SI-units
Newsgroups: de.comp.lang.misc,comp.lang.ada

<http://www.iks-jena.de/mitarb/lutz/ada/units/>

[...] Computing on SI-units respecting the unit dimensions. There are two different implementations: One that uses simple types and so requires explicit conversion between multiplication and addition, while the tagged variant reduces a substantial amount of such typing.

The problem is known in comp.lang.ada as the "matrix operations with compile time discriminant checking" problem. A solution to the matrix-problem allows a very efficient implementation to the SI-problem, too. So this SI-solution might also be valueable for the matrix people.

Example of ISO/OSI Protocol Stack Implementation

From: "David C. Hoos"
<david.c.hoos.sr@ada95.com>
Date: Wed, 28 Nov 2001 05:15:41 -0600

Subject: Re: Example of OSI package/data structure?

Newsgroups: comp.lang.ada

> Can someone point me to an example of an implementation for the ISO/OSI protocol stack? I have a description of a protocol that has to be coded in Ada95. It is now coded (hacked) in a bad form in Ada83 and I want to redesign it for Ada95. First I need a package structure. I want to decouple every layer as much as possible and was thinking of a tagged type for the device and extend it in every next layer. [Details removed. -- dc]

I know of no implementation (Ada or otherwise) that strictly follows the OSI model. However, there is an implementation of IP version 4 worth looking at here: <https://www.iks-jena.de/mitarb/lutz/ada/net/>

In general, though I would not think it wise to derive one layer from the other (going in either direction) because the layers are distinct in their function and purpose. The only thing that they should have in common is that each layer should have a clean interface with each of its neighbors in the stack.

Just off the top of my head, I would start with an organization plan something like this: Net; Net.Physical; Net.Link; Net.Network; Net.Transport; Net.Session; Net.Presentation; Net.Application.

Each of the above would define abstract interfaces from which specific implementations would be derived. [...] Also, in practice the session, presentation and application layers are often collapsed into one. You will note that I have named no package OSI. It just seems to me that Net is a better name for the root package, since this is what it's all about.

As a general implementation scheme I have a task that does a blocking read on the physical device, and delivers received packets to a handler that has been registered with that task. Such registrations could be for all packets, or only for packets of a certain kind. In this way, the same handler can receive packets from its choice of lower-level packet sources. In the send direction, each layer simply calls a Send procedure for the next lower layer of its choice. Since the programs I write usually have multiple threads of execution wishing to send to the network, I protect the lowest layer with a semaphore implemented in Ada95.

I hope these ramblings provide you with some food for thought.

PLib v0.34 - 32-bit Compression Library

From: "Gautier Write-only-address" <gautier_niouzes@hotmail.com>

Date: Sun, 09 Dec 2001 19:52:21 +0000

Subject: Ann: aPLib v0.34 released

Newsgroups: comp.lang.ada

aPLib is a 32bit compression library for Intel x86, with bindings for various systems & languages.

More on that page:

<http://home19.inet.tele.dk/jibz/apack/download.html>. Ada bindings and demo in the "examples\ada" directory.

PolyORB 0.1 - Schizophrenic Object-Oriented Middleware

From: Thomas Quinot

<quinot@inf.enst.fr>

Date: Mon, 10 Dec 2001 12:10:54 +0100

Organization: ENST, France

Subject: First release of PolyORB, the schizophrenic middleware

Newsgroups: comp.lang.ada

We have the pleasure to announce the first public release of our schizophrenic object-oriented middleware: PolyORB 0.1

From the README file:

PolyORB is a polymorphic, reusable infrastructure for building object-oriented distributed systems. Middleware environments are software libraries that hide the complex issues of distribution and provide the programmer with high-level abstractions that allow easy and transparent construction of distributed applications. A number of different standards exist for creating object-oriented distributed applications. These standards define two things:

- * the interface seen by the developer's applicative objects;
- * the protocol used by the middleware environment to talk to other nodes in the distributed application.

Usually, middleware for one platform supports only one set of such interfaces, and cannot interoperate with other platforms.

A polymorphic middleware allows the existence of several different implementations of each of these aspects to be used within the same middleware framework. In addition, PolyORB allows such different personalities to coexist in the same instance of the running middleware; it decouples the personality presented to applications on one side ("application personality"), and the personality presented to other middlewares on the other side ("protocol personality"). Multiple implementations of each personalisable aspect can coexist within the same instance of the running middleware: unlike previous generic middlewares, PolyORB is actually schizophrenic.

The decoupling of application and protocol personalities, and the support for multiple simultaneous personalities within the same running middleware are key features required for the construction of interoperable distributed applications. This allows PolyORB to communicate with middlewares that implement different distribution standards: PolyORB provides middleware-to-middleware interoperability.

The PolyORB architecture also permits the automatic, just-in-time creation of proxies between incompatible environments (although this feature is not implemented yet).

Note: PolyORB is the project formerly known as DROOPI, a Distributed Reusable Object-Oriented Polymorphic Infrastructure.

The PolyORB distribution and further information (including several research papers related to PolyORB) can be found at the project home page: <http://libre.act-europe.fr/polyorb/>

Thomas Quinot, Département Informatique & Réseaux, ENST, 46 rue Barrault, 75634 PARIS CEDEX 13

FSMedit 2.0 - Finite State Machines Editor

From: Christoph Grein

<christoph.grein@eurocopter.com>

Date: Wed, 12 Dec 2001 07:07:05 +0100 (MET)

Subject: FSMedit - The Finite State Machines Editor - Version 2.0

Newsgroups: comp.lang.ada

FSMedit is an editor for finite state machines. It is written in Ada with the graphical user's interface (GUI) by the demonstration version of Claw. Thus in its current version it is restricted to MS Windows systems. It should however not present any problems to replace the Claw version by another GUI (only a lot of work :-).

When the transition diagram of a FSM has been specified, a simulation of the machine can be executed interactively or via scripts. From the transition diagrams, Ada code can be generated; also the reverse, extraction of transition diagrams from Ada code is possible.

[See also "FSMedit 1.4 - Editor for Finite State Machines" in AUJ 22.3 (September 2001), p.137. -- dc]

This new version adds tools for reachability analysis and also for comparison of two machines.

FSMedit may be installed in different languages. Currently English and German are available. Further languages can be provided without recompilation, solely by providing the translation in a language file.

FSMedit has been released under the Gnu GPL. However, since it is an "editor", any software (i.e. Finite State Machine) you produce with it does not fall under any licence other than you choose yourself.

To download FSMedit together with Ada source code and a complete user's manual, see <http://home.t-online.de/home/Christ-Usch.Grein/Ada/FSM.html>

MaRTE OS 1.0 - Minimal Real-Time Operating System for Embedded Applications

From: Mario Aldea Rivas

<aldeam@unican.es>

Date: Tue, 18 Dec 2001 13:52:56 +0100

Organization: Universidad de Cantabria

Subject: MaRTE OS version 1.0 released !

MaRTE OS version 1.0 released !

MaRTE OS (Minimal Real-Time Operating System for Embedded Applications) is a real-time kernel for embedded applications that follows the Minimal Real-Time POSIX.13 subset, providing both the C and Ada language POSIX interfaces.

[See also AUJ 22.1 (March 2001), p.10. - dc]

It allows software cross-development of Ada and C applications using the GNU compilers Gnat and Gcc. Remote debugging of applications is also possible using the GNU debugger gdb. MaRTE OS is available under the GNU General Public License.

MaRTE OS can be used in industrial and educational environments. In education MaRTE OS can be used as the base of a low-cost laboratory for students to experiment with a real-time POSIX operating system in a cross-development environment. For industrial purposes it could constitute a good choice since it is one of the few real-time OS for embedded applications which is POSIX compatible.

MaRTE OS is also useful for research because, due to its relative small code size and modularity, it is easy to integrate and test new functionality in it.

In this version new functionality has been added:

- Application-Defined Scheduling.
- Interrupts Management at Application Level.
- POSIX Sporadic Server Scheduling Policy.
- POSIX Pthread-Specific Data.
- "Task Inspector": A tool for analyzing the scheduling activity.

Some improvements have been performed as well:

- Blocking keyboard reading.
- More complete 'printf' and 'scanf' functions.

MaRTE OS is being developed in the Group of "Computadores y Tiempo Real" of the Department of "Electronica y Computadores" of the University of Cantabria.

For more extensive documentation and downloading please visit the following URL: <http://martel.unican.es/>

For comments, suggestions, doubts, problems, etc., send an e-mail to Mario Aldea Rivas: <mailto:aldeam@unican.es> [...]

Mario Aldea Rivas, Grupo Computadores y Tiempo Real, Dpto. de Electronica y Computadores, Facultad de Ciencias, Universidad de Cantabria, Avda. Los Castros s/n, 39005 Santander (Cantabria), Spain, Tfno. +34 942 201477, Fax +34 942 201402, E-mail aldeam@unican.es

CRCAda95 - Cyclic Redundancy Checks

From: sudhakar reddy menakuru

<reddy_menakuru@yahoo.co.in>

Date: Mon, 24 Dec 2001 04:31:13 -0800

Subject: Crc calculation in ada 83 or 95

To: team-ada@acm.org

This is Sudhakar Reddy from India. I am facing one problem in calculation of crc of an array of 226 bits [...] If any one have algorithm or code in Ada 83 or Ada 95 please give me reply as early as possible.

From: Dirk Craeynest

<Dirk.Craeynest@cs.kuleuven.ac.be>

Date: Mon, 24 Dec 2001 15:03:22 +0100

Subject: Re: Crc calculation in ada 83 or 95

To: team-ada@acm.org

[...] The following was posted to comp.lang.ada several years ago but is still available. I hope it helps you.

Ada-Belgium is providing (pointers to) Ada software, made available by Belgian Ada users. URL of the starting point: <http://www.cs.kuleuven.ac.be/~dirk/ada-belgium/software/> [...]

CRCAda95 - Cyclic Redundancy Checks in Ada 95

Author: Guido Duerinckx, Trasys, Brussels Status: Source code available. Platforms: Portable.

Reference: "Cyclic Redundancy Checks in Ada95", by Guido Duerinckx, ACM Ada Letters, Jan/Feb 1997, Pages 41-53, Volume XVII, Number 1

Abstract: CRCAda95 provides an implementation of standard well optimized CRC algorithms in Ada 95. The basic CRC algorithm is implemented as a generic package. Both 16-bit and 32-bit CRC instantiations are provided,

the 32-bit version is fully POSIX/UNIX95 compliant. This version of CRCAda95 may be freely distributed and reused within your own projects.

The following files are available:

- `crcada95.doc`: a copy of the author's paper in Ada Letters (MS Word 6.0 document);
- `crcada95.ada`: the source code;
- `crcada95.crc`: a listing with POSIX/UNIX95 CRCs of the above two files.

ACF - Ada Cryptographic Framework

From: antonio_duran@hotmail.com

(Antonio Duran)

Date: 8 Jan 2002 00:45:55 -0800

Subject: [ANNOUNCE] Ada Cryptographic

Framework (ACF). First alpha release

Newsgroups: comp.lang.ada

The first alpha release of the Ada Cryptographic Framework is available at project's site in SourceForge <http://sourceforge.net/projects/adacf>. It consists of the functionality for computing secure hashes according to the next algorithms: MD2, MD4, MD5, SHA-1, RIPEMD-128, RIPEMD-160, HAVAL, TIGER, as well as test drivers for those packages and a draft of the user's manual.

Visit the CVS repository to see other packages currently under development (multiprecision natural numbers arithmetic, secure random generators, etc.). If you wish to participate in the project please contact me.

Javadoc-like Utilities for Ada

From: Joseph P Vlietstra

<joevl@concentric.net>

Date: 13 Jan 2002 07:24:34 GMT

Organization: Mojave Systems Corporation

Subject: "Javadoc" for Ada

Newsgroups: comp.lang.ada

Our company is currently using a home-grown documentation generation tool that extracts comments from preambles preceding each Ada function/ procedure. The tool is written in C++ and generates MIF (FrameMaker Interchange Format) files.

We recently updated our C/C++ preamble standards to be closer to Java doc comments and use Doxygen (Javadoc for C++) to generate documentation. We are considering changing our Ada preamble standards in a similar manner. Are there any doc comment utilities for Ada similar?

From: tmoran@acm.org

Date: Sun, 13 Jan 2002 08:21:38 GMT

Subject: Re: "Javadoc" for Ada

Newsgroups: comp.lang.ada

We too have a homegrown utility for documentation. It parses so in addition to copying specs and comments, it can link types to their declarations and uses, as well as parents and children. It generates an intermediate form so that a "mail-merge" kind of operation can override/expand the mechanically generated stuff with manually created text, to create input to the final .rtf/.htm generator.

How do other people handle the problem?

*From: Florian Weimer
<Weimer@CERT.Uni-Stuttgart.DE>
Date: 13 Jan 2002 12:59:42 +0100
Organization: RUS-CERT, University of
Stuttgart, Germany
Subject: Re: "Javadoc" for Ada
Newsgroups: comp.lang.ada*

We use an ASIS-based tool for generating documentation. It extracts the documentation from comments, and automatically adds documented entities to the proper index. Texinfo is the markup language. The system is not comparable to JavaDoc, however, because it does not enforce structure in the documentation comments.

We plan to release this tool under the GPL, but we have to sort out a few things first.

*From: Simon Wright
<simon@pushface.org>
Date: 13 Jan 2002 20:29:45 +0000
Subject: Re: "Javadoc" for Ada
Newsgroups: comp.lang.ada*

[...] for informal use I find gnathtml more than adequate.

We're generating code frameworks (well, at the higher levels of the architecture) from UML, so we're generating documentation from the model.

*From: Frode Tennebo
<frode@tennebo.com>
Date: Sun, 13 Jan 2002 23:51:50 +0100
Subject: Re: "Javadoc" for Ada
Newsgroups: comp.lang.ada*

Take a look at:
<http://sourceforge.net/projects/adadoc/>.
[The documentation] is mostly in French.

[See also "AdaDoc - Html Generator for Ada Package Specifications" in AUJ 22.4 (December 2001), pp.200-201. -- dc]

*From: rolf.ebert@gmx.net (Rolf Ebert)
Date: 16 Jan 2002 01:11:28 -0800
Subject: Re: "Javadoc" for Ada
Newsgroups: comp.lang.ada*

Have a look at GtkAda (<http://libre.act-europe.fr/GtkAda/>). In the source distribution is a Perl script that extracts the structured comments (similar to javadoc) and generates a texinfo file.

AdaBrowse 1.0 - a Javadoc for Ada 95

*From: t_wolf@angelfire.com (Thomas Wolf)
Date: 2 Feb 2002 05:43:56 -0800
Subject: AdaBrowse - a javadoc for Ada 95
Newsgroups: comp.lang.ada*

AdaBrowse is a javadoc-like HTML generator for Ada 95. It is free software, copyright (c) 2002 by Thomas Wolf, and is distributed under the GPL. [...]

AdaBrowse produces a fully cross-referenced HTML rendering of Ada 95 library unit specs (no bodies) similar to what javadoc does for Java sources.

AdaBrowse generates a *type index* for package specs containing all types declared in that package spec. For (tagged) record types, private types, and types derived from those, this type index also contains a fully cross-referenced list of their primitive operations (whether inherited, overridden, or newly defined).

AdaBrowse also extracts a "header" comment (one before the context clauses) and uses it to construct a general unit description.

Furthermore, AdaBrowse generates an index of exceptions (including renames). If there's a comment in the source following the exception declaration immediately (i.e., starting on the next line), it is also extracted and inserted into this exception index as a description of the exception.

Version 1.0 doesn't take apart the source of a package spec any further (but it cross-references and syntax-colors it). This is planned as a future development.

AdaBrowse 1.0 is available at the URL http://home.tiscalinet.ch/t_wolf/tw/ada95/adabrowse as tarred, gzipped files:

- ada_browse_1.0.tar.gz contains the sources and a pre-built executable for GNAT 3.14p on Windows NT or 2000 (680 kB).

- ada_browse_1.0_src.tar.gz contains only the sources (50 kB).

Printing Ada Source Code

*From: Christian Sautereau
<christian.sautereau@cad.etca.fr>
Date: Mon, 21 Jan 2002 14:56:27 +0100
Subject: Imprimer du source Ada
To: "Ada-France" <ada-france@ada-france.org>*

[Extracts translated from French: -- dc]

When I developed under Unix, I used "a2ps" to print source code and I was very pleased with it. Now I develop under NT and don't know an equivalent tool. Does someone know such a tool under Windows? I didn't find an "operational" port of a2ps for NT (on Internet).

[See also "A2ps - PostScript Code Pretty-printer" in AUJ 20.4 (January 2000), p.238. -- dc]

*From: Dominique Canazzi
<dominique.canazzi@wanadoo.fr>
Date: Mon, 21 Jan 2002 22:34:58 +0100
Subject: Re: Imprimer du source Ada
To: ada-france@ada-france.org*
<http://gnuwin32.sourceforge.net/packages/a2ps.htm>

*From: claude.simon@equipement.gouv.fr
Date: Mon, 21 Jan 2002 17:48:15 +0100
Subject: RE: Imprimer du source Ada
To: ada-france@ada-france.org*

There's a reformatter in Adagide:
http://unicoi.kennesaw.edu/ase/ase02_02/tools/reformat/

[See also "Reformatting tool in AdaGIDE" in AUJ 20.1 (April 1999), p.19. -- dc]

Ada-related Products

ACT - AUnit 1.01 - xUnit Test Framework for Ada

*From: Ed Falis <falish@gnat.com>
Date: Mon, 03 Dec 2001 16:55:35 GMT
Subject: New version of AUnit available
Newsgroups: comp.lang.ada,
comp.software.extreme-programming*

AUnit is a xUnit test framework for Ada. Downloads of version 1.01 are available at <http://www.libre.act-europe.fr/>

There are two archives: one for Windows hosts; the other for all other supported hosts (UNIXes). The framework itself is platform-independent, provided an Ada compiler is available.

Note that if you have a version of GNAT Pro, the Glide IDE in v3.14a1 has a new menu that automatically generates test cases, suites and harnesses.

[See also "Unit Testing Tools" in AUJ 22.2 (June 2001), p.72 and "ACT - AUnit test framework for Ada" in AUJ 21.4 (January 2001), p.230. -- dc]

ACT - GVD 1.2.4 - GNU Visual Debugger

*From: Arnaud Charlet
<charlet@gnat.com>
Date: Fri, 07 Dec 2001 10:53:46 +0100
Subject: [ANNOUNCE] Release 1.2.4 of the
GNU Visual Debugger
Newsgroups: comp.lang.ada*

We are pleased to announce the availability of GVD 1.2.4, the GNU Visual Debugger, a general purpose graphical debugger front-end licensed under the GNU General Public License.

Besides providing all the features of other debugger GUIs, GVD includes advanced data display and visualization capabilities. Furthermore, GVD allows

the debugging of multi-process/multi-threaded applications in the same debugging session. GVD works with native as well as cross debuggers and can handle several languages in the same debugging session and the same application. Currently Ada, C and C++ are supported.

GVD can run on a host different from the machine where the debugger is running and provides friendly support for cross-debuggers (VxWorks, Lynx, etc.). For instance, you can use Linux or Windows to debug an application running on a Power PC board with a debugger running on a Sun workstation.

To build GVD we are using the GtkAda GUI technology. GVD comes with all the GtkAda benefits such as a pluggable look-and-feel, a set of very high-level widgets and the ability to have the same look-and-feel on all of your platforms.

You can download GVD (sources and binaries for GNU/Linux x86, Solaris sparc and x86, Windows NT/2000, DEC Unix/Tru64, HP-UX, UnixWare, IRIX, AiX) and get more information at <http://libre.act-europe.fr/gvd>

[See also "GVD 1.2.0 - GNU Visual Debugger" in AUJ 22.3 (September 2001), pp.137-138. -- dc]

New features in GVD 1.2.4:

- General stabilization and improvements in error/warning messages.
- Better handling of VxWorks targets.
- Friendlier handling of Yes/No type of dialogs.
- New menu: File->Add Symbols, particularly useful under VxWorks.
- GVD shows the main source file in the explorer when it opens.
 - The fields in the "New Debugger" dialog are now filled with parameters from the command line.
- A message dialog now pops up when trying to detach a process while the underlying debugger is busy.
- The columns size and visibility for the stack window are now memorized from one session to another.
- Explorer displays return type for functions.
- In addition to GVD_ROOT, the path where gvd is launched is used to retrieve dynamically the prefix. The manual can thus be found more easily on Windows systems.

If you are interested in participating in the GVD development, do not hesitate to contact us (<mailto:gvd-devel@lists.act-europe.fr>)

Arnaud Charlet <charlet@act-europe.fr>

ACT - Ada-mode 3.6 for Emacs 21.1

From: Emmanuel Briot <briot@act-europe.fr>

Date: 07 Jan 2002 17:38:26 +0100

Subject: [ANNOUNCE] ada-mode 3.6 for Emacs 21.1 released

Newsgroups: comp.lang.ada

A new version of the ada-mode for Emacs has been released, that among other things includes a better support for Emacs 21.

Note that the new official page for the ada-mode is: <http://libre.act-europe.fr/adamode>

[See also "Ada Mode 3.5 for Emacs" in AUJ 22.1 (March 2001), p.11. -- dc]

Here is the list of the main changes in the ada-mode. This list doesn't include all the bug fixes.

Support for Emacs 21. Emacs 21 is a major new revision of Emacs, that includes some changes in the packages ada-mode depends on. The port has been done to the new version. As a result, ada-mode 3.6 is probably not compatible with older versions of Emacs.

Better handling for Ada files that don't follow GNAT's default naming scheme (.adb for bodies and .ads for specs).

ada-xref-search-with-grep is a new variable intended for big projects: it allows you to disable the default behavior of ada-mode, that will use grep to do a cross-reference if the information generated by GNAT is not up-to-date.

Cross-references to operators now work correctly in all situations.

Add support for the GNU visual debugger. This debugger will be used by default if found on the path. See also the variable `ada-tight-integration-with-gvd`.

Better support for Windows paths.

Supported users of Ada Core Technologies or ACT-Europe do not need to download this version, which has been available to them for some time. In any case, you should request new versions or bug fixes through your usual channel.

ACT - XML/Ada 0.7.1

From: Emmanuel Briot <briot@act-europe.fr>

Date: 21 Jan 2002 11:28:21 +0100

Subject: [ANNOUNCE] XML/Ada 0.7.1 released

Newsgroups: comp.lang.ada

[See also "ACT – XML/Ada 0.6" in AUJ 22.4 (December 2001), p.207. – dc]

A new version of XML/Ada has been made available on <http://libre.act-europe.fr>.

This is mostly a bug-fix release (memory leaks, and a few small issues). The building of the library should also be a little bit easier (there is now a configure script).

Supported users of ACT or ACT-Europe should request that package through their usual channels instead.

ACT - New Public Release GNAT 3.14p

From: dewar@gnat.com (Robert Dewar)

Date: 30 Jan 2002 18:49:11 -0800

Subject: ACT announces availability of GNAT 3.14p

Newsgroups: comp.lang.ada

Ada Core Technologies (ACT) has made available at the NYU site (<ftp://cs.nyu.edu/pub/gnat>) GNAT 3.14p builds for the following targets:

MS Windows (NT/2K) Sparc Solaris (2.5.1 through 2.8) GNU Linux (Redhat 6.2)

The above are the official platforms, but in practice the NT version works reasonable well on Win 98 and Win ME and other versions of GNU Linux including Debian GNU/Linux are known to be compatible with this version of GNAT.

These are the only public versions that ACT plans to build. As always, the releases contain the full sources, and we invite volunteers to create builds for other platforms. We also draw attention to the availability of source snapshots for the current development version of GNAT (similar to the 3.15 release, but on GCC 3, rather than GCC 2). The above public versions are still based on ACT's 2.8.1 GCC version.

These versions are provided without any warranty or guarantee of any kind, and no support of any kind is available for these public versions from ACT. They are provided as a service for use by students, hobbyists and researchers who need access to a high quality Ada 95 system.

If you need a supported commercial Ada 95 compiler, we recommend the use of our GNAT Pro product. In particular, we do not recommend the use of the public version for formal evaluation purposes. Contact sales@gnat.com or sales@act-europe.fr for further details on GNAT Pro, including the availability of evaluation versions.

Robert Dewar, Ada Core Technologies
GNAT 3.14p New Features List

The following is a list of new features available in 3.14 as compared with 3.13. Copyright (c) 2001, Ada Core Technologies

This file contains a complete list of new features in version 3.14p of GNAT. A full description of all GNAT features can

be found in the GNAT User Guide and GNAT Reference Manual. [Prepend "NF-314-" to all new feature numbers.]

