"Ada-WOW"

Ada's Window On the World

SIGAda 2000
Sponsored by ACM SIGAda

Johns Hopkins University / Applied Physics Laboratory
Laurel, Maryland, USA
2000 November 12-16

Wednesday, 15 November
Volume 2, Issue 2

Vendor Presentations Fuel Opening Day of Conf.

By Hal Hart (TRW), Ada-WOW Editor

Perhaps SIGAda conference organizers finally discovered the secret to the vendor track with all at mid-day and located very near the lunch service provided by APL. With the possible exception of one speaker whom all had heard in plenary earlier in the morning, unheard-of crowds attended all the other vendor presentations on the opening day of the exhibit hall and the conference. Robert Dewar's high-drama arrival from New York, in constant contact by cell phone with his taxi roaring up after a second 2-minute hold was rewarded by overflowing the Track-2 room *(which surprised some of us as a more-than-satisfactory presentation space).*

Rather than summarize all that this issue of Ada-WOW covers, I'll let you read the table of contents to the right and preview just one important aspect of today's program offerings: the opening plenary session this morning by Dave Emery and the closely related workshop/forum at the Sheraton tonight titled "Should Software Engineers be Licensed Engineers?" This connects to the Software Engineering Body of Knowledge (tutorial reviewed in this issue), and both are somewhat controversial political/professionalism issues increasingly confronting our profession, with the potential to impact many of our careers -- this is a change of pace from *technology* that I believe deserves your attention and action.

Program Chair Franco Gasperoni: An Interview

By Dan Larsen (The George Washington University)

This evening after the conference sessions were over, I had a pleasant interview with Franco, the conference chair:

WOW: Tell us a little about yourself.

Franco: I'm an Italian national and currently live in France. I manage ACT Europe.

WOW: What was it like to organize this conference?

Franco: Typically, this conference is a refereed conference. This year, this conference was by invitation.

WOW: Can you explain the differences between the two types?

Franco: A refereed conference is a conference where a call for papers is put out. Academics and professionals write papers and send them in for review. The papers are then reviewed and we would then accept a certain number. We'd then figure out which ones would be presented.

Inside this Issue:

Weather Forecast

Today (Clear)
High: 12 C (53 F)
Low: 1 C (33 F)

Tomorrow (Sunny)
High: 11 C (52 F)
Low: -1 C (30 F)

The way we did it this year, we invited certain speakers to come and speak. We're better able to direct the conference focus that way. Unfortunately, that means that we get papers right at the last minute.

WOW: Why did you choose to do an invitation this year?

Franco: With a refereed conference, we can't really direct the focus of the conference. With invitations, we are.

Although a refereed conference leads to more diversity, sometimes we'd like certain professionals and academics to speak and we can't get that unless we asked them. With a refereed conference, it's hard to gauge the amount of submissions and plan the conference. With an economy like we have today, the amount of submissions decreases and the quality suffers a little. Fewer people have time to write and those that do tend to write at the last minute.

WOW: What do you think of the conference facilities?

Franco: I think that the conference facilities have provided us with a dynamic and vibrant space in which to host the conference. They fill our needs quite well.

A Showcase of Exhibits

By Erin Briska
(The George Washington University)

Eating lunch I couldn't help but notice the dozen or so exhibitors standing around selling their products to the attendees of this year's SIGAda conference. What, I thought, are they selling? I decided to check it out for myself. As a newly-introduced student to the Ada field I was extremely interested in what these exhibitioners were telling me about their products and decided that you, readers of the Ada-WOW newsletter, should hear what they have to offer.

Exhibit Hall Traffic

The first exhibitor I interviewed was Carolyn Bisby with DDC-I. She explained to me that they have a new product offered this year called **SCORE**. **SCORE** is their latest debugger, associated with ease and flexibility. This multi-language debugger supports full Ada-level debugging. Some features of **SCORE** include: optional constraint checking, debugging