5827-001 New `-u` switch for `gnatmake`. The command `gnatmake -u` only recompiles the main file when needed. `Gnatmake` can now be used as the main and only interface to the compiler since a single compilation can be launched with `"gnatmake -u -f"`.

6806-001 Source reference pragmas read by `gnatchop`. The `gnatchop` utility now recognizes and respects existing source reference pragmas that it finds in the input file, so that the output files always properly reflect the original source file.

6813-011 `Asis` queries to evaluate static expressions. A new set of queries is added to package `Asis.Extensions`. These queries allows an `ASIS` application to evaluate the value of a discrete static expressions and to get the low and high bound of a static `'Range` attribute. The results are returned as string images of expression values, The `'Pos` value is returned for enumeration expressions. See specification of `Asis.Extensions` for more details.

7001-006 Better messages on non-visible entities. The warnings for non-visible entities have been improved to exclude implicit entities, and entities declared in the private part of GNAT internal units. This results in more helpful error messages for undefined variables.

7008-003 New package `GNAT.Sockets`. This package provides a high level interface to the sockets API. Most of the features are implemented. This high level and portable interface is based on the `GNAT.Sockets.Thin` API which is a thin binding to the OS sockets API.

7110-008 New package `GNAT.Most_Recent_Exception`. This package provides subprograms giving access to the exception occurrence, or exception occurrence access for the most recently raised exception. Unlike the routines in `GNAT.Current_Exceptions`, these routines do not have to be called statically from within an exception handler.

7207-004 Issue error for bad `Source_Reference` pragma. The `Source_Reference` pragma is (and always has been) required to be the first line of the file. This is now clearly documented, and a diagnostic is issued if the first `Source_Reference` pragma is not the first line in the file.

7207-006 Warn when `Duration` unexpectedly used. A new warning has been added when a universal fixed expression is interpreted as type `Standard.Duration`. Although this is correct according to RM semantics, it is almost always suspicious and represents an unintended meaning.

7215-008 Improve msg for missing `WITH` of `predef` unit. The error message handling for cases of forgotten `WITH`'s of predefined library routines is improved.

7314-004 Remove useless initialization checks. Initialization procedures for arrays were doing unnecessary subscript range checks, that have now been suppressed, since an out of range condition is impossible in this context.

7418-008 New switch for `gnatchop` to exit on errors. The new `-x` `gnatchop` switch causes `gnatchop` to exit on detecting parse errors. Now `gnatchop` also sets the exit status to indicate errors.

7506-010 Improve message for access param comparison. A comparison of an access parameter with null is illegal. This was always caught by GNAT but with a confusing error message that complained about the types of the operands. Now a specific error message is given pointing out that it is not allowed for an access parameter to be null in the first place.

7509-002 Improve warning for possibly null values. The warning for possibly null values has been improved to be more precise and to catch some previously uncaught cases.

7515-007 Multiple `Source_Reference` pragmas allowed. It is now permitted for a single file to have more than one `Source_Reference` pragma. All pragmas must refer to the same original file, but the sections referenced need not be contiguous. This permits correct processing of files with configuration pragmas that are chopped using `gnatchop` with the `-c` and `-r` switches.

7516-012 Better warning messages for `Storage_Error`. In some cases, a warning about possible storage error was posted on the offending statement in a generic template. Now the message is always on the relevant instantiation with a pointer to the generic template location.

7524-009 GNAT version string is in executable. The executable now contains a string identifying the GNAT version in the form "GNAT Version: xxx(xxx)" where xxx(xxx) is the version number. The external name of this constant is `__gnat_version`.

7530-009 Consistency checking for `-gnatE` mode. Units compiled with `-gnatE` and without `-gnatE` can be mixed under certain conditions, now properly documented in the GNAT Users Guide. The binder now checks that the rules for safe mixing are properly followed.

7606-012 Improve equality ambiguity error messages. In the case of ambiguous operands for equality, `-gnatf` now gives details on the possible resolutions discovered by the compiler, making it easy to diagnose the cause of this error in non-obvious situations.

7607-007 Improved control for NT temporary files. Under NT, it is now possible to control where temporary files are created. First, the `TMP` environment variable is checked, and if this is set, it specifies the directory to be used. If `TMP` is not set, then `c:\temp` is used. If both of these checks fail, then the current working directory used.

7611-007 Warnings for `WITH` of internal GNAT unit. The only units that should be `WITH`'ed by application programs are those that are documented in the RM or in the GNAT documentation. Any `WITH` of an internal GNAT implementation unit not documented in one of these two locations now generates a warning. This warning can be controlled individually by use of the `-gnatwi/-gnatwi` switches. It is on by default.

7614-005 Avoid use of `a-types.h` in runtime. The use of `a-types.h` is now avoided in building the runtime library. This reduces unnecessary symbol table and debug information

7619-008 Access to source related information. A new package `GNAT.Source_Info` provides some useful utility subprograms that provide access to source code informations known at compile time, such as file name, line number and enclosing entity.

7620-002 More flexible source file naming. The `Source_File_Name` pragma has been enhanced so that it can provide general pattern driven rules for constructing file names. The scheme is powerful enough to accomodate all common schemes for deriving file names from unit name that we are aware of, and in particular it supports standard schemes used by other Ada 95 compilers. This means that for most purposes the large set of `Source_File_Name` pragmas can be replaced by two pragmas, giving pattern rules for bodies and specs.

7622-004 New packages for CGI programming. A new package `GNAT.CGI` provides basic services for CGI (Common Gateway Interface) programming. A subsidiary package `GNAT.CGI.Cookies` provides facilities for dealing with "cookies" (data kept in Web client software). A third package `GNAT.CGI.Debug` provides debugging facilities. Between them, these packages enable an easy interface for Web programming from Ada.

7626-013 Automatic backtraces during exception handling. A new package `GNAT.Exception_Traces` is now available for platforms on which the backtrace features is implemented. This provides a feature for enabling automatic output of backtraces upon exception occurrences. Two options are available, enabling traces either for every occurrence or only for occurrences that are not caught by a user defined handler.

The latter is typically useful to get traces when a task dies because of an unhandled exception.

7708-001 New Setenv procedure in GNAT.OS_Lib. A procedure Setenv has been added in GNAT.OS_Lib. This procedure can be used to add or remove environment variables for the current and child process. This is not yet supported under VMS, but is fully supported for all other GNAT ports.

7709-004 New unit GNAT.AWK (AWK style file parsing). A new package GNAT.AWK (file g-awk.ads) provides AWK-like file parsing with an easy interface for parsing one or more files containing formatted data. The file is viewed as a database where each record is a line and a field is a data element in this line.

7711-001 New function Paren_Count in GNAT.Regpat. A new function Paren_Count is now provided in GNAT.Regpat to return the maximum number of parentheses pairs in the compiled regular-expression.

7712-005 Support for honoring gcc -fno-common. The -fno-common gcc command line option is now recognized. The use of this option causes the allocation of uninitialized global variables to be moved to the bss section of the object file, rather than generating them as common blocks. This solves problems caused by the presence of a symbol both in a library and in an explicitly linked object file.

7713-002 Improved error message placement. The error message noting that only subtype marks can be used in a generic array formal are now more accurately placed and point specifically to the offending construct.

7713-003 Front-end inlining. The -gnatN switch enables front-end inlining. In this compilation mode, the front-end replaces a call to a subprogram that has an Inline pragma by the expanded body of the subprogram, provided the body is short enough. This supplements the inlining performed by the GCC back-end.

7717-001 Task_Name pragma provided to set task name. A new pragma Task_Name can be used in a task definition to specify the name used for a task for debugging purposes and by Ada.Task_Identification.Image. The argument is the task name, and can be an expression referencing the task discriminants, allowing different names to be given to different instances of the same task type.

7718-001 Linker_Options extensions now documented. The documentation (GNAT Reference Manual) has been enhanced to contain full documentation of the GNAT implementation of the Linker_Options pragma. GNAT allows

multiple arguments, and also allows the use of ASCII.NUL to separate arguments in a single string.

7718-003 New warning option to detect hiding. New flags -gnatwh/-gnatWH are provided to enable/disable checking for the case where an inner entity hides an outer one. This is of course legal, but in some environments such hiding is discouraged, and this warning option (which is by default off) can be used to enforce this requirement. Note that the common case of one character identifiers such as I,J,K is excluded from consideration.

7721-002 Improved range analysis for subtraction. The circuit for range analysis for subtraction has been enhanced. This eliminates some range checks, and some additional warnings at compile time for cases where the result is known to be out of range.

7721-003 Implement range analysis 'Length. Range analysis for the Length attribute has been added, resulting in elimination of some range checks, and also some additional warnings at compile time for cases where the result is known to be out of range

7722-016 Improved error msg for name conflict. The error message for a conflict between an enumeration literal and a later declared constant of the same name has been improved.

7723-005 GLIDE xref works even if compile errors. The new switch -gnatQ can be used to force generation of an ALI file even if there are compile errors. This is most useful in connection with GLIDE and similar tools, since it means that cross-reference information is available even after compiler errors.

7723-012 Unreferenced labels generate warnings. In -gnatwu mode, GNAT now diagnoses labels that are not referenced other than by their initial occurrence.

7731-012 New unit GNAT.Dynamic_Tables. A new package GNAT.Dynamic_Tables provides a resizable one-dimensional array. It is similar to GNAT.Table except that the table type is a declared type, so that it can be used in more general contexts.

7801-005 Warning for aliased discriminated objects. GNAT now generates a warning for an assignment to an aliased discriminated object that is known to generate a constraint error at run time.

7802-002 GLIDE can go to any file in error message. When an error message from the compiler includes several file:line references, it is now possible to click on any of them to display the appropriate file, instead of just the first one.

7814-013 x86 stack traceback for foreign threads. Under x86 targets it is possible

to get the stack traceback through a foreign thread. This is true for unhandled exceptions and for GNAT.Traceback services.

7817-001 GNAT now compatible with Solaris 2.8. GNAT is now fully compatible with Solaris 2.8. This includes proper building and operation of the florist package (which did need some modifications to be 2.8 compatible).

7820-008 Better 'Valid handling for large subtypes. If an object of a discrete type has a larger size than the base type (e.g. from the use of a component clause in a record representation clause), then 'Valid will check all the bits of the object (previously the code simply use part of the field, which was an allowable implementation according to the RM, but nevertheless surprising).

7821-010 ASIS tutorial is available. A simple hands-on ASIS tutorial is added to the ASIS distribution. It consists of two parts. One part is based on the assistant tool and the task is to get the initial experience with using ASIS queries. Another part is based on the ASIS application templates and the task is to implement simple ASIS tools starting from these templates. For all the tasks full documented solutions are provided.

7821-008 ASIS application templates are available. A set of ASIS application templates is added as a part of the ASIS distribution. This set contains the Ada components which are the same or very similar for many ASIS-based tools. These templates may be used as a "quick start" for ASIS beginners.

7822-009 Dynamic elaboration checks improved. Elaboration checks are suppressed for calls to subprograms in packages to which a pragma Elaborate applies. The cases of Elaborate_All and Elaborate_Body already suppressed the check, but checks were not suppressed for Elaborate.

7826-009 gnatdll supports binder arguments. Gnatdll now supports the -bargs parameter passing arguments to the binder. For example, this can be used to build a DLL with stack tracebacks stored in the exception occurrences (gnatbind -E option).

7826-010 pragma Comment restriction removed. The placement of pragma Comment is now unrestricted. This pragma can appear anywhere within the main unit, including as the first line of the file.

7827-011 Control of warnings for address overlays. The warning switch -gnatwo turns on overlay warnings for address clauses where implicit initialization can cause the overlaid memory to be clobbered. The switch -gnatwoO turns off these warnings. The warnings have been implemented for a while. What is new is

allowing them to be selectively turned off (the default is that this warning is enabled).

7829-002 Control over validity checking is provided. GNAT now provides a new switch `-gnatVx` that allows you to control the level of validity checking. The options are `n/d/f` for none/default/full. None means no checking for invalid data, default (which is the default setting) provides sufficient checking to meet the requirements of the RM, and full provides extensive validity checking, particularly useful when used with `Normalize_Scalars`.

7829-003 New warning for hiding loop variables. A common mistake for those familiar with other languages is to fail to realize that a for loop implicitly declares the loop variable, and programmers provide a useless and unused outer level variable definition with the same name. GNAT now specifically detects this situation and provides an explicit warning.

7830-008 ASIS
`Corresponding_Name_Definition_List`. The `Asis.Expressions.Corresponding_Name_Definition_List` query in ASIS for GNAT is now fully implemented.

7830-014 New warning for overlay by access type. The warning for possible unexpected initialization has been extended to include access types. The warning is generated if an access type has an address clause causing overlay, and there is no `pragma Import`, so that initialization to null will take place. Note that NF-314-7827-011 gives the capability of controlling such warnings. Note also that GNAT 3.13p had a (now corrected error) that caused such expected initializations to be omitted.

7906-017 New package `Ada.Interrupts.Signal`. A new package `Ada.Interrupts.Signal` (file `a-intsig.ads`) has been created to provide an easier and more portable way of generating Ada95 interrupts.

7910-004 Uniform behavior for `Slice` subprograms. In packages `Ada.Strings.Bounded/Ada.Strings.Unbounded`, the `Slice` function now returns with the bounds of the slice expressions, rather than with a lower bound of 1. This was discussed in the ISO WG9 ARG, and it was agreed that this was the preferable approach. This change also improves the efficiency of these two functions.

7914-009 Optimization for object declarations. If an object is declared with an unconstrained nominal type and the expression is a function call, it is in general necessary to compute the result of the call first and then copy that result into the object, after determining the bounds. GNAT now suppresses that copy in many cases. The copy is still

used if the type is controlled, if it is classwide, or if the object is declared at the library level.

7918-012 Enhanced variant of `Spawn` in `GNAT.OS_Lib`. In the package `GNAT.OS_Lib`, a new `Spawn` function now returns the exit status of the executed command as an Integer value. The existing `Spawn` procedure only gives a boolean result.

7924-003 Immediate output switch (`-gnate`) replaced. The immediate output switch `-gnate` is no longer defined, reflecting the fact that this is intended only for use in diagnostic mode following a compiler crash. In those cases where this is needed, the effect can be obtained by use of the `-gnatO` debug switch. The purpose of this change is to avoid accidental use of this switch, which disables many useful error message circuits.

7925-003 Protected types visible in entities menu. In addition to subprograms, types and tasks, the entities menu in GLIDE now includes an entry for protected objects and types. This is also available in the speedbar panel.

7926-006 Allow SPARK annotations in `-gnatyc` mode. The `-gnatyc` mode now allows comments starting with `--x` where `x` is any special character in the lower half of the ASCII range (`16#21#..16#2F#`, `16#3A#..16#3F#`). This in particular allows the `--#` comments that appear as annotations in the Praxis SPARK language.

7929-004 `Value_Size` and `Object_Size` output by `-gnatR`. The `-gnatR` switch now outputs `Value_Size` and `Object_Size` separately for types where these two values are different. If the values are the same, then the output simply lists this common value as the `Size` value.

7930-001 `Value_Size` and `Object_Size` for all types. The `Value_Size` and `Object_Size` can now be separately specified for composite types (records and arrays). The meaning is as for scalar types. The `Value_Size` is used for unchecked conversion and packing purposes, and the `Object_Size` is used for allocation of objects.

7930-006 New attribute `Standard'Wchar_T_Size`. This attribute returns the size of the C type `wchar_t`, which may differ from the `Ada Wide_Character` type. The attribute is primarily intended for the construction of the `wchar_t` type in `Interfaces.C`.

7930-007 Changed children of `System` to be pure. Many more packages in the `System` hierarchy have been marked pure. This change documents that the functions in those packages are in fact side-effect free, which gives the compiler more optimization opportunities.

7931-001 Additional in-place assignments for aggregates. Assignments of the form: `S (1 .. N) := (others => Expr)`; are now performed in place, without generating a temporary for the aggregate (as long as `Expr` is independent of `S`, of course). In addition, array assignments where the right-hand side is an aggregate with only an `others` clause are performed in place even if the bounds of the array are non-static.

7931-002 Improved handling of enumeration image tables. The handling of enumeration type image tables (for support of the `Value`, `Image`, and `Width` attributes for enumeration types has been improved). The tables are now generated statically, and are significantly smaller than they were previously (1-4 bytes overhead per entry instead of 12-15).

7931-003 NT Win32Ada binding reformatted for `-gnaty`. The sources of Win32Ada binding were reformatted to meet the style requirements for compiling with the `-gnaty` switch.

8001-002 The `-gnatg` switch is now fully documented. The `-gnatg` switch is the GNAT internal implementation switch. It is intended only for use by GNAT itself. The documentation now fully describes this switch and explains why it should not be used by application programs.

8004-004 `Unchecked_Conversion` now fully documented. The GNAT Reference Manual now contains complete documentation on the approach used by GNAT in handling unchecked conversions where the sizes of the source and target types are different.

8006-002 Improved output for representation information. The `-gnatR` switch now takes an optional parameter which can have the value 0,1,2. No representation output is generated in `-gnatR0` mode. In `-gnatR1` (same as `-gnatR`), representation information is generated for arrays and records. For `-gnatR2`, representation information for all user declared types and objects is generated.

8010-003 Detect duplicate `Value/Object_Size` clauses. The appearance of more than one `Value_Size` or `Object_Size` clause for a single entity, which was previously allowed (with the earlier one being ignored), is now detected as an error, which seems more appropriate and more consistent with the treatment of duplicate `Size` clauses.

8010-005 Spell checking in GLIDE. The standard `ispell` command can now be used to spell check the comments while editing an Ada source file. The checking only applies to comments and not to Ada source code other than comments.

8010-012 More flexible `GNAT.Threads.Create_Thread`.

Create_Thread now returns the task id so that this value is easily known on the client side.

8012-002 New warning for unexpected rounding. Warn in cases where the static evaluation rules of Ada as described in RM 4.9(38) result in different rounding than would have been obtained at runtime. This rule is a rather surprising one, and has caused confusion in the past.

8014-002 Additional information on unused entities. Warning messages on unused entities (generated by compiling with -gnatwu) now indicate the kind (variable, function, etc) of the entity to which the warning applies. Cross-references are now generated when an entity appears as a default actual in an instantiation. This inhibits warnings if the entity is not used explicitly elsewhere, and is also used by tools that rely on xref information (e.g. GLIDE).

8019-001 Documentation on variant object size. An extensive section has been added to the GNAT Reference manual describing how GNAT treats the Size attribute when applied to variant record objects.

8022-004 Improved documentation for -gnato switch. More extensive documentation is provided for the -gnato switch that enables overflow checking, emphasizing that overflow checking is off by default, and explaining the rationale behind treating overflow checks differently from other kinds of range checks.

8023-003 Document Size Limit. GNAT enforces a maximum Size of objects of 2**31-1, which since Size is in bits, corresponds to a size of 256 megabytes. This limit has always been enforced, but it is now properly documented in the GNAT Reference Manual.

8023-005 Improved documentation for GNAT.Task_Lock. The documentation for GNAT.Task_Lock has been enhanced to make it clear that calling Lock multiple times from the same task works as expected for nested use of Lock/Unlock.

8024-002 C_Pass_By_Copy convention now standardized. The implementation of the C_Pass_By_Copy convention has been modified to be consistent with the agreed specification in AI95-00131, which is part of the official technical corrigendum for Ada 95. For GNAT, the modification is that now C_Pass_By_Copy is rejected for any *entities other than record types and subtypes. Convention C can always be used instead for other entities (GNAT used to treat C_Pass_By_Copy as identical to C for other entities).

8025-009 Documentation of GNAT Library Units. The GNAT Reference Manual now contains complete reference documentation for all GNAT specific

units in the GNAT, System, Interfaces, and System. This includes several units that have been present in GNAT, but not previously documented, including System.Address_Image (to convert Address values to strings) and Ada.Command_Line.Remove (for logically removing command line arguments).

8028-002 SIGUSR1/SIGUSR2 now handled in GNU/Linux. Using native threads (aka LinuxThreads), it was not possible to handle the SIGUSR1 and SIGUSR2 signals. This limitation has now been removed. This change affects all versions of GNAT for GNU/Linux including Debian GNU/Linux and also Redhat Linux.

8030-011 New style-check for exit of named loop. The -gnatye switch now includes checking for missing exit labels. It will now cause a warning to be posted if an exit statement appears which refers to a labeled loop but the statement does not include the label.

8030-014 Improved output from gnatbind -e switch. The output now excludes all output for gnat internal units. The dependency information for internal units is of interest only for implementors, and tends to be voluminous and useless for normal use. A -de debug flag is introduced to provide the old behavior for system implementors use.

8031-012 More extensive misspelling warnings. The error messages for undefined variables now include additional cases where a suggestion of a possible misspelling is provided. This message now includes cases where the entity is in a with'ed package and has explicit qualification.

8031-013 Nested package bodies included in -gnatR. The output from the -gnatR switch now includes declarations that appear in nested package bodies.

8031-019 Clear labeling of output in -gnatR output. The output from the -gnatR switch now makes it clear whether the unit for which representation information is listed is a spec or a body.

8101-005 Alignment warnings for bad address clauses. It is the program's responsibility to ensure that the value in an address clause is consistent with (i.e. a multiple of) the alignment of the object to which it is applied, and in general this cannot be checked at compile time. However it is possible to post warnings in some cases where the value is known at compile time and is clearly wrong, and this is now done.

8104-007 New Glide variable ada-prj-gnatfind-switches. This variable can be customized to change the default switches used for gnatfind when you select the menu item "Show All References". For example this can be

used to add the -a switch, in case you often work with read-only ALI files.

8105-007 New convention Win32 equivalent to Stdcall. The convention Win32 is now recognized as equivalent to Stdcall or DLL (all three conventions are identical in effect and considered to be conformant). This eases porting of code from other compilers that use this convention name.

8106-010 New unit Ada.Exceptions.Is_Null_Occurrence. This GNAT addition to the Ada hierarchy allows a program to test if an occurrence is the null occurrence (Null_Occurrence) without enenerating an exception. This capability is not present in the predefined subprograms in Ada.Exceptions.

8106-010 Warnings for useless type conversions. A warning can be generated for type conversions of the form a(b) where b is a simple entity name which is of type a (i.e. the conversion has no effect). This warning is normally off but can be set on by the use of @code{-gnatwr}.

8106-011 Warnings for useless assignments. A warning can be generated for assignments of the form a := a; (i.e. assignments of a variable to itself) which are obviously useless. This warning is normally off but can be set on by the use of @code{-gnatwr}.

8108-006 Warnings for accidental hiding by child unit. A warning is generated when a child unit in the context of a parent hides a compilation unit of the same name. For example, Foo.Ada, if it appears in the context of the body of Foo, will hide an occurrence of the predefined Ada in the same context, which can lead to surprising visibility errors later on.

8108-004 Better error messages for bad array aggregate. If an array aggregate is missing elements (e.g. it has the index values 1,2,8,9 and is missing 3 .. 7), the error messages will now give a full list of missing values.

8114-002 Named numbers included in -gnatwu check. The warning option -gnatwu (check unreferenced entities) now includes named numbers, so unreferenced named numbers will now also cause warnings to be generated.

8114-016 Better msg placement for with'ed unit not found. In some cases, the error message for a WITH that directly or indirectly lead to a file not found could be placed on a location other than the WITH statement. It is now always placed in the most convenient place.

8116-001 Support for wide char to string conversions. The library units System.Wch_Con and System.Wch_Cnv provide a method for converting between wide characters and the corresponding

string representation, using any of the implemented methods for encoding.

8118-003 Backtrace decorators for automatic backtraces. GNAT.Exception_Traces now includes a backtrace decoration facility, allowing customization of the way the set of addresses for a backtrace is output. A typical use of this feature is to provide a function that returns the symbolic information associated with each address, as computed by GNAT.Traceback.Symbolic.

8120-006 Improved dead code detection. The warning circuitry for unreachable code has been improved. Now an IF or CASE statement, all of whose statement sequence end with some transfer of control is recognized, and code after such a statement is flagged as dead code with an appropriate warning.

8127-007 Improved parser error messages. Some improvements in parser error messages have been made. If "|" is used in an expression in an inappropriate manner, the parser suggests that "or" may have been intended. If a component is declared in the visible part of a protected object, the diagnostic reminds that such components can only be in the private part.

8203-008 Default thread library is now LinuxThreads. Under the GNU/Linux operating system, the default tasking run time is now based on the native LinuxThreads library. The alternate FSU threads implementation is still available as an alternative (see file README.TASKING for more details). This change applies to all versions of GNU Linux, including Redhat Linux.

8205-001 New package Ada.Characters.Wide_Latin_1. This package provides definitions analogous to those in the RM defined package Ada.Characters.Latin_1 except that the type of the constants is Wide_Character instead of Character. The provision of this package is in accordance with RM (A.3(27)). Note: this package has been available for some time, but was not properly documented, so from a formal point of view was not available to application programs, but now it is a first class citizen which is fully documented.

8213-003 More flexible placing of address clause. Previously when an address clause and Import pragma were given for a subprogram, the pragma was required to be given first. There is now no restriction on the ordering.

8214-004 Style violations are now warnings not errors. Style errors resulting from the use of a pragma Style_Check or the -gnaty flag are now treated as warnings rather than errors, which means that an object file can be created if there are no other errors, and that also the compiler will find semantic

problems even if there are syntactic style errors. If the previous behavior of treating these as errors is desired, the -gnatwe flag can be used.

8218-005 New Elaboration_Checks pragma. A new configuration pragma Elaboration_Checks can be used to select the RM dynamic model of elaboration or the GNAT default static model. This may be used in gnat.adc for partition wide application, or within sources for unit by unit control. See also feature NF-314-7530-009.

8218-009 More efficient memory allocation. The GNAT run-time file a-raise.c can now easily be recompiled with lock suppression to improve the efficiency of memory allocation and deallocation if certain conditions are met. See the comment on NO_LOCK in a-raise.c itself for details.

8220-005 Generic sort packages in GNAT now Pure. The units GNAT.Heap_Sort_G (g-hesorg.ads), GNAT.Bubble_Sort_G (g-busorg.ads) are now Pure instead of Preelaborate, allowing them to be with'ed and instantiated by Pure clients.

8220-006 Automatic float control for Float Input-Output. Floating-point conversion in Text_IO no longer relies on the floating-point processor being correctly set. This means that the need for explicit calls to GNAT.Float_Reset is limited to programs which explicitly use Long_Long_Float. This feature is especially helpful on NT, where system services of all kinds seem to reset the floating-processor into low precision mode.

8225-001 Project file capability for gnatmake. The gnatmake utility is now project file aware, and can be used with the new GNAT Project Files (see new documentation section in the users guide). It now accepts the new switches -Pproject, -vPx and -Xname=value.

8226-007 Better handling of invalid enum opnds for Image. The Image function for enumeration types yielded rubbish strings for abnormal and invalid operands (e.g. created by unchecked conversions). A validity check (subject to control by the -gnatV switch) is now performed so that an exception (Constraint_Error) is raised for an invalid operand.

8230-001 Style check option for ordered subprograms. The -gnaty switch (ORDERED_SUBPROGRAMS in the VMS version) activates a style check that subprogram bodies within a given scope (e.g. a package body) must be in alphabetical order.

8302-004 Project file capability for gnatls. The gnatls utility is now project aware, and can be used with the new GNAT Project Files (see new

documentation section in the users guide). It now accepts the new switches -Pproject, -vPx and -Xname=value.

8304-001 RPM packages are now provided for GNU/Linux. Under GNU/Linux, GNAT is now provided as either a compressed tar file as before, or as RPM packages which means that the installation is simplified on various versions of GNU/Linux, including Redhat Linux, and Debian GNU/Linux.

8305-003 Better folding of attributes of objects. The Alignment, Size, First, Last, Length, and Component_Size attributes applied to objects are now treated as compile time constants if the value can be determined by the front end.

8317-003 Floating-point range checks now catch NaN's. In GNAT, Machine_Overflows is False for floating-point types, which means that operations such as 0.0/0.0 can generate NaN's. The RM does not require that NaN's be caught by subsequent range checks, but it is certainly convenient if this is the case, and GNAT has now been modified so that NaN's will always fail any range check and cause Constraint_Error to be raised.

8322-016 Program units now distinguished by gnatxref. The cross-reference section of the ali file now distinguishes between generic and non-generic units, and between functions, packages and procedures. The gnatxref utility has been enhanced to take advantage of this new information and now distinguishes these different kinds of units in identification of entities.

8323-004 Additional documentation on elaboration issues. A new section has been added to the users guide, entitled "Additional Elaboration Order Considerations", which discusses the issue of elaboration ordering requirements that are not dictated by the language, but rather arise out of extralingual logic requirements of the program.

8328-012 Better handling of max size of variant record. If a discriminant range is wider than it needs to be (e.g. we have a Natural discriminant, which is used as the upper bound of an array whose maximum bound is 10), then GNAT now uses the maximum array bound in computing the maximum size of the record, at least in most simple cases. In any case it is a good idea to use a discriminant range that reflects the range of actual valid values.

8330-008 End positions of constructs now in ali file. The cross-reference information in the ALI file now includes all labels on END lines, and also marks the end of specs and bodies of tasks, subprograms, packages, protected types, blocks, loops, entries and accept bodies. This information is provided in the output from gnatxref.

8407-012 Objects and types distinguished by gnatxref. The cross-reference output by gnatxref distinguishes type and object entities (for example an entity is labeled as an "integer type" or "integer object", rather than simply being identified as "Type: integer" in both cases).

8409-001 Tree output can be forced with -gnatQ -gnatt. It is now possible to force tree output using a combination of the -gnatQ and -gnatt switches (it may also be appropriate to use -gnatq in this context). This allows the use of ASIS on some illegal programs, though if the error is severe enough to cause a malformed tree, ASIS may blow up when presented such a tree.

8411-002 Boolean types now distinguished by gnatxref. The cross-reference section of the ali file now distinguishes between boolean types and other enumeration types, and the gnatxref utility has been enhanced to take advantage of this new information and now distinguishes these types in the entity identification information.

8412-006 New option for gnatlink for object list file. The switch -f for gnatlink forces the generation of a separate file containing a list of objects for the linker, even if the threshold for command line length is not exceeded. This is useful to get around some cases of unexpectedly exceeding this limit (e.g. due to system environment issues that reduce the limit). The switch can only be used on targets for which linker object list files are implemented. In addition the limit for generation of such files on Tru Unix (Alpha) has been reduced to 10_000, since on some systems the previous limit (30_000) was too high.

8412-010 New file routines in GNAT.OS_Lib. A new routine has been added into GNAT.OS_Lib to rename a file. All routines dealing with files now have two implementations: one using the String type and one using an address to specify the filename. This is a general clean up to fix inconsistencies.

8413-005 Stream size now taken from first subtype. Previously GNAT was using the size of the base type to determine the number of storage units for use by stream routines for elementary types. This is now changed to meet the new recommendations of AI-195, which suggest using the size of the first subtype. GNAT now uses the size of the first subtype for this determination.

8420-006 New tasking run time under Solaris. Under Solaris Sparc, GNAT now comes with a new tasking run time based on posix threads (rts-pthread). This run time has the advantage of being mostly shared across all POSIX compliant thread implementations, and also provides under Solaris 8 the

semantics of PTHREAD_PRIO_PROTECT and PTHREAD_PRIO_INHERIT. The predefined Ceiling_Locking policy for pragma Locking_Policy is used to specify PTHREAD_PRIO_PROTECT, and a new implementation defined policy, Inheritance_Locking, can be used to specify the use of PTHREAD_PRIO_INHERIT.

8430-004 Enhanced style checking for references. For cases in which there is a separate body entity (packages, subprograms, entries, tasks, protected types, accept statements, subprogram formals), the switch -gnatyr now checks the casing of the body entity to make sure that it is the same as that of the spec entity.

8509-011 New package GNAT.Expect. This package provides a set of subprograms similar to what is available with the standard Tcl Expect tool, allowing you to easily spawn and communicate with an external process. You can use this package to send commands or inputs to the process, and compare the output with some expected regular expression.

8514-003 Improved error message for access discriminants. When declaring a self-referential structure as a limited record that contains a discriminated component that points to the enclosing record, a common mistake is to define the type of the component as having a discriminant with a general access type, rather than as a proper access discriminant. This results in an accessibility violation (RM 3.10.2 (21)). The new message indicates that the error is in the discriminant declaration itself.

8522-001 Solaris programs do not depend on libthread.so. On Solaris, for programs that do not use tasking, the generated executables no longer depend on libthread.so so that a link can be successfully completed without requiring this library to be present.

8526-003 RecordSize evaluated at compile time. In the case where the size of a record type is specified using a size representation attribute clause, the front end now folds the attribute reference at compile time. The result is still not a static expression, but the quality of code is improved, and in addition, representation clauses (such as component clauses) that require values and types to be statically known at compile time are permitted in additional cases as a result of this change.

ACT - Supported Platforms

From: dewar@gnat.com (Robert Dewar)

Date: 3 Feb 2002 06:11:58 -0800

Subject: Re: ACT announces availability of GNAT 3.14p

Newsgroups: comp.lang.ada

> I can understand the reason for limiting ACT's work to Windows NT .A compiler that works "reasonably well" in W98, XP or Me is never going to be used on those platforms for any serious work.

Lee is seriously confused here, ACT's work is of course not limited to these platforms. Since others may possibly share the same confusion, I should perhaps clarify.

For serious work using Ada 95, ACT provides a commercial implementation of Ada 95, GNAT Pro, on a very wide range of platforms including the following (list not complete):

Native Platforms: Windows 2000, Windows NT, Windows XP, Interix, Solaris, Solaris-x86, AIX, Tru64 (formerly Dec Unix), SGI Irix, SCO Unix, JVM (JGNAT), OpenVMS, HPUX, GNU-Linux (Redhat Linux and other versions).

Cross-Platforms: x86 Lynx, Power PC Lynx, 68k VxWorks, Ultrasparc VxWorks, PPC VxWorks, PPC VxWorks AE, Bare board, AAMP (the above with various hosts, including Solaris, NT) (the VxWorks based products are available directly from Wind River Systems under their WinDirect program).

High Integrity: GNAT HI-E (no run time), GNAT HI-E (Ravenscar profile), VxWorks-Cert.

The above list is not complete, but if you are interested in doing serious work in Ada 95 on any of these systems, or on systems not listed here, consult Ada Core Technologies directly for information (sales@gnat.com) including information on how to arrange for free evaluation systems, including full support.

We shortly expect to announce GNAT Pro version 3.15, which contains many new features, including a greatly extended capability for project management, and we will also announce a completely new powerful integrated development environment based on GTKAda technology.

The public versions are not intended at all for serious work, so we not only agree with Lee here, but we very much discourage the use of the public version of GNAT for serious mission critical work, since for one thing we discourage the use of unsupported software in such environments. They are intended for student and hobbyist use and we provide the most commonly used ports for this purpose. We also of course provide the sources, so we expect to see other versions of GNAT built (in the past volunteers have built ports for DOS, BSD Unix, Atari, NEXT, and all sorts of other machines), and indeed you see threads starting here already on building for Solaris x86, and AIX.

For those interested in working with the GNU project for generating interesting new Free Software, we would recommend that you get involved with the development of GNAT version 5 which is now part of the GCC project. This version of GNAT works with GCC 3.x and snapshots are available at gnu.org.

Robert Dewar, Ada Core Technologies

DDC-I - Sun Hosted DACS for 80x86/Pentium v.4.7.14

[From: "DDC-I Online News, December 2001, Vol. 2 Issue 10. -- dc]
URL: http://www.ddci.com/news_vol2num10.shtml

Sun Hosted DACS for 80x86/Pentium v.4.7.14 Now Available!

Part of DDC-I's commitment to our customers is to continue to offering improvements and enhancements to our products. With that in mind, we are delighted to announce this new release which offers many improvements and enhancements that we hope will be of value to each program using the DACS product line. The following is a list of some of the enhancements:

Error messages have been improved to also contain the nesting line information for errors/warnings detected inside generics or inlined routines. Also the source file names are written to the .err file to ease automatic positioning to where the error or warning were detected.

The number of elements in an array aggregate has been increased beyond the 32767 elements limit, so that there now is virtually no limit.

The tool version of the compiler is now recorded in the program library, so the proper compiler version is reported by the PLU.

The 32 bit target root libraries have an added procedure called Make_Trace that takes an optional string parameter and which produces a call trace at the place of the call in the same format as the trace from an unhandled exception.

The notation xx..xxxh or xx..xxxH (where x is a hex digit) is now allowed as a replacement for 16#xx..xxx#, if surrounded by spaces (or ending the command line) in most command contexts.

Objects found outside the immediate context (in the WITH context) will be reported found with their full names.

When displaying arrays the individual index values can be shown by setting the debugger variable `DBG_DISPLAY_INDEX` to TRUE. If the index values are enumeration values, their spellings are shown rather than their values (e.g. FALSE => ...)

Values of public objects (their addresses) may now be retrieved by using: `def mypub := "@MYPUBLIC"` The symbol 'mypub' can thereafter (if found) be used in address expressions.

The display of memory now assigns the first 10 values displayed to the debugger symbols `DBGRESULTx` (where x = 0..9). The values for the symbols may be used in subsequent commands.

If a target program requests input and no more input is available the user can send a CTRL-G and a new line, which will act as an EOF to the target program.

The assembler has been extended to recognize instructions up to and including the P4 processor, including MMX and XMMX registers.

The target linker may now handle 'split' segments that stretch over more memory sections.

The target linker may now produce its resulting binary file in ELF as an alternative to OMF386.

If a target program requires input over the serial connection it will now ask for a line at a time, instead of sending all the lines in one chunk. In this way synchronous target read is assured, and the loader complies with this.

For more information about this and other releases, contact DDC-I.

GrammaTech - Ada-ASSURED and Ada-Utilities released for Linux

From: kirk@grammatech.com (Kirk Macolini)
Date: 19 Dec 2001 06:21:08 -0800
Subject: Ada-ASSURED and Ada-Utilities released for Linux
Newsgroups: comp.lang.ada

GrammaTech announced that it has released new versions of its multi-purpose development tools, Ada-ASSURED and Ada-Utilities, running on Linux for the first time.

Ada-ASSURED and Ada-Utilities are language-based tools for editing, browsing, automatic standards and style enforcement, code analysis, and code transformation. Language-based Ada tools understand the rules and structure of the Ada programming language, to automate many tasks that most software engineers still perform manually with text-based tools.

Evaluation copies of Ada-ASSURED can be downloaded at:

<http://www.grammatech.com/products/aa/overview.html>

Evaluation copies of Ada-Utilities can be downloaded at:

<http://www.grammatech.com/products/au/overview.html>

Ada-ASSURED ensures consistent coding style, prevents syntax errors while editing, and provides numerous productivity features for writing and reviewing code. Available for Windows NT, most Unix platforms, and now Linux, it features WYSIWYG language-sensitive editing, automatic standards enforcement, high-quality pretty printing, and hypertext browsing in a single package that can be integrated with any Ada compiler.

Ada Utilities is a language-sensitive toolset for quality and standards auditing of whole Ada projects. It combines the power of Ada-ASSURED with tools for auditing, searching, and prettyprinting entire Ada projects.

The Linux versions of Ada-ASSURED and Ada-Utilities are currently available directly from GrammaTech, and will be available through Aonix in the first quarter of 2002.

Rational - Apex Embedded 4.0.0 for Sun Solaris to Motorola M68K Family

From: "Eddie Glenn"
<cav@Rational.Com>
Subject: Rational Apex Embedded for Rational Exec and Tornado 4.0.0 for Sun Solaris to Motorola M68K Family is available by FTP
To: "Apex Announcements" <apex-announcements@Rational.Com>

[Extracted from postings on Wed, 19 Dec 2001 and Fri, 21 Dec 2001. -- dc]

[In all Rational' URLs below, substitute <REL> by [/apex_cross/releases/sol/m68k](http://apex_cross/releases/sol/m68k) and <FTP> by [ftp://ftp.rational.com/public](http://ftp.rational.com/public) -- dc]

Product: Rational Apex Embedded for Rational Exec (rt) & Tornado (vw)
Version: 4.0.0 Platform: Sun Solaris to Motorola M68K Family URL: <REL>/rt/4.0.0 & <REL>/vw/4.0.0

This release is pending. Generally Available (GA) status as it goes through the final steps of the manufacturing process. We anticipate that this will be complete within the next 30 days. Once this release reaches GA status, it will be available for shipping. Until then, it is being provided on this FTP server for immediate access. Follow this link for Rational Apex for Rational Exec and Tornado download and installation instructions. [...] <FTP>/standard.msgs/install_instructions.html

Release Notes and Install Guide are located here:

[In these URLs, substitute <DOC> by <FTP>/apex_cross/documents/unix -- dc]

Rational Apex Exec 4.0.0 Release Note for Motorola 68K: <DOC>/Rexec/relnote.4.0.dir/rexec_relnote_68k/

rexec_release_noteTOC.html
 <DOC>/Rexec/relnote.rexec.68k.4.0.ps.Z
 Rational Apex Embedded for Tornado
 4.0.0 Release Note for Motorola 68K:
 <DOC>/VxWorks/relnote.4.0.dir/
 vxworks_relnote_68k/
 vxworks_release_noteTOC.html
 <DOC>/VxWorks/
 relnote.vxworks.68k.4.0.ps.Z

Ada and Linux

New Linux packages on www.gnuada.org

From: Jürgen Pfeifer
 <juergen.pfeifer@gmx.net>
Date: Fri, 7 Dec 2001 22:10:56 +0100
Subject: New RPMs uploaded
To: "GNAT Discussion List"
 <gnatlist@lyris.seas.gwu.edu>

<http://www.gnuada.org/rpms313p.html>
 has new RPM releases:

- Release 8 of GNAT-3.13p. This is mainly a fix for the build scripts. No changes to the binaries and libs.
- Version 1.2.4 of gvd.
- First release of the AUnit RPM (thank to Rolf Ebert).

If you want to author your own RPM packages for the ALT distribution, please note that there is now a short Intro how to setup the ALT buildsystem. Look at <http://www.gnuada.org/alt.html#AUTHORING>

From: Jürgen Pfeifer
 <juergen.pfeifer@gmx.net>
Date: Sat, 8 Dec 2001 21:58:21 +0100
Subject: More RPMs
To: "GNAT Discussion List"
 <gnatlist@lyris.seas.gwu.edu>

I've now uploaded new versions of adasockets and AWS to <http://www.gnuada.org/rpms313p.html>

AdaIC Press Release - Ada Expands into Linux Market

From: a Brandon@sover.net
Date: Thu, 31 Jan 2002 01:19:33 -0500 (EST)
Subject: [AdaIC] Press release on Ada & Linux
To: announce@adaic.com

We have put a press release on the AdaIC Website concerning a couple of recent news items that both related to using Linux. Please see it at <http://www.adaic.org/news/linuxmkt.html>
 URL: <http://www.adaic.org/news/linuxmkt.html>

Ada Expands into Linux Market

New York (LinuxWorld) - (Jan. 30, 2002) Two independent moves have both recently worked to expand Ada's position

in the Linux market, the Ada Resource Association announced today at LinuxWorld. First, GrammaTech released new versions of its Ada development tools to reside on the Linux operating system. Second, the GNAT Ada Database Environment (GNADE) project leader, Michael Erdmann, queried the Ada community for comments on its open source common application programming interface (API) for accessing a database management system with Ada 95 database objects. [See also earlier in this AUJ issue. -- dc]

GrammaTech's two multi-purpose development tools, Ada-ASSURED and Ada-Utilities, are now running on the Linux OS for the first time. Both Ada-ASSURED and Ada-Utilities are used for developing Ada software, from editing code to checking compliance with standards and guidelines. The tools automate many of the more tedious tasks that software engineers must hand code when using simple text processors. For more information, go to GrammaTech's website at <http://www.grammatech.com>. To evaluate, download it at <http://www.grammatech.com/products/aa/download.html>

In other Ada-in-Linux news, Michael Erdmann explained that the GNADE project stemmed from his own frustration over having no freely available tool with which to bind Ada 95 applications with those that are open source for Linux and other systems platforms: MySQL, PostgreSQL, etc. He recruited other interested parties to provide the tools and support packages to integrate seamlessly with Ada 95 in the following manner:

- * The source code is independent of the database control system.
- * The tool chain provides a migration path from other non-open source products to open source GNADE.
- * The application can use more than one database at a time. The GNADE project originated and remains firmly entrenched in the Ada for GNU/Linux Team.

The community project already provides two ways of working between an application and a Relational Multimedia Database System (RMDBS):

- * Using Open Database Connectivity (ODBC) and embedded SQL (Structured Query Language);
- * Using native Ada 95 bindings (e.g. MySQL and PostgreSQL).

In order to address those situations in which the ODBC interface cannot be used, the GNADE team decided to develop a common API for accessing an RMDBS for ODBC and all native database interfaces. Now that they have written a specification, they are actively

seeking comments from the Ada community on their work. "To move forward, the GNADE project depends entirely on the Ada community's input and energy," Erdmann said. "My experience with the on-line volunteers in the past make me feel assured that this next stage of developing Ada 95 database objects will be a success." For more information and to comment on the project, please see the GNADE project's home page, <http://gnade.sourceforge.net/>. To read about the newest Ada Database Objects, go to <http://gnade.sourceforge.net/ado.html>.

For more information, please write to or call Ann Brandon, Communications Director, Ada Resource Assoc., abrandon@sover.net, (802) 728-9947

Ada and Microsoft

Ada Bindings to Windows APIs

From: John Walker
 <john@jswalker.demon.co.uk>
Date: Fri, 7 Dec 2001 20:13:05 +0000
Subject: Intel-OA: WinAPI Version 4.1 Release 2 Upgrade
To: intel-objectada@sf.aonix.com

The following upgrade is released on www.jswalker.demon.co.uk/jswtech.htm
 Ada Binding to Win32 (WinAPI) Version 4.1 Release 2 Upgrade

It provides support for ImageHlp. Please let me know if you have any problems with it.

[See also same topic in AUJ 21.4 (January 2001), p.234. -- dc]

Communication with Excel

From: "Gautier Write-only-address"
 <gautier_niouzes@hotmail.com>
Date: Sat, 01 Dec 2001 07:42:22 +0000
Subject: Communication avec Excel (E/S)
Newsgroups: fr.comp.lang.ada

[Extracts translated from French: -- dc]

I'm looking for a way to communicate with Excel. [...] If someone has a small example? The goal is to read and write data in an open sheet in Excel. [...]

From: "Gautier Write-only-address"
 <gautier_niouzes@hotmail.com>
Date: Sun, 09 Dec 2001 20:32:01 +0000
Subject: Communication avec Excel (E/S)
Newsgroups: fr.comp.lang.ada

Good, I ended up making a mini-library DDE (and DDE.Excel) for these operations. The source code is available in [win_paqz.zip](http://www.mysunrise.ch/users/gdm/gsoft.htm), on the page <http://www.mysunrise.ch/users/gdm/gsoft.htm>.

AIDE - Ada Instant Development Environment for Windows

From: "stephane@rochebrune.org"
<stephane@rochebrune.org>
Date: Tue, 25 Dec 2001 19:26:47 +0100
Subject: Quelques questions...
Newsgroups: fr.comp.lang.ada

[Extracts translated from French: -- dc]
 Yesterday evening, I polished my "Ada Instant Development Environment" (sic) Gnat/GVD/GtkAda, always with the aim of proposing an instantaneous environment for Ada development on Windows NT4/2K/XP, available by a simple directory copy from a CD-ROM.

I am more particularly busy with:

- the aspect of "immediate installation" and from now on, if the copy of the repertory is carried out on C:, one does not even have to touch the environment variable containing the AIDE directory;
- on line help (INFO, HTML, etc);
- documentation all in PDF format;
- printing under Emacs;
- the integration of GVD;
- the integration of alibrowse, adadoc;
- a small FAQ for the beginners.

I propose two preconfigured IDEs:

- AdaGIDE (not to frighten the beginners and for those who will remain under Windows without requiring the power of Emacs);
- Emacs 21.1.1 + Ada mode/Glide 3.13p (for the experts and those who work multiplatform).

From: "stephane@rochebrune.org"
<stephane@rochebrune.org>
Date: Wed, 26 Dec 2001 12:30:30 +0100
Subject: Re: Quelques questions...
Newsgroups: fr.comp.lang.ada

> Brilliant - is there a "beta" version for consenting guinea-pigs?

Sure, contact me by email...

Moreover I spent yesterday to patch AdaGIDE so that it does no longer depend on the registry but only on a single environment variable ADA_ROOT.

The installation procedure is now (extract from the README):

Rapid installation

- 1) Copy directory \iade from cdrom in c:\iade;
- 2) Copy c:\iade*.bat in c:\winnt;
- 3) Copy c:\iade*.lnk to desktop;

The installation is finished.

Personalized installation in z:\my_dir

- 1) Copy directory \iade from cdrom in z:\my_dir;
- 2) In z:\my_dir\setada.bat, modify ADA_DISK=z: and ADA_PATH=\my_dir;
- 3) Copy z:\my_dir*.bat in c:\winnt;
- 4) Copy z:\my_dir*.lnk to desktop, update properties of these .lnk;

The installation is finished.

I plan to make a small GtkAda program to automate this "enormous task". [...]

From: "stephane@rochebrune.org"
<stephane@rochebrune.org>
Date: Sun, 06 Jan 2002 16:25:52 +0100
Subject: Lisezmoi et installation AIDE version 0.50
Newsgroups: fr.comp.lang.ada

A link to allow you to get an idea of AIDE (Ada Instant Development Environment) for Windows...

<http://ouvaton.org/rochebrune/stephane/computing/ada/aide-presentation-0.50.zip>

I hope to get some comments... I am also looking for a place to put this distribution on the net.

AdaGIDE 6.43.1 - Ada GUI IDE for Windows 95/98/NT/...

From: "Gautier Write-only-address"
<gautier_niouzies@hotmail.com>
Date: Thu, 24 Jan 2002 17:44:37 +0000
Subject: AdaGIDE 6.43.1 release (Ada GUI IDE for Windows 95/98/NT/...)
Newsgroups: comp.lang.ada

AdaGIDE 6.43.1 release (Ada GUI IDE for Windows 95/98/NT/...)

AdaGIDE (the Ada GNAT Integrated Development Environment) is an interface to the GNAT compiler featuring a color context-sensitive editor and code reformatter. It runs on Windows 95, 98, ... and Windows NT, ... series.

Main improvements in AdaGIDE 6.43.1 compared to version 6.26 which comes with GNAT 3.13p: spell-checker, automatic suggestion of filename on save, support for multiple debuggers, drag-and-drop for files, updated options dialog.

Note that AdaGIDE is again compatible with Windows 95. AdaGIDE is available at the following web site:

http://www.usafa.af.mil/dfcs/bios/mcc_html/adagide.html

Martin (1) & Gautier (2)

- 1) <http://www.usafa.af.mil/dfcs/bios/carlisle.html>
- 2) <http://www.mysunrise.ch/users/gdm/index.htm#Ada>

On GNAT under Windows XP and CE

From: dewar@gnat.com (Robert Dewar)
Date: 3 Feb 2002 06:18:27 -0800
Subject: Re: ACT announces availability of GNAT 3.14p
Newsgroups: comp.lang.ada

> So IMO ACT does it well. I believe there should be no big problems with using GNAT [3.14p] under XP.

GNAT Pro version 3.15 works just fine under XP, and we consider XP to be a fully supported target. It may be the case that 3.14p works fine on XP, we just don't know since we have never tried, so we don't like to make guesses. One person at ACT tried it briefly and it seemed to work, but that's as far as we have gone. This is just a matter of timing, XP was not around when 3.14 was being developed, but XP is reasonably compatible with NT in practice.

[See also "ACT - Supported Platforms" earlier in this AUJ issue. -- dc]

> What I would wish, is GNAT for Win CE, but I also understand the reasons why ACT does not support it.

The reason is pretty simple, we never had a potential customer seriously interested in this target (it is not a hard port to do, and I guess the fact that no volunteer did it yet means there is not much interest in the hobbyist arena for this port either). Certainly there are many systems for which GNAT could easily be ported if there is interest (we just heard that the port Jim Hopper is doing for Mac OS/X is coming along very nicely), and some interesting new ports of GNAT Pro will be appearing soon from Ada Core Technologies.

Robert Dewar, Ada Core Technologies

File Header Dump Program for Windows

From: "Sune Falck"
<Sune.Falck@telia.com>
Date: Wed, 6 Feb 2002 20:33:18 +0100
Subject: Re: Intel-OA: Object/executable file contents
To: "Aonix List" <intel-objectada@sf.aonix.com>

> Is there any place that describes the contents/layout of .OBJ or .EXE files? I have to compare executables and binaries compiled on different machines. I can look at the HEX contents of these files, and note differences in words 4, 5, 6. [...]

There is a file header dump program with sources at Jerry's Ada on Win32 Page <http://users.ncrvnet.nl/gmvdijk/packages.html#FILEINFO>

"A PE format file info utility. On Win95/98/NT systems the .exe and .dll

files conform to a Microsoft defined and COFF like Portable Executable format. The fileinfo utility dumps the most important information about such a PE format file to standard output."

There is also an utility dumpbin supplied with ObjectAda

References to Publications

Springer Publishes Consolidated Ada Reference Manual

URL: http://www.springer.de/cgi-bin/search_book.pl?isbn=3-540-43038-5

Taft, T.S., and Duff, R.A., AverCom Corporation, a Titan Company, Burlington, MA, USA; Brukardt, R.L., AXE Consultants, Madison, WI, USA; Ploedereder, E., University of Stuttgart, Germany (Eds.)

Consolidated Ada Reference Manual. Language and Standard Libraries. International Standard ISO/IEC 8652/1995(E) with Technical Corrigendum 1. 2001. XXV, 560 pp. Softcover. 3-540-43038-5

This consolidated version of the Ada Reference Manual enhances the International Standard ISO/IEC 8652:1995(E) for the programming language Ada by incorporating the Technical Corrigendum 1 approved by ISO in February 2001. The Technical Corrigendum 1 lists the individual changes that need to be made to the text of ISO/IEC 8652:1995(E) to correct errors, omissions or inconsistencies. The enhanced Ada Reference Manual presents and updates the International Standard for Ada in a user-friendly way and thus will replace the former version as an indispensable working companion for anybody using Ada professionally or learning and studying the language systematically.

Keywords: Ada, Ada Programming, Programming Languages, Distributed Systems, ReactiveSystems, Real-Time Systems, Object-Oriented Programming, Systems Security, Safety, Software Engineering, Systems Design, Exceptions, Compilation

Series: Lecture Notes in Computer Science. Vol. 2219.

Last update: 19.02.2002 [...]

Springer-Verlag Heidelberg, Tiergartenstr. 17, D-69121, Heidelberg, Germany, phone +49 6221 487 0 [...]

New Books in French

From: Lionel Draghi
<Lionel.Draghi@free.fr>

Reply-To: ada-france@ada-france.org
Date: Mon, 26 Nov 2001 23:05:18 +0100
Subject: Nouveaux livres
To: ada-france@ada-france.org

[Extracts translated from French: -- dc]

Two new books in French about (or with) Ada 95 have been published this fall, see: http://www.eyrolles.com/php.informatique/Ouvrages/liste_ouvrages.php3?noeud_id=121200&xd=74a1e0cc31787ebce80db4341615185b

[From that URL: -- dc]

"Initiation et auto-formation à la programmation informatique", G.Canesi, R.Suc, Ellipses, November 2001, 288 pages, French [...]

"Ada 95 - Orientation objet, structures de données et algorithmes", P.Gabrini, De Boeck, September 2001, 672 pages, French [...]

List of French Ada Books

From: "Gautier Write-only-address"
<gautier_niouzes@hotmail.com>
Date: Fri, 28 Dec 2001 00:58:08 +0000
Subject: Re: Bouquin
Newsgroups: fr.comp.lang.ada
<http://www.adalog.fr/biblio1.htm>

Information on HOOD Method

From: "Jean-Pierre Rosen"
<rosen@adalog.fr>
Date: Tue, 27 Nov 2001 14:06:26 +0100
Organization: Adalog
Subject: Re: UML & Ada
Newsgroups: comp.lang.ada

> I wish I could find more information about HOOD [...]

Did you have a look at www.hood-method.org? If you don't get enough information from there, you are welcome to get in touch directly with me.

DDC-I Online News

[See elsewhere in this AUJ issue for selected items. -- dc]

From: JC <jcdk@ddci.com>
Date: Wed, 28 Nov 2001 11:46:11 -0700
Subject: Real-Time Industry Updates - News from DDC-I
To: Z8dk-Nov 2001 Online News
<jcdk@ddci.com>

DDC-I Online News November 2001, Vol. 2, Num. 9 A monthly news update dedicated to DDC-I customers & registered subscribers.

This Month:

- * Agile Methods: What's it All About? An introduction of some hot software topics including pointers to learn more.
- * Tech Talk: Explore some examples on how to use SCORE, DDC-I's multi-

language development environment, to build a program which consists of both Ada and C sources with the main program in C.

[...] For the complete newsletter, go to http://www.ddci.com/news_vol2num9.shtml [...]

From: JC <jcdk@ddci.com>
Date: Thu, 20 Dec 2001 12:55:28 -0700
Subject: Real-Time Industry Updates - News from DDC-I
To: A9 Dec2001 Online News DK
<jcdk@ddci.com>

DDC-I Online News December 2001, Vol. 2, Num. 10 A monthly news update dedicated to DDC-I customers & registered subscribers.

This Month:

- * New Release - DACS v.4.7.14 Now Available! Check out the list of enhancements for the latest release of the Sun hosted DDC-I Ada Cross Compiler System for Intel 80x86/Pentium (DACS-80x86 v.4.7.14)!
- * The Benefit of Frequent, Small Meetings. This independent consultant shares proven examples of a very important component in "results oriented" software development methods.
- * Tech Talk: Displaying Information About Ada Library Units in SCORE. This technical article describes how the comand list_unit in SCORE (Safety Critical Object-oriented Real-time Embedded) is used to display information about the Ada compilation units which have been compiled into a program library.

[...] For the complete newsletter, go to http://www.ddci.com/news_vol2num10.shtml [...]

From: JC <jcdk@ddci.com>
Date: Wed, 30 Jan 2002 15:07:57 -0700 (MST)
Subject: Real-Time Industry Updates - News from DDC-I
To: B9DK Jan 2002 Online News
<jcdk@ddci.com>

DDC-I Online News January 2002, Volume 3, Number 1 A monthly news update dedicated to DDC-I customers & registered subscribers.

This Month:

- * Learning and Remembering: Tell me a Story! This article offers proven tips for the software community on using stories and metaphors to teach patterns and to help developers remember them.
- * Tech Talk: Notes on TADS Interrupt Types. This tech note defines three methods of implementing interrupts using the Tartan Ada Development System (TADS).

[...] For the complete newsletter, go to http://www.ddci.com/news_vol3num1.shtml [...]

Ada Distilled - Online Book

From: Richard Riehle

<richard@adaworks.com>

Date: Mon, 07 Jan 2002 18:35:11 -0800

Organization: AdaWorks Software

Engineering

Subject: Ada Distilled -- Announcement

NewsGroups: comp.lang.ada

David Botton has recently posted a PDF version of my little book, Ada Distilled, on the adapower web site.

Ada Distilled is intended as a quick start entry into Ada for programmers who already know some other language. It is not as comprehensive as the excellent book by Norm Cohen, but many of my students, in industry and in graduate school, have found it to be a good supplement to learning Ada.

Anyone who wants to use this book for whatever purposes, commercial training, university education, or whatever, is welcome to download it and reprint it, as long as they include the credits given within the book to the author and other contributors.

I update the book from time using input and feedback from those who have been using it. I welcome any comments anyone might have. Ultimately, I hope it will be a useful book for a wider audience.

It is my intention to keep the book to around 100 pages. Each time I add something, I find it necessary to rearrange other material. There is a little deliberate redundancy here and there, so I know I can add new material now and then without turning it into a heavyweight volume.

Some of the programs and examples are in color. If you print it with a color printer, you will find that helpful. It includes an annotated version of Ada.Text_IO. I plan to continue to annotate some of the Ada library packages with each revision of the book.

Hope it is helpful to some of you.

AdaIC Mirrors of Online Ada Books

From: "Technical Webmaster"

<Webmaster@adaic.com>

Date: Sat, 12 Jan 2002 19:18:58 -0600

Subject: [AdaIC] A new book by Richard Riehle is now available

To: <Announce@adaic.com>

Ada Distilled is a new on-line book by Richard Riehle. The book is aimed at experienced programmers who want to

learn Ada at the programming level. It summarizes some key features of the Ada language that are essential for getting started. It is a quick-start book, one that enables the experienced programmer to get into the Ada language quickly and easily. See it at <http://www.adaic.org/docs/distilled/adadistilled.pdf>.

In a related development, the AdaIC is now a mirror for the book by John English, Ada95: The Craft of Object Oriented Programming. The book can be downloaded and browsed directly from the AdaIC site. To browse the book, look at <http://www.adaic.org/docs/craft/html/contents.htm>.

To see all of the on-line textbooks, look at [<http://www.adaic.org/free/freebook.html>]

Randy Brukardt, Technical co-Webmaster

Ada Success Story in IEEE Software Magazine

From: rod@praxis-cs.co.uk (Rod Chapman)

Date: 8 Jan 2002 03:16:41 -0800

Subject: ANNOUNCE: Ada success story in IEEE Software

NewsGroups: comp.lang.ada

Those of you who are interested in Ada success stories might be interested to see this month's IEEE Software Magazine (Jan/Feb 2002) at www.computer.org/software.

We have an article in this issue "Correctness by Construction: Developing a Commercial Secure System" that describes our development of the MULTOS CA system - a highly secure, distributed, fault tolerant certification authority. A significant proportion of the system is constructed using Ada95 and SPARK95. [...]

[See also "UK / Praxis CS - MULTOS Certification Authority for Smart Cards" further in this AUJ issue. -- dc]

Rod Chapman, SPARK Team, Praxis Critical Systems

From: rod@praxis-cs.co.uk (Rod Chapman)

Date: 6 Feb 2002 02:10:42 -0800

Subject: Re: ANNOUNCE: Ada success story in IEEE Software

NewsGroups: comp.lang.ada

PDF of this article is now available free of charge at www.sparkada.com under "Publications". [...]

Guidelines for Choosing A Computer Language

From: dennison@telepath.com (Ted Dennison)

Date: 21 Jan 2002 07:09:54 -0800

Subject: Re: I need your experience - classification and comparison of languages

NewsGroups: comp.lang.ada, comp.lang.beta, comp.lang.c++, comp.lang.clos, comp.lang.cobol

> I am writing a small report about "Object oriented languages and their public implementations" for a course in Software Engineering. I am trying to classify and compare different OO languages. [...]

You should definitely look at "Guidelines for Choosing A Computer Language: Support For The Visionary Organization 2nd Edition" by Patricia K. Lawlis (<http://archive.adaic.com/docs/reports/lawlis/content.htm>)

Multiple Inheritance in Ada95

From: Preben Randhol

<randhol@pvv.org>

Date: Wed, 6 Feb 2002 18:53:13 +0100

Organization: PVV

Subject: Re: Multiple inheritance in Ada95

To: "GNAT Discussion List"

<gnatlist@lyris.seas.gwu.edu>

> Can somebody show me a simple example of multiple inheritance in Ada95?

<http://www.adapower.com/rationale/rat95-p2-4.html> [The chapter on Object Oriented Programming from the Ada95 Rationale. -- dc]

<http://www.adapower.com/lang/interface.html> [Ed Falis explains a method of programming multiple-inheritance in Ada to implement Interfaces.]

Perhaps also of interest: <http://www.adapower.com/alg/mediator.html> [Matthew Heaney describes the Mediator Pattern.]

[See also "Multiple Inheritance" in AUJ 22.1 (March 2001), p.18. -- dc]

From: Francois Godme

<fgodme@bigfoot.com>

Date: Wed, 06 Feb 2002 23:17:21 +0100

Subject: Re: Multiple inheritance in Ada95

To: "GNAT Discussion List"

<gnatlist@lyris.seas.gwu.edu>

Wait for Ada 2005 where multiple interface inheritance will be introduced.

As for full multiple inheritance, it never existed. Full multiple inheritance implies that the derived class is deriving several classes at the same time *and* that the resulting class can be a substitute simultaneously for each class it derives of. The second part of the sentence is simply not true.

Java

Ada and Java Interoperability

From: Stephen Leake

<stephen.a.leake.1@gsfc.nasa.gov>

Date: 08 Dec 2001 12:48:46 -0500

Organization: NASA Goddard Space Flight Center

Subject: Re: Java Bindings

Newsgroups: comp.lang.ada

> Just finished a Java class. Curious as to whether or not anyone has written a binding so that Ada can talk to Java and pass data.

Since Java is normally interpreted by the JVM, and Ada is normally compiled to machine code, it is not possible to have a normal binding.

However, there are several options. If you want to write Ada code that runs on a JVM, and uses all the Sun-defined Java classes, just use an Ada compiler that targets the JVM (JGNAT or ObjectAda for Java). There are also utilities that let you call native Ada code from Java/JVM code.

> If so, what is the URL.

JGNAT: <ftp://cs.nyu.edu/pub/gnat/jgnat>

ObjectAda: <http://www.aonix.com/> (search for "ObjectAda Java")

Native Ada from Java: don't remember, can't find it.

From: James Rogers

<jimmaureenrogers@worldnet.att.net>

Date: Sat, 08 Dec 2001 20:08:34 GMT

Subject: Re: Java Bindings

Newsgroups: comp.lang.ada

> Native Ada from Java: don't remember, can't find it.

Following the JNI (Java Native Interface) rules, you would need to create a C program as a wrapper to call the Ada library. The C wrapper must be compiled as a DLL (WIN32) or Shared Object (Unix, Linux).

The C wrapper must include the C header file generated by the javah program based upon the Java "wrapper" class defining the Java view of the method(s) to be called.

The Java view of interfacing to other languages is that the other language must perform all the conversions to Java. Java remains ignorant of other language issues. For instance, there is NO Java equivalent to Ada's Convention parameter to the Ada Import statement. [...]

Jim Rogers, Colorado Springs, Colorado USA

From: "Marc A. Criley"

<mcqada95@earthlink.net>

Date: Fri, 21 Dec 2001 02:00:51 GMT

Organization: Quadrus Corporation

Subject: Re: Ada vs Java performance testing...

Newsgroups: comp.lang.ada

> [...] you can import Java classes and Objects into Ada code using it, including Java3D. [...] Has anyone done this?

Oh yes. I've built a whole GUI based on the Swing components, both using and extending them, utilizing both classes and interfaces. (JGNAT comes with a pre-canned set of bindings for JDK 1.2 and a tool to auto-generate an Ada binding from any Java class.) [...]

Marc A. Criley, Senior Staff Engineer, Quadrus Corporation, www.quadruscorp.com

JGNAT Users

From: "Torben Hoffmann"

<Torben.Hoffmann@motorola.com>

Date: Fri, 7 Dec 2001 12:42:42 +0100

Organization: Motorola

Subject: JGNAT users

Newsgroups: comp.lang.ada

I was wondering if anyone is actually using JGNAT and, if so, if they have made a web-page or some other documentation of their deeds.

I am contemplating using JGNAT instead of Java since I am less than satisfied with the software engineering level in Java compared to Ada - especially maintainability and the ability to return to some code after a while and actually "get into to" fast are important issues for me.

From: "Marc A. Criley"

<mcqada95@earthlink.net>

Date: Fri, 07 Dec 2001 12:40:31 GMT

Organization: Quadrus Corporation

Subject: Re: JGNAT users

Newsgroups: comp.lang.ada

[...] I used JGNAT 1.1p quite heavily for awhile to build the client, GUI-oriented portion of an application. While the effort was successful - it runs and works well - I did have to work around some problems and idiosyncracies of JGNAT.

Mind you, I did not have problems with approach taken by JGNAT to implement things like interfaces and inheriting from Java classes, but I did have some problems with the compiler. A few months ago in this newsgroup I characterized JGNAT 1.1p as almost, but not quite, production quality. There were certain constructs that JGNAT did not handle well, such as (as I recall from last spring) functions returning unconstrained arrays.

There was nothing show-stopping, but you did have to code around such situations. I was hoping that there would be a new public release addressing these problems (I did submit several error reports to ACT), but nothing has turned

up yet. (And for a one-person effort, commercial support isn't an option.)

My take on using JGNAT is that if it's something relatively small, or if you're willing to be a technology explorer, go ahead with it. [...]

From: "Rob Veenker"

<veenker@xs4all.nl>

Date: Fri, 7 Dec 2001 17:15:46 +0100

Subject: Re: JGNAT users

Newsgroups: comp.lang.ada

I am using the supported version of JGNAT in order to be able to reuse code that should run on Windows NT and on a PDA running a JVM. I have implemented a communications application that connects ruggedised PDA's to our main application. By using JGNAT I only needed to change a few Ada package bodies specific to the JVM environment :-). Nearly all of the problems I found are fixed already in the wavefront version. My compliments to the ACT people !

[On Marc Criley's experiences with the public JGNAT version: -- dc]

I can't comment on the public version of JGNAT, but I don't feel the supported version is that restrictive :-). I assume this technology will also become available in the public version. [...]

[See also "Netherlands - JVM on PDA to Drive Communications Radio" in AUJ 22.1 (March 2001), p.19. -- dc]

Rob Veenker, Dutch Ministry of Defense, RNLA/DMKL/C3I/C2 Support Centre

From: Richard Riehle

<richard@adaworks.com>

Date: Fri, 07 Dec 2001 09:06:37 -0800

Organization: AdaWorks Software Engineering

Subject: Re: JGNAT users

Newsgroups: comp.lang.ada

One of our graduate students at Naval Postgraduate School, a Major in the U.S. Marine Corps, used JGNAT as part of his Master's Degree thesis to create a GUI interface to a Computer Aided Prototyping System (CAPS). There was one problem with the tasking model in the current JGNAT which ACT promise to fix someday. We did a workaround on that. The GUI runs quite well over the JVM.

Since that student graduated, one of our other professors is using this GUI in his class on real-time systems. Eventually, another graduate student will take over the system and enhance it as part of a thesis for his/her master's degree in computer science.

From: "Marc A. Criley"

<mcqada95@earthlink.net>

Date: Sat, 08 Dec 2001 21:33:38 GMT

Organization: Quadrus Corporation

Subject: Re: JGNAT users

Newsgroups: comp.lang.ada

If the supported version of JGNAT becomes the public version at some point, it sounds like the problems I had with it will no longer be a factor to have to work around. I'm very to glad to hear of your positive experience.

Ada Inside

USA / AdaIC - Secondary Web Site

*From: Randy Brukardt
<Randy@rrsoftware.com>
Date: Tue, 4 Dec 2001 18:06:39 -0600
Subject: Re: AdaIC Website revamped
To: team-ada@acm.org*

[...] The primary site (<http://www.adaic.org>) runs on a commercial hosting site, because we (the TPPB) wanted connectivity and reliability that we couldn't afford to build ourselves. That limits the use of items beyond HTML and scripting.

The secondary site (<http://www.adaic.com>) and the archive site (<http://archive.adaic.com>) [the archives contain all of the stuff from the old site that we haven't reviewed or updated] run on a yet-to-be-named server that's part of a product-in-development that may or may not ever see the light of day. It's all in Ada, currently based on the Claw sockets library, and was designed for security and reliability. Thus, it doesn't do anything fancy at all, just serves pages and directories. So far, it hasn't failed since the site has been on-line. It has occasionally raised an exception (most commonly Use_Error - I haven't figured out why), which it just logs and keeps on running.

Several people have asked me to make the source available, which I may do if I get some time to make a version for distribution (I don't want to provide the exact configuration of our particular server to possible crackers).

Some of the content (including the Ada Reference Manual and the Ada 95 Certified Processors List) are created with Ada programs that generate HTML.

So, most of the site is running on Ada already. If possible within our budget, we'll do that for new features as well.

Randy Brukardt, co-webmaster

*From: Thomas W Moran
<Saratogans@aol.com>
Date: Fri, 7 Dec 2001 15:46:38 EST
Subject: Re: AdaIC Website revamped
To: team-ada@acm.org*

The server started life based on smplsrvr (on adapower under "simple Claw web server"), though of course Randy has added a great deal of functionality.

Finding dead links was assisted by Finder (on adapower under "Finder").

Tom Moran, tmoran@acm.org

USA / LLNL - National Ignition Facility Laser

*From: "John P. Woodruff"
<woodruff1@llnl.gov>
Date: Tue, 4 Dec 2001 16:22:29 -0800
Subject: Re: AdaIC Website revamped
To: team-ada@acm.org*

The AdaIC web site might reasonably mention the National Ignition Facility laser, under construction at Lawrence Livermore National Lab: <http://www.llnl.gov/nif/>.

Our Integrated Computer Control System is 70% Ada95 (with user interface in Java accounting for most of the remainder). Controls are described at <http://www-lasers.llnl.gov/nif/ICCS/index.html>.

The software is distributed over some 350 computers using CORBA. It is roughly half written with about 400 KSLOC's presently in hand.

We reported early results at SigAda 98 "A Large Distributed Control System Using Ada in Fusion Research" [available online at <http://www.acm.org/sigada/conf/sa98/papers/woodruff.pdf> -- dc], and recently presented a collection of papers at the 8th International Conference on Accelerator and Large Experimental Physics Control Systems. <http://icalepcs2001.slac.stanford.edu/>

Folks here are succeeding with our milestones, in part because Ada does support our requirements.

John Woodruff, Lawrence Livermore National Lab, 925 422 4661

World-wide - "Ada at Work" Articles on AdaIC

*From: Randy Brukardt
<Randy@rrsoftware.com>
Date: Tue, 4 Dec 2001 18:47 -0600
Subject: Re: AdaIC Website revamped
To: team-ada@acm.org*

Ann [Brandon] has posted a variety of new "Ada at Work" articles in the last few years. Some of them are listed in the "What's New" page on the [www.adaic.com] site (click on the "What's New" button), and others can be found through the "What's New" page on the archive site (<http://archive.adaic.com/whatsnew.html>). [...] There probably are some newer ones not listed on either of those pages.

I know Ann is interested in projects using Ada, so feel free to tell her about them.

Australia - Spaceflight Avionics Software on FedSat-1 Microsatellite

*From: Alan Brain
<abrain@auspace.com.au>*

*Date: Mon, 10 Dec 2001 10:34:58 +1100
Subject: FedSat/Ada-95 Metrics Freeware
To: team-ada@acm.org*

[...] Basically, we're at the finishing-up stage of development for the Spaceflight Avionics Software on FedSat-1, a scientific research minisat being developed on a shoestring budget. For my sins, I'm the leader of the on-board software team. [...]

For details on FedSat, see <http://www.crcss.csiro.au/engin/fsdetail/bus.html> <http://www-ssc.igpp.ucla.edu/personnel/russell/papers/FEDSAT/> and others.

Environment (for those interested) is an unsupported version of GNAT running on the open source RTEMS, on an ancient ERC-32 processor at the glacial speed of 8 MHz. It's running 5 different complex experiments (GPS propagation Ionosphere research, Star Camera, Ka-Band Comms/Mail forwarding, High Performance Computing Experiment using PGAs, Newcastle Magnetometer), plus communicating with a COTS Attitude Control System from Dynacon, Canada. This last only added to the requirements about 1 month ago.

The Mass Memory system uses a different memory-map from the rest, too. Addresses 0, 1 are valid, 2 and 3 aren't, 4 and 5 are valid... and of course we have bank-switching issues, only 4 MB of it (8 MB of addresses) is visible at a time. Much of the hardware was made by SIL when it was going bust, so was incomplete, undocumented, or just plain shoddy. And the "software emulator" of the unfinished system was capable of simulating no more than 2.7 secs of real-time - not enough to complete the boot sequence!

Fortunately, Ada has come to our rescue on numerous occasions. For example, on the Engineering Model using code executed for the first time, it took less than 2 hours to deduce a hardware failure (stuck bit) in the mass-storage memory, whose only symptom was the failure of a complex remote code-patching function on untested payload hardware. Had we been programming in C++, we'd still be poring over the code trying to find the bug that wasn't there - or examining the new hardware, logic probes in hands. [...]

*From: Alan and Carmel Brain
<aebrain@austrarmetro.com.au>
Date: Thu, 31 Jan 2002 19:20:41 +1100
Subject: Re: derived types
To: team-ada@acm.org*

[...] BTW today was my last day working as leader of the On-Board Software Development on FedSat (Australia's First R&D Satellite in 25 years). That's the trouble with Ada - the software works reliably first time, and the developers are out of a job till the next project comes along: there's almost no maintenance

effort compared with the initial development.

USA / Lockheed Martin - Joint Strike Fighter (JSF) Aircraft

From: "Ann S. Brandon"

<abrandon@sover.net>

Date: Fri, 04 Jan 2002 15:18:05 -0500

Subject: [AdaIC] News release on Ada contract

To: announce@adaic.com

Green Hills Software, Inc., announced that Lockheed Martin will be using Green Hills' INTEGRITY real-time operating system (RTOS) and AdaMULTI(r) 2000 software development tools to develop software for its Joint Strike Fighter (JSF) aircraft. Lockheed Martin's design for the JSF was selected by the Department of Defense (DoD) in a \$200 billion award, the largest in US DoD history.

[See also "Green Hills Software - INTEGRITY RTOS and AdaMULTI SDE Selected for F-35 JSF" in AUJ 22.4 (December 2001), pp.208-209. -- dc]

To read the rest of the press release, please look on <http://www.adaic.org/> under "Ada in the News" for "Green Hills AdaMULTI for F-35." [...]

Ann Brandon, Editor and co-Webmaster

From: Tom Timberlake

<thomas.c.timberlake@boeing.com>

Date: Fri, 4 Jan 2002 14:32:46 -0800

Subject: Re: [AdaIC] News release on Ada contract

To: team-ada@acm.org

> My understanding is that most of this code is already written (since there were prototypes) and that over 90% of the code for the JSF is in Ada.

This is not correct, at least from the Boeing perspective. The prototype aircraft (two each from Boeing and Lockheed) had basic flight control and navigation capability, but none of the mission-capable avionics and weapon delivery suites -- and these capabilities represent over 90% of the code. The Boeing plan was to migrate a lot of Ada code from F-22 -- one would presume that Lockheed plans to do the same.

Tom Timberlake, The Boeing Company, Phantom Works Software, P.O. Box 3707, Mail Stop 4A-25, Seattle, WA. 98124-2207, USA

From: "stephane@rochebrune.org"

<stephane@rochebrune.org>

Date: Sat, 05 Jan 2002 14:39:28 +0100

Subject: Re: [Fwd: Re: [AdaIC] News release on Ada contract]

To: ada-france@ada-france.org

[Extracts translated from French: -- dc]

For those who are not familiar with the aerospace world, the JSF is *the* world's military aerospace contract of the first

half of the 21st century (seriously). Besides, it's a strategic problem of collecting resources for the European airframe manufacturers, because it is also intended for the European market. [...]

It will probably be one of the most produced planes of its category, low estimates being more than 3000 copies. Taking into account the unit costs and average volumes in this activity, it is *enormous*. Hence the importance of the event for Ada. [...]

UK / Praxis CS - MULTOS Certification Authority for Smart Cards

From: rod@praxis-cs.co.uk (Rod Chapman)

Date: 8 Jan 2002 03:16:41 -0800

Subject: ANNOUNCE: Ada success story in IEEE Software

Newsgroups: comp.lang.ada

[See also "Ada Success Story in IEEE Software Magazine" earlier in this AUJ issue. -- dc]

[...] We have an article in this issue "Correctness by Construction: Developing a Commercial Secure System" that describes our development of the MULTOS CA system - a highly secure, distributed, fault tolerant certification authority. A significant proportion of the system is constructed using Ada95 and SPARK95.

It's the kind of system where most people would not even consider Ada, but we found its use to be a significant factor in the success of the project. The final system achieved 0.04 defects per kloc (that's 4 defects in 100,000 lines of code) post- delivery, which compares favourably with industry norms.

Rod Chapman, SPARK Team, Praxis Critical Systems

From: rod@praxis-cs.co.uk (Rod Chapman)

Date: 8 Jan 2002 09:45:06 -0800

Subject: Re: ANNOUNCE: Ada success story in IEEE Software

Newsgroups: comp.lang.ada

[In response to "Why would most people not even consider Ada?": -- dc]

Mainly because it's an industry sector (banking) where the benefits of more rigorous software engineering approaches are not that widely recognized. There's also some belief going around that you can't build large, distributed applications in anything other than C++, Java, CORBA, ObjectWibble## etc. etc. these days... The CA is actually written in a combination of C++, Ada95, SPARK95, C and SQL, and it all fits together very well. Please read the article for more details.

From: rod@praxis-cs.co.uk (Rod Chapman)

Date: 17 Jan 2002 00:49:44 -0800

Subject: Re: ANNOUNCE: Ada success story in IEEE Software

Newsgroups: comp.lang.ada

Please see <http://www.sparkada.com/downloads/iccc2001.pdf> or <http://www.sparkada.com/downloads/ChapmanSigAda2000.pdf> for some overview of the MULTOS CA system.

USA / Pratt & Whitney - Commercial Jet Engine Certified With Aonix ObjectAda/Raven

URL: http://www.aonix.com/content/news/pr_1.24.02g.html

Press Release: Pratt & Whitney Certifies Engine to DO-178B Level-A With Aonix(r) ObjectAda(r)/Raven

Boulder, Colorado, January 24, 2002. Aonix, a member of the Gores Technology Group and a leading provider of Ada 95 software development environments and safety critical solutions, has announced that Pratt & Whitney has successfully certified its newest commercial jet engine, the PW6000, using the ObjectAda(r)/Raven run-time system.

The Pratt & Whitney certification was achieved at software Level-A of RTCA's DO-178B, Software Considerations in Airborne Systems and Equipment Certification. Certification to DO-178B requires that all COTS software included in the product be certified to the same standard as the core product. ObjectAda/Raven meets this standard for Level-A systems.

Pratt & Whitney incorporated the full suite of lifecycle artifacts provided by Aonix within the overall engine-system software documentation set approved for certification by the Federal Aviation Administration. By utilizing the ObjectAda/Raven product and associated documentation, Pratt & Whitney was able to focus development efforts on its core competency of engine-system software, while ensuring that the run-time system portion of the product was developed and verified by experts in that domain. This approach reduced the schedule and technical risks associated with the program while also reducing development cost.

Pratt & Whitney selected the ObjectAda/Raven product for use on the PW6000 in 1998 following an extensive evaluation. Aonix was selected for a variety of reasons including the usability of the tool set and the technical support that they were able to provide, states Bret Lynch, Manager, Real Time and Embedded Software for Pratt & Whitney.

The main discriminator, however, was the safety-critical domain experience of the company and their ability to meet the standards required for incorporation into a DO-178B Level-A software system.

Aonix is the leading supplier of certified (i.e., certifiable) run-time systems for the Ada 83 language and offers the only certified Ada 95 run-time system. ObjectAda/Raven is certified to the highest certification levels and meets the DO-178B Level-A required by the FAA for airborne systems. [...]

Press Contacts: Greg Gicca, Director of Product Marketing, greg.gicca@aonix.com; additional product information: (858) 457-2700, info@aonix.com [...]

UK / BAE - Upgraded Main Computer for Tornado

*From: Kees de LezenneCoulander
<lezenne@compuserve.com>
Date: Fri, 25 Jan 2002 13:50:52 -0500
Subject: Ada on Tornado
To: team-ada@acm.org*

The current issue of the magazine Flight International (22-28 January 2002) contains a half page article entitled "RAF's new weapons near Tornado GR4 service start".

One paragraph states: Last year, BAE received a contract for an upgraded main computer (UMC) which Greenhalgh says will be fitted to the fleet by September 2005. The UMC will be a PowerPC processor with expansion capability. A change to Ada software will improve long-term supportability, he says. Other changes <snipped>

After all the discussion about whether or not Ada is used on the JSF, this is particularly encouraging. Of course, for anyone subscribing to Jobserve, it should come as no surprise that Ada is used extensively on Tornado and Eurofighter. Nevertheless, it is nice to see it in print in a prestigious magazine.

C.M. de Lezenne Coulander, Aircraft Development and Systems Engineering B.V., Hoofddorp, The Netherlands

France / Dolphin Integration - GDS Compiler for Array Generators

*From: Brian Rogoff
<bpr@bpr.best.vwh.net>
Date: Mon, 04 Feb 2002 04:01:45 GMT
Subject: Ada sighting!
Newsgroups: comp.lang.ada*

I happen to work in this area and have written similar programs, so this was near and dear to my heart. [...]

http://www.dolphin.fr/medal/gdscompiler/gdscompiler_overview.html

*From: "Marin David Condic"
<marin.condic@pacemicro.com>
Date: Mon, 4 Feb 2002 10:38:41 -0500
Subject: Re: Ada sighting!
Newsgroups: comp.lang.ada*

Well, the good news is that they're using it. [...] I'm just glad to see another company building its product with Ada. And they cite good reasons for doing so.

Marin David Condic, Senior Software Engineer, Pace Micro Technology Americas, www.pacemicro.com, www.mcondic.com

*URL: http://www.dolphin.fr/medal/gdscompiler/gdscompiler_overview.html
Subject: gds compiler - the structure generator builder*

The development platform for array generators

What is GDS Compiler?

GDS Compiler is dedicated to microelectronics for the design of any array generator. It has been used since 1987 for our own developments in our memory, sensor or test parametric generators teams.

Originally a simple tool to build in an artisanal way memory generators, GDS Compiler is now a complete development platform of array generators, which allows easy development, distribution and integration in a SoC design of any compiler (memories, MEMS, devices,...).

Framework independant solution, GDS Compiler automates and eases array generators for which parametrization can provide flexibility, security and productivity.

GDS Compiler is developed in Ada to give access to users to a quality-critical and robust language with the strength of a normalised language available freely on any hardware platform.

Many functions are available to quickly and safely create any array generator. When the generator is ready, GDS Compiler automatically generates the layout view (in GDSII) as well as front end views. Using the Free User Mode of GDS Compiler, the structure generators can be distributed to end-users with security and efficiency. [...]

Indirect Information on Ada Usage

[Extracts from and translations of job-ads and other postings illustrating Ada usage around the world. -- dc]

*From: chillipeter@hotmail.com (Peter)
Date: 27 Nov 2001 21:56:44 -0800
Subject: Employment - Urgent!
Newsgroups: comp.lang.ada*

Full-time position based in Sydney. I need an experienced Ada programmer to start ASAP. Must have current

Australian security clearance. Join one of the leading companies in Australia. [...]

*From: kepps@technisource.com
Date: Fri, 30 Nov 2001 10:14:07 -0600
Subject: Merry Christmas Guys and Girls
To: team-ada@acm.org*

[...] It's been a while since I have come to you Ada gurus with any great opportunities, but here I am once again! This is an ASAP opportunity, [...]. Looking to have this person interview next week, and start work in two weeks!

Embedded Software development, using Ada (of course). This person will definitely need a Secret Clearance! And they will be working on the radar and tracking part of a missile system! This is a contract opportunity in Huntsville, AL, [...]

*From: "PlanetRecruit.com"
<mailto@planetrecruit.com>
Date: Mon, 03 Dec 2001 02:48:59 +0000
Subject: ** 1 NEW Jobs from PlanetRecruit.com (03/12/2001) ***

Ada Software Engineer

My client urgently requires experienced Ada Engineers to work in their embedded competence centre for the aeronautic and railway sectors. You will have excellent Ada Development and Design experience, with a knowledge of real-time methodologies a distinct advantage. Contractors will be considered. Belgium. [...]

*From: "Kester, Rush W."
<Rush.Kester@jhuapl.edu>
Date: Tue, 4 Dec 2001 10:15:17 -0500
Subject: FW: Ada job posting site at GWU (was Future with Ada)
To: team-ada@acm.org*

There is still Ada work in the Washington metro area. Some defense related, some not. NASA/Goddard, the FAA Air Traffic Management, and of course many DoD contracts. If you're interested in working in this area, contact me and I'll fill you in. I may even be able to find you a job through AdaSoft where I work. :-)

You don't see many ads in the local papers. My belief is that many in this area have found that it's easier to hire someone with application domain expertise and have them learn Ada on-the-job or at one of the area colleges. IMO, It's easy to learn Ada. It's much harder to learn to be a good software engineer or application domain expert.

Many of you know of the job posting site at GWU <http://www.seas.gwu.edu/~adajobs/> [sponsored by ACM SIGAda -- dc]. There have been job postings as recently as 11/30/01. [...]

*From: Colin Paul Gloster
<Colin_Paul_Gloster@acm.org>
Date: Wed, 5 Dec 2001 11:56:37 +0000*

Subject: Re: Future with Ada
To: team-ada@acm.org

[...] There is a move in ESTEC to continue with Ada though. Renumeration is more based on amount of time with ESA than time with Ada. If you would prefer a different salary scale, you could try to become an employee of a company (quite possibly non-Dutch) but based in an office at ESTEC. [...], e.g. see "A Software Standardisation Engineer (Noordwijk, The Netherlands)" [...]:

"[...] Space research organisation requires software standards engineer to work on replacing old standards with new. Software Engineering standard ECSS-E40 needs to be tailored to suit different projects. Skills required: Modern software engineering practices, Software standards, practical SW exp, real-time sys, design methods, cross-compilers (GNU), programming in C and Ada. [...]"
 Your guidance in crafting new standards may be a good way to go to foster the adoption of sensible tools in the Netherlands.

From: "J.P. Kermodé"
<kermodé@captec.ie>
Date: Thu, 13 Dec 2001 13:06:15 -0000
Subject: McCabe Static Analysis Tool
To: team-ada@acm.org

Does anybody out there have experience of the McCabe QA Tool for Ada. [...] We are considering a purchase of this tool for SW static analysis and navigation purposes [...]

Paul Kermodé, CAPTEC - Computer Applied Techniques Limited, 3 St. James's Terrace, Malahide, Co. Dublin, Ireland, mail@captec.ie, http://www.captec.ie

From: "PlanetRecruit.com"
<mailto@planetrecruit.com>
Date: Wed, 19 Dec 2001 06:10:29 +0000
*Subject: ** 1 NEW Jobs from PlanetRecruit.com (19/12/2001) ***

Ada Engineers/Project Managers

Consultancy for Information, Real Time Embedded Systems and E-Commerce domains is recruiting French or Dutch speaking Ada Engineers to work on important projects. Technically you will have good commercial experience of Ada, C++, OOAD (UML) and good knowledge of Unix and NT. Successful candidates will also have Degree in Software Engineering (or related technical discipline) and excellent communication skills. Belgium. [...]

From: "TAMS Team" <tamsteam@rollsroyce-rps.demon.co.uk>
Date: Fri, 21 Dec 2001 15:31:10 -0000
Subject: Help! (Ada/Integrity/PEG)
Newsgroups: comp.lang.ada

We're just about to start our project using Integrity/AdaMulti to code the main part of the application, with PEG as our GUI

designer. The target hardware will be a Radstone PPC4 board. The (Ada) application will decode serial data coming from a remote processor to generate the screen layouts and softkeys (and changes to their properties, e.g. text contents), and encode serial data to send back to the remote processor which will essentially only contain information about softkey presses and status flags from the screen hardware. All the PEG task is required to do is to display the appropriate windows or softkeys. [...]

From: Lionel Draghi
<Lionel.Draghi@free.fr>
Date: Fri, 21 Dec 2001 19:17:52 +0100
Subject: Nouveau stage
To: ada-france@ada-france.org

Another very interesting student job at http://www.ada-france.org/DB/stage_list.html

[The job is in a project to develop two Ada95 cross-compilers for the ESA with a runtime based on the Ravenscar profile, one using Raven from Aonix and the other using the open-source ORK kernel from the university of Madrid]. -- dc]

From: Joseph P Vlietstra
<joevl@concentric.net>
Date: 24 Dec 2001 20:47:53 GMT
Organization: Mojave Systems Corporation
Subject: Re: Ada-ASSURED and Ada-Utilities released for Linux
Newsgroups: comp.lang.ada

[...] We use use Ada-ASSURED to enforce uniform style across a small development team. It goes slightly deeper than the rule checking provided by Rational Apex and the GNAT style checking options. [...]

From: "postman@jobscareer.be"
<postman@jobscareer.be>
Date: Fri, 28 Dec 2001 07:52:18 +0100
Subject: Your weekly jobscareer.be postman

2 Software Engineers Ada to start mission in Charleroi, Belgium [...]

From: Lionel.Draghi@fr.thalesgroup.com
Date: Fri, 4 Jan 2002 17:09:25 +0100
To: ada-france@ada-france.org

> Subjectively, I have more the impression that the audience for Ada increases.

This is also my impression, but it is necessary to communicate a lot, because as has been said at the last "Journée Ada-France", some give Ada up because they think to be the last in the world using it, which is really a pity. [...]

From: "PlanetRecruit.com"
<mailto@planetrecruit.com>
Date: Fri, 11 Jan 2002 06:19:29 +0000
*Subject: ** 2 NEW Jobs from PlanetRecruit.com (11/01/2002) ***

A Software Engineer

Working within simulation projects for Space-related projects, our client is seeking a Software Engineer with a background in Electronics. With 1-2 years industry experience and strong experience of C, C++, Ada, Tcl/Tk, Unix and Linux, you will participate in exciting European Space projects for a rapidly growing company. Knowledge of English and French required. Belgium. [...]

A Project Manager (Software)

Working at the cutting edge of Space related projects throughout Europe, our client is currently seeking a Project Manager to be responsible for development projects co-ordinating a team of 2-10 Software Engineers. With experience of working to ISO standards, you will have strong experience in areas such as Unix with C/C++/Ada as well as OO analysis and methods. With 3-5 years industry experience, you will have excellent communication skills in the English language. Belgium. [...]

From: "postman@jobscareer.be"
<postman@jobscareer.be>
Date: Fri, 11 Jan 2002 08:42:33 +0100
Subject: Your weekly jobscareer.be postman

Ada Software Engineers (junior or senior) [...] - All of Belgium [...]

You will be integrated in a strategic project including architectural & detailed design, development of the application, programming, testing and writing of the design documentation.

Education: Civil Engineer, Industrial Engineer, Graduate in Computer Sciences or similar experience. One or two years of experience in software development. Knowledge of a programming language preferably Ada 83-95 or C++. Developer & analyst designer. Teamspirit and good methodology. [...]

From: "postman@jobscareer.be"
<postman@jobscareer.be>
Date: Fri, 25 Jan 2002 08:52:18 +0100
Subject: Your weekly jobscareer.be postman

2 Software Engineers Ada to start mission in Wallonia - [...] Belgium

We are looking for a person to join our Customers Signalization Division in Charleroi. As part of a software team, you will be responsible for developing security applications for embedded equipment. Understanding of the specifications written by the system team. Software Conception (architecture or detailed). Creation of programs in Ada83/Ada95. Unity and integration testing. Writing of conception documents. Support of the Systems team with functional testing.

You are a Civil or Industrial Engineer Software Designer / Developer. You have a first relevant experience with Ada

Development. Practical experience with software conception. Knowledge and experience with Ada Language (especially Ada95) is a must. Knowledge and Experience with UML. Good command of French, English and Dutch. Good technical background. Team worker. Well organised and rigorous. Dynamic and creative. [...]

Developer Ada [...] - Brussels, Belgium [...]

Analysis of request of software incidents. Production of detail design and software incidents. Configuration management. Detailed design documentation. Participation in the validation of design, its performance and reliability. Test plans and specifications. Participation in project coordination and process meetings.

At least two years of experience in the development of application software. Experience in software development in Unix environment. Programming experience in Ada or C++ and Unix, Shell and Oracle. Experience in the development and support of mission critical applications. Ability to work in an international environment. Good knowledge of French or Dutch. [...]

From: Leslie Green
<leslie@jbcharles.com>

Date: Thu, 31 Jan 2002 11:49:23 -0700

Subject: Looking for Ada developer/tester in Colorado

To: team-ada@acm.org

[...] I am looking for an Ada software/test engineer for a full-time position in Colorado. [...] The work involves conducting software unit testing on a local launch vehicle. Any candidates with Ada programming experience or IPL's AdaTEST testing tool experience will be considered.

Developer should have: BS in Engineering or equivalent. Complete understanding of the software life cycle development process. Minimum of 2 years development in Ada or experience with AdaTest testing software. [...]

From: "postman@jobscareer.be"
<postman@jobscareer.be>

Date: Fri, 01 Feb 2002 08:28:36 +0100

Subject: Your weekly jobscareer.be postman

Ada Software Development Engineers in Aeronautics - [...] Brussels, Belgium

[...] looking for Senior Ada software developers to participate to the development of IT technical applications in the air traffic management.

Preferably university degree or equivalent experience. At least 3 years of professional experience in Ada software development is mandatory. Knowledge of UML, Corba, Rational Rose, Unix, HP Openview and/or NT is an asset. Possessing good verbal and written

communication skills in English. You have a real team player attitude, you are open-minded and naturally curious for new technologies. Place of work: Brussels. [...]

From: Niklas Holsti <holsti@ssf.fi>

Date: Sun, 3 Feb 2002 10:22:18 +0200

Subject: Re: derived types

To: team-ada@acm.org

[On the use of type derivation in Ada: --dc]

In a software tool we are developing (for static worst-case execution-time analysis) I count some 60 derivations of new untagged types, many from predefined types like Natural or Positive. The reason for using derived types in most cases is to enforce strong type checks for indices and counters where we have no a priori reason to set a specific range (as in "type T is range 1 .. 100"). Another reason is to override the predefined stream I/O attributes (Read, Write etc.) with procedures that apply specific lay-outs, byte ordering, or checks such as accumulating a check-sum of the bytes read or written.

In other applications, I have used type derivation of record types to enjoy the automatic lay-out conversion that occurs on conversion between related record types with different record representation clauses.

So I have found derived types useful even in the non-tagged case.

Niklas Holsti, Space Systems Finland Ltd.

Ada in Context

Book Recommendation

From: "Mark Lundquist"

<up.yerz@nospam.com>

Date: Wed, 28 Nov 2001 18:12:38 GMT

Subject: WAS Re: Pre-Elaboration clarification.

Newsgroups: comp.lang.ada

Sorry, this isn't about elaboration or anything, but I couldn't think of a good, non-inflammatory, i.e. non-C++-bashing :-) subject line for this... [Nor could I. --dc]

Matthew Heaney <mheaney@on2.com> wrote

> You can read John Lakos' Large Scale C++ Software Design for ideas that apply to either C++ or Ada95.

I recommend this book to anyone considering Ada, to read as part of a comparative language study. For one, it's a good book. This is really how you have to live in C++. But the reasons why are oh-so-illustrative.

One of the dings you hear against Ada is that it's full of all these confining *rules*,

which supposedly stifle one's creativity, and result in unacceptable syntactic overhead (i.e. verbiage) in the 0.1% of cases when one needs to do something unsafe.

But it turns out that survival with C++ depends on a system of conventions, which are outside the language and must be developed and written about by gurus in books, and which have to be enforced, not by a compiler but by a human being (this being both error prone and a human resource drain). I.e., the conventions become draconian rules!

Since we have to have rules, I'd a lot rather have them be language rules enforced by a compiler than ad hoc provincial rules enforced by a "conventions czar".

The Beaujolais Effect Revisited

From: Christoph & Ursula Grein <Christ-Usch.Grein@T-ONLINE.DE>

Date: Mon, 28 Jan 2002 20:31:07 +0100

Subject: Beaujolais

To: team-ada@acm.org

Allegedly John Goodenough long ago in the good old Ada83 (or even pre-83) days presented the first example of Beaujolais effect (but I understand Jean Ichbiah never paid the bottle of wine).

Does anybody still have a copy of this contrived example? Are there still Beaujolais effects in Ada95?

From: Ben Brosgol <brosgol@gnat.com>

Date: Tue, 29 Jan 2002 13:56:27 -0500

Subject: Re: Beaujolais

To: team-ada@acm.org

I forwarded the question to JDI, and he responded:

<<The message is not correct: Olivier Roubine found the counterexample and he did get his bottle.>>

From: Colin Paul Gloster

<Colin_Paul_Gloster@acm.org>

Date: Wed, 30 Jan 2002 10:12:58 +0000

Subject: Re: Beaujolais

To: team-ada@acm.org

[...] An example is given on http://www.Informatik.Uni-Stuttgart.De/ifi/ps/AdaBasis/pal_1195/ada/ajpo/standards/95Isn/LSN1037.PrefRules

The page (not the origin of the example) is attributed to Bob Duff in the year 1992:

"[...] Here is an example of an Ada 83 Beaujolais effect. A Beaujolais effect is a case where adding or subtracting a use_clause can cause a change from one legal interpretation to another.

```
package P is
  procedure Q(B: Boolean); -- Q#1
end P;
```

with P;

```

procedure Main is
  function "<"(X, Y: Integer) return
    Integer;
  procedure Q(I: Integer) is ... -- Q#2
begin
  Q(1 < 2);
end Main;

```

As written, the call to Q unambiguously resolves to Q#2 -- the user-defined "<" operator is used, and the numeric literals are implicitly converted to type Integer. However, adding the use_clause "use P;" to Main causes it to unambiguously resolve to Q#1 (in Ada 83) -- the predefined "<" operator of universal_integer is used, and the numeric literals are NOT converted. That's because there is a legal interpretation of the complete context without implicit conversions, so implicit conversion is not done. This is the Beaujolais effect.

In Ada 9X, adding the use_clause causes the call to Q to become ambiguous. That's because the two interpretations do not "differ only in that..." as required above.

These Beaujolais examples are admittedly pathological. Nonetheless, it is a nice side-effect of the new rule that they are eliminated."

A comment on how Beaujolais could arise, by Bob Crisp on <http://www.web3d.org/www-vrml/hypermail/1998/9807/0532.html>:

"[...] There was once "Beaujolais case" -- a particular combination of USE clauses and variables and packages and subprograms with the same name defined both locally and in the USED packages (etc.) such that a spec-compliant compiler couldn't determine whether to access the local variable or the one in the other package. [...]

I remember seeing the example several years ago after the bet had expired, and the code that invoked this spec bug (the only one like that ever found) looked like it was written by somebody with a serious drug problem. [...]"

Christoph Grein: "Are there still Beaujolais effects in Ada95?"

Hopefully not.

<http://www.Ada-auth.org/~acats/arm-html/AA-8-6.html>:

"[...] {incompatibilities with Ada 83} {Beaujolais effect [partial]} The new preference rule for operators of root numeric types is upward incompatible, but only in cases that involved Beaujolais effects in Ada 83. Such cases are ambiguous in Ada 95. [...]

{Beaujolais effect [partial]} It is the intent that the Ada 95 preference rule for root numeric operators is more locally enforceable than that of RM83-4.6(15). It should also eliminate interpretation shifts

due to the addition or removal of a use_clause (the so called Beaujolais effect). [...]"

<http://www.FAQs.org/faqs/computer-lang/Ada/programming/part3/>

Tucker Taft:

"[...] The existing cases in Ada 83 had to do with implicit conversion of expressions of a universal type to a non-universal type. The rules in Ada 9X are subtly different, making any case that used to result in a Beaujolais effect in Ada 83, illegal (due to ambiguity) in Ada 9X. [...]"

Jean D. Ichbiah:

"It is worth pointing that many popular languages have Beaujolais effect: e.g. the Borland Pascal "uses" clause, which takes an additive, layer-after-layer, interpretation of what you see in the used packages (units) definitely exhibits a Beaujolais effect.

Last time I looked at C++, my impression was that several years of Beaujolais vintage productions would be required.

For component-based software development, such effects are undesirable since your application may stop working when you recompile it with the new -- supposedly improved -- version of a component."

Another Ada Porting Experience

From: Wesley_Groleau@raytheon.com
Date: Thu, 13 Dec 2001 14:45:19 -0500
To: team-ada@acm.org

> If I used to compile an Ada-built system using PowerAda, and want to change to GNAT, can there be problems? What sort of problems and can I do something to prevent them? Its a very big system.....

I experimented with porting a system comprising 20,000 files, millions of SLOC, from Apex Solaris to GNAT Solaris. Took less than 80 hours to get everything to compile and link. Almost all of these changes were due to non-portable Apex-specific features that had been used. On several occasions, a compiler bug got in the way. In all but one of these cases, the bug was fixed in a new compiler provided by FTP within 24 hours. In that one case, we figured out a way to re-organize the code to avoid the bug. [...]

[See also "Porting from Ada 83 to Ada 95" in AUJ 22.3 (September 2001), p.164. -- dc]

On Defect Rates and Industry Norms

From: "Martin Dowie"
<martin.dowie@baesystems.com>

Date: Tue, 8 Jan 2002 12:48:44 -0000
Subject: Re: ANNOUNCE: Ada success story in IEEE Software
Newsgroups: comp.lang.ada

[See also "UK / Praxis CS - MULTOS Certification Authority for Smart Cards" earlier in this AUJ issue. -- dc]

> It's the kind of system where most people would not even consider Ada, but we found its use to be a significant factor in the success of the project. The final system achieved 0.04 defects per kloc (that's 4 defects in 100,000 lines of code) post-delivery, which compares favourably with industry norms.

[And in response to: I'm not sure I follow this. If this result is the industry norm, and most of industry doesn't use Ada, then why do you think Ada was "a significant factor in the success of the project"?]

Need to re-read the original post :-)

He said it "compares favourably with industry norms" not "matches the industry norms".

From: Ted Dennison
<dennison@telepath.com>
Date: Tue, 08 Jan 2002 14:20:50 GMT
Subject: Re: ANNOUNCE: Ada success story in IEEE Software
Newsgroups: comp.lang.ada

I suspect that may have been a bit of that famous British understatement too. I think our last (non safety-critical) Ada project would have had a defect count orders of magnitude higher than that.

From: Kilgallen@SpamCop.net (Larry Kilgallen)
Date: 9 Jan 2002 15:28:50 -0600
Organization: LJK Software
Subject: Re: ANNOUNCE: Ada success story in IEEE Software
Newsgroups: comp.lang.ada

> I recall seeing the "industry norm" given as 1 defect per kloc.

I suppose it depends on what industry. I have seen numbers of 10 and 5 defects per kloc on brand new code and modification of code, not specific to Ada.

From: "Pat Rogers"
<progers@classwide.com>
Date: Wed, 09 Jan 2002 21:46:29 GMT
Subject: Re: ANNOUNCE: Ada success story in IEEE Software
Newsgroups: comp.lang.ada

In a study described in a paper published in 1986, Herbert and Myron Hecht found that for each million lines of code, 20,000 bugs existed. Normally 90% would be found by testing. Another 200 would be found during the first year of operation by users, leaving 1,800 undetected bugs. Regular maintenance would fix 200 bugs, but also introduce 200 new ones.

Things have probably progressed *a little* since then, but not much; certainly not orders of magnitude. Too, that's just one study (of several large systems), but the magnitude is astounding. (Both individuals are extremely well respected in the software fault tolerance field.)

The paper is: H. Hecht and M. Hecht, "Software Reliability In The Systems Context," IEEE Transactions On Software Engineering, vol. 12, no. 1, pp. 51-58, 1986.

[And from a later message:]

> And how can any study detect 1,800 bugs that neither the testers nor the users can detect?

The users eventually detected them.

Patrick Rogers,
http://www.classwide.com, (281)648-3165

Reducing Security Risk Requires Better Software

URL: http://itmanagement.earthweb.com/secu/article/0,,11953_953891,00.html
Subject: Earthweb IT Management:
Security: Steep Rise In 'Net Viruses, Software Security Flaws

[...] by Thor Olavsrud; 01/14/2002

[Check URL above for complete article. - dc]

The number of viruses and other types of attacks making rounds on the Internet, and the number of security vulnerabilities discovered in software, climbed dramatically in 2001, according to newly issued statistics by the Computer Emergency Response Team Coordination Center (CERT/CC).

CERT's statistics, issued Friday, indicated that the number of incidents rocketed from 21,756 reported in 2000 to 52,658 reported in 2001. For comparison's sake, CERT said there were 9,859 reports in 1999, 3,734 in 1998 and six in 1988. To be clear, an incident may involve one site or thousands and may take place over a long period of time.

"The increase [in incidents] we can basically attribute to an increased sensitivity and an increased awareness as to what constitutes an incident," said Chad Dougherty, Internet security analyst at CERT. [...] he also noted, "It really drives home the point that sites need to be aware of patches that are available from their vendors." [...]

But that's just one aspect of decreasing risk. As the number of patches needed to keep a system secure continue to climb, Dougherty said it may be time to look for software with fewer vulnerabilities.

"One piece of the puzzle for reducing risk is to have software with fewer vulnerabilities out of the box -- software

that is more secure by default," he said. [...]

Ada and Extreme Programming (XP)

From: Terry Westley <twestley@acm.org>
Date: Fri, 7 Dec 2001 16:19:09 -0500
Subject: ada and extreme programming
To: team-ada@acm.org

Anyone have any testimonials on use of Extreme Programming in Ada projects?

Extreme Programming [...] has requirements (user stories), testing (both unit and acceptance), and documents. [...] can be learned about at <<http://www.extremeprogramming.org>>. There is a short introduction there and references to lots of books.

From: Ed Falis <efalis@mediaone.net>
Date: Fri, 7 Dec 2001 17:18:59 -0500
Subject: Re: ada and extreme programming
To: team-ada@acm.org

I haven't done formal XP. I have used "test-first" design on a smallish (8K semicolons) personal project, and on implementing HW interrupt handling for GNAT on VxWorks. The resulting unit test suites, even if incomplete, are invaluable.

As far as pair programming goes, I only have informal experience, but have generally found it useful.

Constant integration and regression runs are also invaluable - ACT has had this bit implemented on a nightly basis for years. The result, in terms of being able to respond to customer requirements, is beyond anything I've seen in 25 years in the sw business.

So, even if not taken as gospel, many of the elements of XP have proven to be very valuable practices, and they do appear to reinforce each other as claimed. How they scale to larger efforts is unanswered at the moment.

AUnit, which supports unit testing as advocated in XP, is available at <http://www.libre.act-europe.fr/>. A new release was put up just a few days ago. [See also "ACT - AUnit 1.01 - xUnit Test Framework for Ada" earlier in this AUJ issue. -- dc]

From: Laurent Guerby <guerby@acm.org>
Date: Fri, 7 Dec 2001 23:38:17 +0100
Subject: Re: ada and extreme programming
To: team-ada@acm.org

> Constant integration and regression runs are also invaluable [...]

Same experience in the BNP Paribas Equity Derivative Research Team [in France -- dc]. We do constant integration and regression runs as well. Our software is critical to our business, and our responsiveness and professionalism is highly appreciated by

our internal users. Having been an ACTer, the main difference is that we have a team 80% composed of young people with no formal software background (mainly financial mathematics) all working in a 300KSLOC software project - hopefully not as structurally complex as GNAT, many thanks to Ada and GNAT error messages! Also we're more in the 48 seconds support business than the 48 hours one due to our activity :).

We have no unit testing, but our regression testing technology is quite advanced, so this compensates in practice. Any change, new feature and bug fix, must have a regression test when it is committed.

We do follow in practice a lot of what is advocated in the XP books, at least what I qualify as plain common sense :).

From: Corey Minyard <minyard@acm.org>
Date: Fri, 7 Dec 2001 16:40:46 -0600
Subject: Re: ada and extreme programming
To: team-ada@acm.org

XP has a well specified method of handling requirements, and testing is the backbone of how XP works. Documentation is not considered as part of the XP process, you can do documentation however you like.

With that said, I've been involved in one XP project (in Java, not Ada, although the language shouldn't really matter). It didn't turn out well, but there were some bad personality conflicts, so it's hard to say if any design process could have succeeded. The theory is intriguing, since it more or less just goes with reality and doesn't assume that you can do things you really can't do, but it has yet to be proven out.

From: Laurent Guerby <guerby@acm.org>
Date: Fri, 7 Dec 2001 23:58:48 +0100
Subject: Re: ada and extreme programming
To: team-ada@acm.org

The XP books are quite weak on the topic [of personality conflicts] IIRC. They all assume you have an almighty manager to start with and people coming to form the team out of random.

Our team manages recruiting all by itself, candidates see at least 3 people, up to five or more if it looks good, no one goes in the team if anyone having seen the candidate has a doubt. This greatly minimizes chances of personality conflict. Common sense I'd say but looks quite rare (I'm no old-timer though). [...]

On Languages and Productivity

From: Steven T Abell <abell@brising.com>
Date: Sat, 12 Jan 2002 00:38:02 GMT

Organization: *brising.com*
 Subject: *Re: True faiths*
 Newsgroups: *comp.lang.lisp,*
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk

> Lisp, Ada, Eiffel and Smalltalk are all excellent languages, far superior to the Gang of Three (Java, C++, C).

Not very many people can use these languages well. It's true that two or three people who can use them well can outproduce a whole roomful of very competent C/C++/Java guys. But a manager is highly influenced by the Truck Effect: if one of your exotic wonderboys goes away for any reason, he can be very hard to replace. Furthermore, the loss of one of these is equivalent to the loss of a whole team of C/C++/Java guys. Yes, I know the time/cost tradeoffs, but most managers don't want to hear the facts on this issue, they just want to know if they can hire someone off the street, and street people don't do Smalltalk.

I'm doing C++ right now, and I'm painfully aware of just how unproductive this thing is. But my client believes that I can be replaced if I go splat, and that belief helps them get through the day. Underneath it all, my work is informed by my Smalltalk and Lisp experience in ways that your average C/C++/Java guy just doesn't get, and my client understands that I know something they don't.

I would love to be able to do Smalltalk all day long. I would hate to go through life with the outlook of a C guy. It's hard, but I try to be content, and I go home and work on learning APL. For those of us who actually have to produce things, it's what you feed your brain that's relevant, and C and its children are not enough.

From: *vputz@bgp01364175bgs.*
sandia01.nm.comcast.net (Victor B.
Putz)
 Date: *Sat, 12 Jan 2002 02:31:10 GMT*
 Subject: *Re: True faiths*
 Newsgroups: *comp.lang.lisp,*
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk

If you can find the right group of folks who are all interested in improving their productivity with marginal languages, you can always try and work outside the "C Block" and do an end-run around slower-moving organizations.

It is a Great Mistake to assume that, because a programming language has been overlooked by the majority, it is therefore not worth pursuing in a niche. Sure, there's a great draw to simply throwing up one's hands and saying "ah, what the heck, everyone else is using C++" ... and that is a choice of safety over all else. Not a bad choice, but perhaps not the best choice.

Short-term Gains and Long-term Views

From: *Preben Randhol*
<randhol+abuse@pvv.org>
 Date: *Sat, 12 Jan 2002 15:58:51 +0000*
 Organization: *Norwegian university of*
science and technology
 Subject: *Re: True faiths*
 Newsgroups: *comp.lang.lisp,*
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk

[In response to the claim that only substantial reasons can have marginalized excellent languages. -- dc]

This implies that the market is rational and logical. It has shown time and time again that it isn't. The market won't choose a superior technical solution over an inferior yet better marketed or seemingly cheaper solution.

Capitalism will need to adjust itself in the near future from the short-term gain view to a long-term view. This includes taking into account security and maintainability over time. In all sectors we see that the drive to cut costs leads to problems with the security; secure food, transport, utilities, software etc... There now seems to come articles that looks at the cost of software bugs for businesses.

It is just as frustrating every time I hear about some company that makes some kind of "secure" solution and when you ask them what language they use they say C or C++. When one then ask them why they use such an unsafe language they start arguing not that C/C++ is safe, they mostly agree that it isn't, but out of economical concerns or that they need people that can program and people know C/C++.

From: *Preben Randhol*
<randhol+abuse@pvv.org>
 Date: *Sun, 13 Jan 2002 19:05:16 +0000*
 Organization: *Norwegian university of*
science and technology
 Subject: *Re: True faiths Newsgroups:*
comp.lang.ada

[In response to "Why would the market not be rational and logical?" -- dc]

Well look at the history and the present and you'll see this. Were is the rationality to start using say C/C++ for critical systems?

[...] I'm trying to point out that C++ and C are chosen not from the point of making the most secure software, but for the *belief* that it will be cutting costs. The customers are sadly not knowledgeable or critical enough to demand something better. [...]

From: *Christian Lynbech*
<christian.lynbach@ted.ericsson.dk>
 Date: *Wed, 16 Jan 2002 13:00:41 +0100*
 Organization: *ericsson*
 Subject: *Re: True faiths*

Newsgroups: *comp.lang.lisp,*
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk

[In response to "The market isn't rational and logical". -- dc]

Exactly, the market is made up of armies of individuals that behave according to their own small views of the world. If enough individuals fall for a myth about something being smart and cool, then that will be the markets collected reaction as well.

[About a shift in the near future from the short-term gain view to a long-term view. -- dc]

Unfortunately, I do not share that optimism. To survive in the market place, it is good enough that you do not do any worse than your competitors in certain areas and then you can be better in some other areas. So using C as an application language will not [hurt] a business if the competitors do the same. Of course using something better than C will increase the advantages of that business, but it isn't a requirement.

So as long as enough people believe something, and the market will provide a selfsustainable weight to a belief once it is there, it will not be working against you, even if it is downright wrong.

A real bummer for payrollers such as myself that needs to depend on management seeing through the myths to be able to work with Lisp, but certainly also a great opportunity for the entrepreneur with a good idea and an understanding of what Lisp can do for him. [Or Ada...]

In the land of the blind, the one-eyed is king.

On Languages and Finding Programmers

From: *Erik Naggum <erik@naggum.net>*
 Date: *Sun, 13 Jan 2002 18:52:43 GMT*
 Organization: *Naggum Software, Oslo,*
Norway
 Subject: *Re: True faiths*
 Newsgroups: *comp.lang.lisp,*
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk

> There is, of course, the economic reason that, for example, C/C++ guys are two a penny but Eiffel and Smalltalk guys aren't.

This is one of the most misleading abuses of statistics around. Just because the probability that you hit a C++ programmer if you throw a rock into a crowd is very high, does not mean that the probability that he can replace _your_ C++ programmer is any higher than finding a replacement Eiffel or Smalltalk programmer. Because you have to weed through tons of idiots who only _claim_ they know C++, the effort required to

find a real replacement may be significantly lower for Eiffel or Smalltalk. Besides, if you can find a good programmer, chances are very good that he will be able to learn any programming language you use reasonably well in the time it would take to find a good C++ programmer. And learning from the sources of the previous programmer is a lot easier than learning the language from scratch in a general, application-independent way.

I have actually witnessed this. A company I worked for got a new manager level that was completely superfluous, so the new manager had to prove to herself that she had a real job, and spent a lot of time arguing against using languages that were not mainstream, and basically made it hard to use anything but Java, and many good people quit. Then a Java man got seriously ill. She was unable to replace him in the 5 months he was away. The other Java men could not do his work. To her amazement, choice of language mattered less than the other skills the programmers had. The conclusion from this story that this manager actually arrived at was that it was bad to have skilled programmers -- she alone should make the design decisions and programmers would simply implement them. She could now return to her policy of using only mainstream languages and hire only unskilled programmers who lied about knowing a language. As far as I know, nothing interesting has happened at that company for a long time.

*From: Espen Vestre <espen@vestre.net>
Date: Mon, 14 Jan 2002 08:12:01 GMT
Subject: Re: True faiths
Newsgroups: comp.lang.lisp,
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk*

The scary thing is that your experience is no exception, there are `_so_` many representatives of this type of manager around. It's the kind of manager that actually thinks that hiring java or C++ programmers is so easy because they teach these languages at "every school", and fail to understand that having successfully spent 2 or 3 years at some school which educates "it professionals" doesn't necessarily imply that you're suited to be a programmer at all, and it `_definitely_` doesn't mean that you're well trained in the languages they happen to use at that school.

*From: "Kevin McFarlane"
<kevin@atech.globalnet.co.uk>
Date: Mon, 14 Jan 2002 11:42:59 -0000
Subject: Re: True faiths
Newsgroups: comp.lang.lisp,
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk*

[...] Employers are obsessed with buzzwords. Many of the buzzwords they're obsessed about can be learnt to a

useful level within a few days by competent programmers. But I guess it's less effort for recruiters to concentrate on buzzwords than to assess candidates in more depth.

A friend of mine who was involved in hiring told me a story about this. Two candidates were offered jobs. The first had all the buzzwords and impressed the senior manager. My friend was sceptical but the senior manager won on that occasion. The second candidate had no buzzwords but exuded competence. The senior manager was not impressed but my friend was. This time my friend won.

The first candidate was hopelessly out of his depth and left within a week. The second candidate turned out to be one of their star programmers.

[On managers arguing against using languages that are not mainstream (cf. higher): -- dc]

Yes. This is true. BTW, have you read this? It supports your case.

"Debunking the Myth of a Desperate Software Labor Shortage" <http://heather.cs.ucdavis.edu/itaa.real.html>

One of its counterintuitive findings is this:

"A study quoted Myths and Methods: a Guide to Software Productivity by David T. Fisher (Prentice-Hall, 1991) found that the factor Personnel Capability, i.e. general talent and energy of the programmers, counted for a score of 4.18 in a productivity prediction equation. This was by far the largest factor; the next largest was Product Complexity, with a score of only 2.36. The factor (Programming) Language Experience, i.e. experience with a specific software skill, had the smallest score among the 15 factors studied, with a score of only 1.20. Fisher comments:

"The relatively small impact of language knowledge is an important fact which is not intuitively obvious. Judging by advertisements for programmers it would seem that [IT] managers tend to overemphasize specific language experience."

On Simplified Language Dialects

*From: kaz@accton.shaw.ca (Kaz Kylheku)
Reply-To: kaz@ashi.footprints.net
Date: Fri, 18 Jan 2002 19:57:50 GMT
Subject: Re: True faiths
Newsgroups: comp.lang.lisp,
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk*

Most C++ programmers I have come across know only an imaginary, simplified dialect of C++ that they have assembled from various incorrect sources, and compiler-specific reference. It is my experience that attitudes toward

standards and language specifications in general tend to be very poor among C++ users.

There is a lot of literature written by idiots and for idiots, purportedly about C++, but really about a simplified dialect having little to do with C++. The literature about languages which are not hyped up tends to be of a much higher quality. The result is that if your typical C++ programmer comes across a textbook about some programming language (like say one of the ones in the Newsgroups: line) that language seems incredibly difficult compared to the simplified language that he misunderstands C++ to be.

He doesn't understand that half of his code is not even portable to the compiler he developed it with, but works only by fluke, and that if he were to get it right, he would have to work in a much more complex programming language, namely the real C++.

About Good Programmers

*From: marc@oscar.eng.cv.net (Marc Spitzer)
Date: Fri, 18 Jan 2002 19:58:46 GMT
Subject: Re: True faiths
Newsgroups: comp.lang.lisp,
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk*

[...] most places want to hire, for lack of a better term, cogs. People who do there job, go home, fear management and are easy to push around by management. I feel the reason for this is that management knows that they CAN replace one average (or sub average) programmer with another as long as you pick commodity people and are using commodity languages. The problem with very good or even worse great programmers is that you need to find more people like that to replace them, they do not fear management and generally are "trouble makers", they have opinions that differ from management about what to do and/or how to do it with facts to back them up.

*From: Ed Falis <efalis@mediaone.net>
Date: Fri, 18 Jan 2002 20:11:28 GMT
Subject: Re: True faiths
Newsgroups: comp.lang.lisp,
comp.lang.ada, comp.lang.eiffel,
comp.lang.smalltalk*

Yes, and they also have this annoying habit of coming through with "home runs" for the company when conventional wisdom says their approach is wrong.

Conference Calendar

This is a list of European and large world-wide events that may be of interest to the Ada community. More information on items marked ♦ is available elsewhere in the *Journal*. The information here is extracted from the online *Conference announcements for the international Ada community* at <http://www.cs.kuleuven.ac.be/~dirk/ada-belgium/events/list.html> on the Ada-Belgium webserver. These pages contain full announcements, calls for papers, calls for participation, programmes, URLs etc and are updated regularly.

2002

- 06-08 May **3rd European COTS User Working Group Workshop (ECUA Workshop)** Horsholm, Denmark. Includes "High Integrity Systems" working session, presentation by Pierre Morere, Aonix, France, on "Providing a Certified Development Environment for Safety Critical Systems".
- 15-17 May **3rd International Conference on Integrated Formal Methods 2002 (IFM'2002)** Turku, Finland.
- 19-25 May **International Conference on Software Engineering (ICSE'2002)** Orlando, Florida, USA.
- 26-29 May **3rd International Conference on eXtreme Programming and Agile Processes in Software Engineering (XP'2002)** Alghero, Sardinia, Italy.
- 27-31 May **14th Conference on Advanced Information Systems Engineering (CAiSE'02)** Toronto, Canada. Topics include: Distributed, Web and Mobile Architectures; OO and Agent-Oriented Technologies and their Applications to IS Development; Languages and Protocols for IS; Component-ware and IS; etc.
- 04-07 June **8th International Symposium on Software Metrics (Metrics'2002)** Ottawa, Canada Theme: "Measuring and Managing Software Risks in the Age of Internet".
- 05-07 June **6th Brazilian Symposium on Programming Languages (SBLP'2002)** Rio de Janeiro, RJ, Brazil. Topics include: Technical research papers on Programming language design and implementation, Domain-specific programming languages, Programming languages for mobile, WWW, and network computing, Design and implementation of programming tools and environments, Teaching programming languages, etc.; Experience reports on the use of programming languages, tools, and environments; Tutorials on subjects related to programming languages, APIs, tools, environments or theories.
- 09-12 June **7th European Conference on Software Quality** Helsinki, Finland.
- 10-14 June **16th European Conference on Object-Oriented Programming (ECOOP'2002)** Málaga, Spain. Topics include: implementations of language features; language support for security and safety; techniques for embedded and mobile code; compilation for distributed, heterogeneous systems; languages and compilers for parallel computing; etc. Deadline for early registration: May 6, 2002. Includes a.o. the following events:
- 10 June **7th International Workshop on Component-Oriented Programming (WCOP'2002)** Topics include: components in distributed embedded systems, quality attributes, etc.
- 10-11 June **12th PhD Students Workshop in Object-Oriented Systems (PhDOOS'2002)** Topics include: Concurrent, real-time, parallel systems; Patterns; Distributed and mobile object systems; Frameworks and software architectures; Language design and implementation; Object testing and metrics; Programming environments; Metaprogramming; etc.
- 11 June **6th Workshop on Pedagogies and Tools for Learning Object-Oriented Concepts** Topics include: approaches and tools for teaching design early; design early vs. design late; topic presentation issues; non-trivial examples to exemplify OO concepts; etc.

- 11 June **Workshop on Inheritance** Topics include: Flaws and anomalies in the way inheritance is currently implemented or used; Inheritance and parameterization, inheritance and typing, inheritance and encapsulation, inheritance and behavior; Inheritance and software maintenance, inheritance vs. analysis/design/implementation, inheritance vs. program understanding, refactoring, tools; Experience on the benefits and drawbacks of inheritance in real projects; etc.
- 11 June **Workshop on Multiparadigm Programming with OO Languages (MPOOL'2002)** Topics include: non-OO programming with OO languages; merging functional/logic/OO/other programs (language crossbinding); non-OO programming at the meta level (e.g. template metaprogramming); module systems vs. object systems; etc.
- 11 June **2nd International Workshop on Composition Languages (WCL'2002)** Topics include: Programming paradigms for software composition; Scalability and extensibility of the language abstractions; Design and implementation strategies for cross-platform development; etc.
- 11 June **1st International Workshop on Unanticipated Software Evolution (USE'2002)** Topics include: Formal methods, language concepts and implementation techniques for USE; USE support at different stages of a program's life-cycle: compile-time, load-time and run-time; USE support in object-oriented languages, component models and related infrastructures; Experience reports on engineering for 24x7 availability and on-line software upgrades; etc.
- 11 June **5th Workshop on Object-Orientation and Operating Systems (OOOSWS'2002)** Topics include: distributed OOOS and middleware, what are the penalties of OO in OS and how to avoid them, reusability and interoperability of OOOS components, OOOS for embedded systems, real-time OOOS, etc.
- 11 June **Workshop on Resource Management for Safe Languages**
- 10-15 June **27th Annual USENIX Technical Conference (USENIX'2002)** Monterey, Canada. Topics include: Reliability and QoS; Usage studies; Web technologies; Interoperability of heterogeneous systems; special track on freely redistributable technology (GNOME, GNU, Linux, Tcl/Tk and more); etc
- 17-19 June **ACM SIGPLAN 2002 Conference on Programming Language Design and Implementation (PLDI'2002)** Berlin, Germany. Sponsored by ACM SIGPLan in cooperation with ACM SIGSoft Topics include: implementations of language features; language support for security and safety; techniques for embedded and mobile code; compilation for distributed, heterogeneous systems; languages and compilers for parallel computing; etc.
- 17-19 June **16th Annual International Symposium on High Performance Computing Systems and Applications (HPCS'2002)** Moncton, New-Brunswick, Canada. Topics include: session on parallel and distributed real-time computing (software engineering and formal methods; programming languages and run-time systems; design and analysis tools; case studies and applications; etc.); etc.
- ◆ 17-21 June **7th International Conference on Reliable Software Technologies - Ada-Europe'2002** Vienna, Austria. Sponsored by Ada-Europe, in cooperation with ACM SIGAda. Topics include: management of software development and maintenance; software quality; software development methods and techniques; software architectures; tools; kinds of systems; applications; Ada language and tools; Ada experience reports; education and training; case studeies and experiments; and a special session on embedded systems, including the use of Ada in this realm. Includes workshop "A Standard Container Library for Ada".
- 19-21 June **14th Euromicro International Conference on Real-Time Systems (ECRTS'2002)** Vienna, Austria.

- 19-21 June **ACM SIGPLAN Joint Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES'02) and Software and Compilers for Embedded Systems (SCOPES'02)** Berlin, Germany. Immediately after PLDI'02. Topics include: Programming languages for embedded applications; Software design for multiprocessor systems; Memory management/garbage collection for embedded systems; Concurrent+distributed embedded environments/runtime systems; Real-time operating systems: environment and tools (e.g., RT-Linux); Exception and interrupt handling for real-time; Code generation for embedded processors; Program optimization for real-time performance and DSPs; Real-time scheduling analysis; etc.
- 20-21 June **1st International IFIP/ACM Working Conference on Component Deployment (CD'2002)** Berlin, Germany.
- 23-26 June **International Conference on Dependable Systems and Networks (DSN'2002)** Washington, D.C., USA.
- 24-27 June **2002 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'2002)** Las Vegas, Nevada, USA. Topics include: Parallel/Distributed applications; Reliability and fault-tolerance: Software and hardware fault-tolerance (system- and application-level), etc.; Real-time and embedded systems; Object Oriented Technology and related issues; Software tools and environments for parallel and distributed platforms: Operating systems, compilers, languages, debuggers, monitoring tools, software engineering on parallel/distributed systems; Education: parallel and distributed processing in computer science curriculum (both graduate and undergraduate levels.); Recent history (last decade) of parallel/distributed processing and what to expect during the next decade if history repeats itself; etc. Includes:
- 24-27 June **PDPTA2002 - Special Session on Parallel and Distributed Programming Languages and Software Tools** Topics include: Task allocation strategies; Fault tolerance in distributed systems; Real-time distributed systems; Correctness in distributed systems; Middleware; Programming language support for distribution; etc.
- 24-27 June **PDPTA2002 - Special Session on Coordination and Component-Oriented Computing (Languages, Models, Systems)** Topics include: programming language support for COC and component frameworks in particular; etc.
- 02-03 July **International Workshop on Distributed Event-Based Systems (DEBS'02)** Vienna, Austria. Topics include: Programming language support and integration (e.g. typing, abstractions); Real-time distributed event systems; Integration with standard middleware; Fault-tolerant event distribution; Quality of service and its specification; Case studies of challenging applications and requirement analysis; etc.
- 10 July **3rd International Workshop on Constructive Methods for Parallel Programming (CMPP'2002)** Dagstuhl, Germany. In conjunction with MPC'02 Topics include: languages for parallel programming; parallel object-oriented programming; hardware-software codesign; distributed computing; etc.
- 12-13 July **7th International Workshop on Formal Methods for Industrial Critical Systems (FMICS'2002)** Málaga, Spain. Topics include: Verification and validation of complex, distributed, real-time systems and embedded systems; Verification and validation methods that aim at circumventing shortcomings of existing methods in respect to their industrial applicability; Case studies and project reports on formal methods related projects with industrial participation (e.g. safety critical systems, mobile systems, object-based distributed systems); etc.
- 15-18 July **Workshop on Real-time and Embedded Distributed Object Computing** Washington DC, USA.
- 17-20 July **International Symposium on Parallel and Distributed Computing (ISPDC'2002)** Iasi, Romania. Topics include: programming paradigms and tools; real-time distributed systems; security; fault tolerance; application case studies; etc.
- 20-24 July **11th Formal Methods Europe Symposium (FME'2002)** Copenhagen, Denmark. Theme: "Formal Methods: Getting IT Right". In conjunction with the 3rd Federated Logic Conference (FLoC'02).

- 18-21 August **2002 International Conference on Parallel Processing (ICPP'02)** Vancouver, British Columbia, Canada. Topics include: Programming Methodologies and Tools; Compilers and Languages; Parallel/Distributed Algorithms; etc.
- 18-22 August **2002 Rational Software User Conference (RUC'2002)** Lake Buena Vista, Florida, USA. Topics include: case studies featuring one or more Rational products, provide practical tips and techniques geared towards intermediate or advanced users, etc.
- 20-23 August **13th International Conference on Concurrency Theory (CONCUR'2002)** Brno, Czech Republic. Topics include: concurrency related aspects of: real-time systems, distributed programming, object-oriented programming, case studies, tools and environments for programming and verification, etc.
- 26-28 August **International Conference on Pervasive Computing (PERVASIVE'2002)** Zurich, Switzerland. Deadline for submissions: June 19, 2002 (posters and short papers).
- 26-29 August **26th Annual International Computer Software and Applications Conference (COMPSAC'2002)** Oxford, England. Theme: Prolonging Software Life: Development and Redevelopment. Topics include: Component-based; Object-oriented technology; Quality management; Safety and security; Software architecture, software development framework, and design; Software evolution; Software fault tolerance; Software re-engineering; Software reliability; Software reuse; Distributed systems; Embedded systems; Enterprise systems; Middleware systems; etc.
- 27-30 August **European conference on Parallel Processing (Euro-Par'2002)** Paderborn, Germany. Topics include: Support Tools and Environments; Performance Evaluation, Analysis and Optimization; Distributed Systems and Algorithms; Parallel Programming: Models, Methods and Programming Languages; etc.
- 02-05 September **8th International Conference on Object-Oriented Information Systems (OOIS'2002)** Montpellier, France. Topics: OO frameworks; OO components/COTS; OO patterns; OO middle-ware; Reuse processes; Web-based Applications; OO distributed systems; OO built-in tests; etc. Includes a.o. the following events:
- 02 September **OOIS2002 - Workshop on MANaging of SPEcialization/Generalization Hierarchies (MASPEGHI)** Deadline for paper submissions: May 6, 2002.
- 02 September **OOIS2002 - Workshop on the planning and management of organisational transition to Object Technology**
- 04-06 September **3rd International Conference on Parallel and Distributed Computing, Applications, and Techniques (PDCAT'2002)** Kanazawa, Japan. Topics include: Formal methods and programming languages; Parallelizing compilers; Web technologies; Component-based and OO Technology; Tools and environments for software development; etc.
- 04-06 September **EUROMICRO Conference** Dortmund, Germany. Includes conference tracks on Software Process and Product Improvement, and on Component-based Software Engineering (topics: Components and Reuse; Component Specification; Component Design, Implementation, Testing; Development Environment and Tools; Components for Real-time systems; Component-based embedded systems; Case Studies; etc.)
- 09-12 September **7th International Symposium on Formal Techniques in Real-Time and Fault Tolerant Systems (FTRTFT'2002)** University of Oldenburg, Germany.
- 09-13 September **IEEE Joint Conference on Requirements Engineering (RE'02)** Essen, Germany.
- 09-13 September **International Conference on Practical Software Quality Techniques & Testing Techniques (PSQT/PSTT'2002 North)** St. Paul, Minnesota, USA.
- 10-13 September **21st International Conference on Computer Safety, Reliability and Security (Safecomp'2002)** Catania, Italy. Focuses on safety-critical computer applications.
- 17-20 September **6th International Enterprise Distributed Object Computing Conference (EDOC'2002)** Lausanne, Switzerland.

- 23-27 September **17th IEEE International Conference on Automated Software Engineering (ASE'2002)** Edinburgh, U.K. Deadline for submissions: May 6, 2002 (abstracts), May 13, 2002 (papers).
- 24-27 September **8th IEEE Real-Time Technology and Applications Symposium (RTAS'2002)** San Jose, California, USA. Topics include: Real-time applications in Linux; Real-time software components; Embedded control applications; Secure real-time systems; Middleware support; etc.
- 29 September – 2 Oct. **4th Austrian-Hungarian Workshop on Distributed and Parallel Systems (DAPSYS'2002)** Linz, Austria. Topics include: Parallel and Distributed Algorithms; Languages, Tools and Environments; Applications; Distributed OO Systems; Middlewares; etc.
- 30 September – 04 Oct. **5th International Conference on UML - the Language and its Applications (UML'2002)** Dresden, Germany. Theme: "Model Engineering, Concepts and Tools"
- 02 October **8th IEEE Workshop on Empirical Studies of Software Maintenance (WESS'2002)** Montreal, Quebec, Canada.
- 03-06 October **IEEE International Conference on Software Maintenance (ICSM'2002)** Montreal, Canada. Theme: Maintaining distributed heterogeneous systems. Topics include: Design for maintenance; Formal methods; Software reusability; Empirical studies; Programming languages; Maintenance and/or productivity metrics; Preventive maintenance; Tools and environments; Freeware and open source applications; Internet and distributed systems; Source code analysis and manipulation; Impact of new software practices; etc. Deadline for submissions: May 1, 2002 (fast track papers, dissertation forum, industrial applications).
- 06-10 October **10th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS-X)** San Jose, California, USA. Topics include: Interaction of operating systems, compilers, programming languages, and architectures; Case studies of hardware/software design in novel experimental systems; etc.
- 07-09 October **2nd Workshop on Embedded Software (EMSOFT'02)** Grenoble, France. Topics include: System design and integration methodologies, Programming languages and software eng., etc.
- 13-16 October **21st Symposium on Reliable Distributed Systems (SRDS'2002)** Osaka University, Suita, Japan. Topics include: Distributed systems with reliability, availability, security, safety, and/or real-time requirements; Distributed databases and transaction processing; Distributed objects and middleware systems; Security and high confidence systems; Analytical or experimental evaluations of reliable distributed systems; etc.
- ◆ 17 October **Combined Ada UK / Embedded Systems Club Conference UK.** Topics include: any topic relevant to the embedded systems and/or Ada communities.
- 18-20 October **Conference on Quality Engineering in Software Technology (CONQUEST'2002)** Nuremberg, Germany.
- 27-31 October **21st Digital Avionics Systems Conference (DASC'2002)** Irvine, California, USA. Topics include: avionics (flight critical systems, system engineering, open systems, software engineering, etc.), Air Traffic Management, etc.
- 28 October – 01 Nov. **4th International Symposium on Distributed Objects and Applications (DOA'2002)** Irvine, California, USA. Topics include: Design patterns for distributed object design; Interoperability-supporting environments; Security, including authorisation and authentication; Reliable and fault tolerant middlewares; Real-time/Reflective middlewares; Web Services and distributed objects, including SOAP interoperability and service discovery; Reports on Best Practice; etc. Deadline for paper submissions: May 31, 2002.
- 04-08 November **17th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA'2002)** Seattle, WA, USA. Deadline for submissions: July 19, 2002 (Posters, Demonstrations, Doctoral Symposium, and Student Volunteers).
- 12-15 November **13th International Symposium on Software Reliability Engineering (ISSRE'2002)** Annapolis, Maryland, USA. Topics include: Software testing and verification; Secure software engineering; Security testing and certification; Reliability of distributed systems; Standards and regulation; etc.

Deadline for submissions: May 1, 2002 (tutorials, panels), August 1, 2002 (student papers, fast abstracts)

- 18-22 November **ACM SIGSOFT 2002 10th International Symposium on the Foundations of Software Engineering (FSE-10)** Charleston, South Carolina, USA. Topics include: Component-Based Software Engineering; Empirical Studies of Software Tools and Methods; Feature Interaction and Crosscutting Concerns; Generic Programming and Software Reuse; Software Engineering Tools and Environments; Software Reliability Engineering; Software Safety; Specification and Verification; etc. Deadline for submissions: August 15, 2002 (student posters).
- 02-04 December **8th IEEE International Conference on Engineering of Complex Computer Systems (ICECCS'2002)** Greenbelt, Maryland, USA. Topics include: technologies for developing complex systems; means of avoiding, controlling, or coping with complexity; embedded real time complex systems; distributed and network based complex software systems; design and analysis of complex software systems; formal methods for complex systems; techniques for component-based software development; etc. Deadline for submissions: May 3, 2002 (initial abstracts), May 10, 2002 (papers, extended abstracts), June 7, 2002 (tutorials, panels and exhibits).
- 08 December **2nd Workshop on Industrial Experiences with Systems Software (WIESS'2002)** Boston, Massachusetts, USA. Topics include: Distributed Systems, Programming Environments and Tools, Fault Tolerance and High Availability, Real Time and Quality of Service, Middleware, Embedded Systems, etc. Deadline for paper submissions: July 15, 2002.
- ◆ 08-12 December **2002 ACM SIGAda Annual International Conference (SIGAda'2002)** Houston, Texas, USA. Topics include: Reliability needs and styles; Safety and high integrity issues; Use of the Ada Distributed Systems Annex; Process and quality metrics; Testing and validation; Standards; Use of ASIS for new Ada tool development; Relationships between Ada and real-timeJava; Mixed-language development; Ada in XML environments; Ada education; Use of Real-Time CORBA; Real-time networking/quality of service guarantees; Fault tolerance and recovery; Distributed system load balancing; Static and dynamic code analysis; Performance analysis; Debugging complex systems; Integrating COTS software components; System Architecture & Design. Deadline for submissions: May 6, 2002 (tutorials), June 3, 2002 (papers).
- 09-11 December **5th USENIX Symposium on Operating Systems Design and Implementation (OSDI'2002)** Boston, Massachusetts, USA. Topics include: distributed systems, parallel systems, embedded systems, the influence of hardware development on systems and vice-versa, etc. Deadline for paper submissions: May 12, 2002.
- 10 December **Birthday of Lady Ada Lovelace, born in 1815 – Happy Programmers' Day!**

2003

- 06-09 January **Software Technology Track of the 36th Hawaii International Conference on System Sciences (HICSS-36)** Big Island of Hawaii, USA. Includes mini-tracks on: Experimental Software Engineering; Domain-Specific Languages; Distributed Object and Component-based Software Systems (Design Patterns for Distributed Systems, Middleware, Programming Languages and Environments for Distributed Object and Component Systems, ...); etc.
- 05-07 February **11th Euromicro Conference on Parallel Distributed and Network based Processing (PDP'2003)** Genoa, Italy. Topics include: Distributed Systems; Parallel Computer Systems; Models and Tools for Parallel Programming Environments; Advanced Applications (numerical applications with multi-level parallelism, real time distributed applications, distributed business applications, ...); Languages, Compilers and Runtime Support Systems (task and data parallel languages, object-oriented languages, scheduling and load balancing, task and object migration, ...), etc. Special sessions on: Advanced Tools for Parallel and Distributed Programming; Parallel Realtime Systems; etc. Deadline for submissions: May 31, 2002.
- 05-13 April **European Joint Conferences on Theory and Practice of Software (ETAPS'2003)** Warsaw, Poland. Event includes: conferences from 7 to 11 April 2003, affiliated workshops on 5-6 and 12-13 April, 2003.



7th International Conference on
**RELIABLE SOFTWARE TECHNOLOGIES -
ADA-EUROPE 2002**



VIENNA, AUSTRIA, JUNE 17-21, 2002

<http://www.ada-europe.org/conference2002.html>



SIGAda

TU

TECHNISCHE UNIVERSITÄT WIEN



PRELIMINARY PROGRAM

The information presented here is preliminary - please refer to the conference website for the latest details.

In 2002, the 7th International Conference on Reliable Software Technologies will take place in Vienna, Austria, from June 17th to June 21st. The conference offers a technical program and exhibition, plus a series of tutorials and a workshop.

The conference provides an international forum for researchers, developers and users of reliable software technologies. Presentations and discussions cover applied and theoretical work currently conducted to support the development and maintenance of software systems.

Vienna, a city with about 2 million inhabitants is situated in the heart of Europe. It is a city on

which its ever-changing history has left an indelible mark, manifested also in the rich cultural heritage. Shaped by its hundreds of years as capital of an empire, the city's ultimate fascination nowadays stems from combining imperial grandeur with explosive modernity.

The conference will take place in the Parkhotel Schönbrunn which originated in 1907 as the guest house of Emperor Franz Josef I. The newly renovated hotel is located in the immediate vicinity of the "Schönbrunn Palace" and its beautiful surrounding park, situated close to the center of Vienna.

OVERVIEW OF THE WEEK

	Morning	Late Morning	After Lunch	Afternoon
Monday June 17th Tutorials	SPARK, an "Intensive Overview", <i>P. Amey and R. Chapman</i>			
	MaRTE OS: Bringing Embedded Systems and Real-Time POSIX Together, <i>M. González and M. Aldea</i>			
	Principles of Physical Software Design in Ada95, <i>M. Heaney</i>		Implementing Design Patterns in Ada95, <i>M. Heaney</i>	
Tuesday June 18th Sessions & Exhibition	Embedded Systems unsuitable for object orientation, <i>Maarten Boasson</i>	Embedded Systems	Real-Time Systems	High Integrity Systems
		Case Studies	Vendor presentations	
Wednesday June 19th Sessions & Exhibition	On Architectural Stability and Evolution, <i>Mehdi Jazayeri</i>	Ada Language Issues	Program Analysis	Tools
			Vendor presentations	
Thursday June 20th Sessions & Exhibition	Reasoning About Reliable Distributed Programs, <i>Rachid Guerraoui</i>	Distributed Systems	Libraries	Contextware: Bridging Physical and Virtual Worlds, <i>Alois Ferscha</i>
		Vendor presentations	OO Technology	
Friday June 21st Tutorials & Workshop	CORBA 3 and CORBA for Embedded Systems, <i>S. Ron Oliver</i>			
	Using Open Source Hardware and Software to Build Reliable Systems, <i>J. Sherrill and J. Gaisler</i>		Cleanroom Software Engineering: An Overview <i>W. Bail</i>	
	Workshop: A Standard Container Library for Ada, <i>E. Lamm</i>		Exceptions – What You Always Wanted to Know About Exceptions, But Were Afraid to Ask <i>C. Colket</i>	



INVITED SPEAKERS

Embedded Systems Unsuitable for Object Orientation

Maarten Boasson, Quaerendo Invenietis bv & University of Amsterdam

It will be argued that the current focus on object technology is detrimental to progress in embedded systems. The core of the problem is that OO is fine for analysis but does not answer the design needs. Solutions for shortcomings are sought within the OO dogma, making things worse. This talk will outline a different approach.

Maarten Boasson studied mathematics in Groningen, the Netherlands. He became involved in advanced studies aiming at control of complexity, both of the development process and of the system under development itself. This resulted in the creation of a novel architecture for distributed reactive systems, that has been applied successfully in numerous systems and is, more than 10 years after its introduction, still unsurpassed in its support for integration, fault tolerance and component reuse. In 1996 Boasson was appointed professor of computer science at the University of Amsterdam, where he holds a chair in Industrial Complex Computer Systems. He played a major role in establishing a dutch national research program in embedded systems, and is currently associate editor-in-chief of IEEE Software.

Reasoning About Reliable Distributed Programs

Rachid Guerraoui, Swiss Federal Institute of Technology in Lausanne (EPFL)

What does it mean for a distributed program to be reliable? A program is reliable if it looks like a centralized program that does never fail. This talk aims at addressing the ramifications underlying this first glance intuitive answer. While doing so, the talk overviews several decades of work on correctness of distributed programs, from Lamport's atomicity and Papadimitriou's serializability, to linearizability and x-ability.

Rachid Guerraoui is professor in computer science at the Swiss Federal Institute of Technology in Lausanne (EPFL). He leads the Distributed Programming Laboratory and teaches object-oriented programming and distributed algorithms. He is interested in devising abstractions for reliable distributed programming.

On Architectural Stability and Evolution

Mehdi Jazayeri, Technical University of Vienna

Many organizations are now pursuing software architecture as a way to control their software development and evolution challenge. A software architecture describes the properties of a family of products, thus addressing the problems of both development and evolution. An important problem is to be able to evaluate the "goodness" of a proposed architecture. The talk will propose stability or resilience as a measure of goodness of an architecture. The stability of an architecture is a measure of how well it accommodates new family members. It can be measured by the amount of code changes necessary for the introduction of a new member. A case study of several releases of a telecommunication software system containing a few million lines of code will be used to demonstrate one way to try to estimate architectural stability. The talk will also present the challenges in software evolution and conclude with recommendations for future research.

Mehdi Jazayeri is a professor of computer science at the Technical University of Vienna. He spent many years in software research and development at several Silicon Valley companies, including ten years at Hewlett-Packard Laboratories in Palo Alto, California. His recent work has been concerned with component-base software engineering of distributed systems, particularly Web-based systems. He is a coauthor of Programming Language Concepts (John Wiley, 1998), Fundamentals of Software Engineering (Prentice-Hall, 2002), and Software Architecture for Product Families (Addison-Wesley, 2000).

Contextware: Bridging Physical and Virtual Worlds

Alois Ferscha, University of Linz

Alois Ferscha joined the University of Linz as full professor in 2000. He published more than 60 technical papers on topics related to parallel and distributed computing. Currently his research interests are in the areas of Pervasive Computing, Embedded Software Systems, Wireless Communication, Multiuser Cooperation, Distributed Interaction and Distributed Interactive Simulation.



SESSIONS AND PRESENTATIONS

Embedded Systems

Evaluating Performance and Power of Object-oriented vs. Procedural Programming in Embedded Processors, *Alexander Chatzigeorgiou and George Stephanides (Greece)*.

OMC-INTEGRAL Memory Management, *Jose Manuel Pérez Lobato and Eva Martín Lobo (Spain)*.

Language Issues of Compiling Ada to Hardware, *Michael Ward and Neil C. Audsley (UK)*.

Case Studies

Software Development Reengineering – An Experience Report, *Adrian Hoe (Malaysia)*.

Using a Secure Java Micro-kernel on Embedded Devices for the Reliable Execution of Dynamically Uploaded Applications, *Walter Binder and Balázs Lichtl (Austria)*.

Development of a Control System for Teleoperated Robots using UML and Ada95, *Francisco J. Ortiz, Alejandro Martínez, Bárbara Alvarez, Andrés Iborra, and José M. Fernández (Spain)*.

Real-Time Systems

A POSIX-Ada Interface for Application-Defined Scheduling, *Mario Aldea Rivas and Michael González Harbour (Spain)*.

The Formal Development of a Real Time Kernel: Kernel Modelling, *Stephen G. Michell and Douglas J. Howe (Canada)*.

Vendor Presentations

Each vendor will give a presentation in the vendor presentation track. Please find a (preliminary) list of vendors on the last page.

High Integrity Systems

Closing the Loop: The Influence of Code Analysis on Design, *Peter Amey (UK)*.

High-Integrity Systems Development for Integrated Modular Avionics using VxWorks and GNAT, *Paul Parkinson and Franco Gasperoni (UK, France)*.

Tools

A Tailorable Distributed Programming Environment, *E. Martel, F. Guerra, and J. Miranda (Spain)*.

About the Difficulties of Building a Pretty-Printer for Ada, *Sergey Rybin and Alfred Strohmeier (Russia, Switzerland)*.

Ada Language Issues

Adding Design by Contract to the Ada Language, *Ehud Lamm (Israel)*.

How to Use GNAT to Efficiently Preprocess New Ada Sentences, *J. Miranda, F. Guerra, E. Martel, J. Martín, and A. González (Spain)*.

Exposing Uninitialized Variables: Strengthening and Extending Run-Time Checks in Ada, *Robert Dewar, Olivier Hainque, Dirk Craeynest, and Philippe Waroquiers (US, France, Belgium)*.

Program Analysis

Static Dependency Analysis for Concurrent Ada95 Programs, *Zhenqiang Chen, Baowen Xu, Jianjun Zhao, and Hongji Yang (China, Japan, UK)*.

DataFAN: A Practical Approach to Data Flow Analysis for Ada95, *Krzysztof Czarnecki, Michael Himsolt, Ernst Richter, Falk Vieweg, and Alfred Rosskopf (Germany)*.

Prioritization of Test Cases in MUMCUT Test Sets: An Empirical Study, *Yuen T. YU and Man F. LAU (China, Australia)*.

Distributed Systems

Concurrency Control in Transactional Drago, *Marta Patiño-Martínez, Ricardo Jiménez-Peris, Jörg Kienzle, and Sergio Arévalo (Spain, Switzerland)*.

Transparent Environment for Replicated Raven-scar Applications, *Luís Miguel Pinho and Francisco Vasques (Portugal)*.

Modeling and Schedulability Analysis of Hard Real-Time Distributed Systems Based on Ada Components, *Julio L. Medina, J. Javier Gutiérrez, José M. Drake, and Michael González Harbour (Spain)*.

Libraries, APIs, Bindings

An Ada Binding to the IEEE 1003.1q (POSIX Tracing) Standard, *Agustín Espinosa Minguet, Ana García Fornes, and Alfons Crespo i Lorente (Spain)*.

GNAT Ada Database Development Environment, *Michael Erdmann (Germany)*.

OO Technology

Ada, Interfaces and the Listener Paradigm, *Jean-Pierre Rosen (France)*.

Using Object Orientation in High Integrity Applications: A Case Study, *Alejandro Alonso, Roberto López, Tullio Vardanega, and Juan Antonio de la Puente (Spain, the Netherlands)*.



TUTORIALS AND WORKSHOP

SPARK, an “Intensive Overview”

Peter Amey & Rod Chapman, Praxis Critical Systems

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.

MaRTE OS: Bringing Embedded Systems and Real-Time POSIX Together

Michael Gonzalez Harbour & Mario Aldea, University of Cantabria

MaRTE OS is a free software implementation of the POSIX minimum real-time system profile. It is designed for embedded systems and provides a development environment for Ada, C, or mixed language real-time applications. The tutorial will describe the main features of MaRTE OS, its architecture and performance, and the details on its development environment.

In addition, the tutorial will discuss the main real-time operating system services defined in the POSIX.13 minimum real-time profile. These services allow application developers to write portable applications that meet their real-time requirements, and that may be implemented on small embedded systems.

Principles Of Physical Software Design in Ada95

Matthew Heaney

The tutorial addresses issues concerning the compilation of large software systems and presents many techniques for ameliorating the problems.

Most texts on software design concentrate almost exclusively on logical design, and provide only a cursory explanation of physical design. Discussions about types and objects are important, but there are also many pragmatic compilation issues that cannot be ignored. Unless care is taken, dependencies among modules often force a substantial recompile when seemingly innocuous changes are made. This can stymie development, especially for large systems that require hours (or even days) to rebuild.

Implementing Design Patterns in Ada95

Matthew Heaney

This tutorial addresses the question of what “design patterns” are and presents many advanced idioms for object-oriented programming in Ada95.

CORBA 3 and CORBA for Embedded Systems

S. Ron Oliver, Top Graph’X

The tutorial starts with an overview of CORBA 3 with emphasis on changes from CORBA 2. Thereafter it addresses CORBA principles, the Interface Definition Language (IDL), client programs, object (server) programs, CORBA Services, CORBA Facilities, and the CORBA Component Model (CCM). Several advanced features of CORBA 3, including Minimum CORBA and Real-Time CORBA, are also discussed. These topics are of particular interest when using CORBA in the area of embedded systems.

Using Open Source Hard- and Software to Build Reliable Systems

**Joel Sherrill, OAR Corporation
Jiri Gaisler, Gaisler Research**

A framework for the development of embedded systems based solely on open-source components is presented. The framework is based on the LEON SPARC-V8 processor, RTEMS real-time operating system, and the GNU Ada toolchain. The tutorial includes a discussion of the implications of applying the open source model to hardware and embedded systems software. An overview of the characteristics of real-time embedded systems, the cross development process, and the features of Ada95 that aid the development of real-time embedded systems is presented. A demonstration is made on how to configure the target processor, adapt the RTEMS operating system to custom boards, and develop Ada applications.

Cleanroom Software Engineering: An Overview

William Bail, MITRE & University of Maryland

Cleanroom Software Engineering is an approach to the development of software that emphasizes defect avoidance and that is strongly rooted in formal methods and mathematics. While not gaining the notoriety that other techniques have enjoyed, projects that have applied Cleanroom have



experienced significant benefits, including low defect rates. It emphasizes multiple builds in an incremental model, with each build constructed using forms known as box structures. Verification of the structures is accomplished using correctness proofs, while software certification is based on usage models which facilitate statistical testing. Recent work has integrated Cleanroom with object-oriented models. In addition the SEI has released a Cleanroom Software Engineering Reference Model, providing an integrated set of work products and processes for organizations wishing to apply this technique.

Exceptions - What You Always Wanted to Know About Exceptions, But Were Afraid To Ask

Currie Colket, MITRE & ACM SIGAda

Exception processing has the power to detect serious problems in the execution of a program and return one back to a known safe state with high integrity. As such, it can be a very powerful tool for developing high quality software.

To be effective, exceptions and their handling must be addressed at the design level and not at the code level. This presentation will discuss several alternative approaches to addressing error handling in the design using exceptions.

Moreover the use of exceptions can be assessed via automated tools. Several analyses that can be performed on a program via automated tools so the program quality can be improved will be discussed. The tutorial will conclude by addressing proposed needs for exceptions resulting from the Exception Workshop held at Ada-Europe 2001.

Workshop: A Standard Container Library for Ada

Workshop Co-Chairs

Ehud Lamm, The Open University of Israel
Email: ehudla@openu.ac.il

John English, University of Brighton
Email: je@brighton.ac.uk

Both contemporary dominant general purpose programming languages, Java and C++, come equipped with a standard set of reusable containers. There are several Ada libraries for these purposes, but there is little agreement on the exact details of a standard container library. A standard container library is important in terms of reusable components for efficient software engineering. Moreover it can be used for educational purposes and for efficient implementation of common algorithms and data structures.

Designing a useful standard container library for Ada is a difficult task, as the language is used in a wide variety of different domains, with different and at times conflicting demands. Hence the need for debating and elaborating the issues among a group of interested Ada users. It is the aim of the workshop to come up with the basis for a recommendation which would lead to the adoption of a standard container library as part of the Ada standard library, in the next revision of the Ada language.

Prospective participants should consult the conference web pages or directly contact the workshop Co-Chairs to learn about the terms of workshop participation.

OTHER PROGRAM DETAILS

Exhibiting

Exhibition space will be provided at the Parkhotel Schönbrunn in the area of the so-called "Kaisersalon". The exhibition and a summary of the exhibits will be publicized in handouts, conference schedule, and conference program. Announcements will be made in the course of technical presentations.

Sponsoring

A sliding scale of sponsorship provides a range of benefits. All levels include display of the sponsor's logo on the conference web site and in the program.

Social Program

Several activities have already been organized. On Tuesday the City of Vienna has invited us all for a reception at the historic town hall. Before that we will enjoy a guided tour by bus that will provide a first impression of the city and several of its well-known sights.

Wednesday evening the conference banquet will take place at a famous "Heurigen" in Grinzing. Over a glass of wine and traditional Viennese cuisine we will have the opportunity to experience several of the mundane ingredients such as "Schrammel-Musik" and "Wiener Gemütlichkeit" that add to the flair of this city.

See the conference web site for more details (<http://www.ada-europe.org/conference2002.html>).



7th International Conference on Reliable Software Technologies - Ada-Europe 2002
Vienna, Austria, June 17-21, 2002

REGISTRATION FORM

PARTICIPANT

Please use block capitals

Ms/Mrs Mr Title _____
Family name _____ First name _____
Affiliation/Organisation _____
Street _____
City _____ Post / Zip code _____ Country _____
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Special requirements (e.g. diet) _____
Reduced registration fee member Ada-Europe; national organization _____ academia
 member ACM; membership number _____

Additional Comments _____
Registration time Early registration (by May 15th) Late or on site (after May 15th)

REGISTRATION FEES

Conference registration fee (see table on next page)
Three day conference EUR _____
Individual days (Tue Wed Thu) EUR _____
Tutorial/Workshop registration (see table on next page)
Please indicate tutorials/workshop for which you want to register:
Monday, June 17th T 1 T 2 T 3 T 4
Friday, June 21st T 5 T 6 T 7 T 8 W
Tutorial/Workshop registration fee EUR _____
Extra Banquet ticket: _____ tickets @ 53 EUR EUR _____
Extra proceedings: _____ proceedings @ 30 EUR EUR _____
TOTAL PAYMENT DUE EUR _____

PAYMENT METHOD

By bank transfer By cheque By credit card
By bank transfer to account number 0130-30655/00, "TU Wien - Ada-Europe 2002". The account is at the CA-BV Austria whose bank identifier (swift) code is CABVATWW (Please mention "Ada-Europe 2002" and your name and attach proof of payment, e.g., a copy of the bank draft, to this form).
By cheque drawn on an Austrian Bank and made payable to:
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Mail or fax this form to:
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Kaiserstr. 14, A-1070 Vienna, Austria
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Conference Registration Fee:

Three days of conference (June 18th–June 20th) including one copy of the proceedings, coffee breaks, lunches, and visit and reception in town hall on Tuesday 18th.

	member Ada-Europe or ACM SIGAda		non member	
	non academia	academia	non academia	academia
Early registration (by May 15 th)	530 EUR	470 EUR	590 EUR	530 EUR
Late registration (after May 15 th)	590 EUR	590 EUR	650 EUR	650 EUR
Individual day registration (per day)	270 EUR	270 EUR	300 EUR	300 EUR

Tutorial Registration Fee:

Prices are per tutorial, including tutorial notes and coffee breaks.

Lunches are only included when registered for full day tutorial or two half day tutorials on the same day.

	half day	full day or two halves on same day	Workshop (by invitation only)
Early registration (by May 15 th)	120 EUR	230 EUR	50 EUR
Late registration (after May 15 th)	150 EUR	290 EUR	70 EUR

Overview of Tutorials:

Monday June 17 th	T 1	full day	SPARK, an “Intensive overview” – <i>Amey/Chapman</i>
	T 2	full day	MaRTE OS: Bringing Embedded Systems and RT POSIX Together – <i>Gonzalez/Aldea</i>
	T 3	morning	Principles of Physical Software Design in Ada 95 – <i>Heaney</i>
	T 4	afternoon	Implementing Design Patterns in Ada 95 – <i>Heaney</i>
Friday June 21 st	T 5	full day	CORBA 3 and CORBA for Embedded Systems – <i>Oliver</i>
	T 6	morning	Using Open Source Hardware and Software to Build Reliable Systems – <i>Sherrill/Gaisler</i>
	T 7	afternoon	Cleanroom Software Engineering: An Overview – <i>Bail</i>
	W	morning	Workshop: Standard Container Library for Ada – <i>Lamm</i> (by invitation only)
	T 8	afternoon	Exceptions – What You Always Wanted to Know About Exceptions, But Were Afraid to Ask – <i>Colket</i>

Note: No registration request will be confirmed until payment has been received. CANCELLATIONS must be in writing. A Cancellation fee of 120 EUR will be applied to all cancellations. No refunds will be given for cancellations postmarked after June 1st. Substitutions will be accepted. The hotel information can be found through the web page of the conference. Additional lunch tickets will be on sale throughout the conference.

For latest information see the web page at <http://www.ada-europe.org/conference2002.html>, or send email to ae2002-info@auto.tuwien.ac.at.

For any information, please contact:

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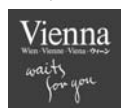
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and the supporters (preliminary list) of the conference.

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Autumn Conference, 17th October 2002

Register Your Interest Now !

Attending as a delegate	<input type="checkbox"/>	Giving a Tutorial	<input type="checkbox"/>	Presenting a case study, vendor presentation or technical paper	<input type="checkbox"/>
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We invite contributions on any topic relevant to the embedded systems and/or Ada communities. We are particularly interested in receiving proposals for the following types of sessions:

- **Case studies:** presentations, typically 60 minutes in duration, reporting on experience of applying embedded technologies in real-world applications.
- **Tutorials:** training sessions, typically half a day or one day in duration, with the emphasis on equipping developers with new skills and techniques.
- **Workshops / Birds-of-a-feather sessions (BOFs):** BOFs give people with common interests the opportunity to engage in substantive discussions, sharing lessons learned and establishing relationships that may continue beyond the conference. Workshops are more formal and attendees are often chosen by submission of appropriate **position papers**.
- **Delegate position papers:** a position paper is usually around 2 to 5 pages, although it can be longer if the technical contribution demands it, in which you to present an opinion, viewpoint or experience relevant to the community. Position papers are ideal for delegates who wish to encourage the conference to address specific issues without the need to get up and speak to an audience.
- **Vendor presentations:** commercial presentations, typically 15 to 20 minutes in duration, describing new product releases or product enhancements of interest to the community.
- **Technical papers:** presentations, typically 60 minutes in duration, covering a technical topic related to embedded systems engineering.

If you are interested in submitting a paper or proposal for a session, please contact us immediately to register your interest. We will then contact you to agree a timetable for submission.



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Preliminary Call for Participation – SIGAda 2002

8-12 December 2002, Houston, Texas, USA

Sponsored by ACM SIGAda

<http://www.acm.org/sigada/conf/sigada2002>

(Approval pending by ACM)

Constructing reliable software is an engineering challenge. The application of methods, tools, and languages interrelate to make the challenge easier or more difficult. This conference focuses on the interaction between these three aspects of software engineering, especially how features in a language such as Ada drive the tools, methods, and ultimately correctness, reliability, and quality of the resulting software. Especially welcome are papers that analyze Ada with respect to these factors or in comparison with other languages. This conference will gather industrial experts, educators, software engineers, and researchers interested in developing and testing reliable software. Technical or theoretical papers as well as experience reports with a focus on Ada are solicited. Possible topics include but are not limited to:

- Reliability needs and styles
- Safety and high integrity issues
- Use of the Ada Distributed Systems Annex
- Process and quality metrics
- Testing and validation
- Standards
- Use of ASIS for new Ada tool development
- Relationships between Ada and real-time Java
- Mixed-language development
- Ada in XML environments
- Ada education
- Use of Real-Time CORBA
- Real-time networking/quality of service guarantees
- Fault tolerance and recovery
- Distributed system load balancing
- Static and dynamic code analysis
- Performance analysis
- Debugging complex systems
- Integrating COTS software components
- System Architecture & Design

How You Can Contribute

SIGAda 2002 is interested in receiving contributions in six major categories. Contributions from students are actively solicited. **Technical Articles** present significant results in research, practice, or education. These papers will be double-blind refereed and published in the Conference Proceedings. Papers should not exceed 5000 words (equivalent to approximately 10 pages, typeset 10-point on 16-point spacing). **Extended Abstracts** discuss current work for which early submission of a full paper may be premature. If your abstract is accepted, you will be expected to produce a full paper, which will appear in the proceedings. Extended abstracts will be competitively reviewed. Clearly state the contribution of the work being described, its relationship with previous work by you and others (with bibliographic references), results to date, and future directions. Please do not exceed 2500 words (equivalent to approximately 5 pages typeset 10-point on 16-point spacing). **Experience Reports** present timely results on the application of Ada and related technologies to the design and implementation of applications such as the following: avionics, aerospace, automobile, command and control, consumer electronics, process control, transportation, trading systems, energy, medical systems, simulation, telecommunications, etc. Such reports will be selected on the basis of the interest of the experience presented to the community of Ada practitioners. You are invited to submit a 1-2 page description of the project and the key points of interest of project experiences. Descriptions will be published in the final program or proceedings, but a paper will not be required. **Workshops** are focused work sessions, which provide a forum for knowledgeable professionals to explore issues, exchange views, and perhaps produce a report on a particular subject. A list of planned workshops and requirements for participation will be published in the SIGAda 2002 Advance Program. Workshop proposals will be evaluated by the Program Committee and selected based on their applicability to the conference and potential for attracting participants. Proposals should state the problem or issue to be addressed, the coordinator(s), and criteria for participant selection. **Panel Sessions** gather a group of experts on a particular topic who present their views and then exchange views with each other and the audience. Panel proposals should be 1-2 pages in length, identifying the topic, coordinator, and potential panelists. **Tutorials** offer the flexibility to address a broad spectrum of topics relevant to Ada, and those enabling technologies which make the engineering of Ada applications more effective. Submissions will be evaluated based on relevance, suitability for presentation in tutorial format, presenter's expertise, and past performance. Tutorial proposals should include the expected level of experience of participants, an abstract or outline, the qualifications of the instructor(s), and the length of the tutorial.

Please submit **Technical Articles, Extended Abstracts, Experience Reports, Workshop proposals, and Panel Sessions** to the Program Chair, John McCormick <McCormick@cs.uni.edu> and **Tutorial proposals** to the Tutorials Chair, David Cook <david.cook@hill.af.mil>. Please submit questions on the conference to the Conference Chair, Salih Yurttas <yurttas@cs.tamu.edu>.

Deadline for Tutorial submissions: 6 May 2002; Deadline for other submissions: 3 June 2002

See SIGAda 2002 Home Page for details: <http://www.acm.org/sigada/conf/sigada2002>

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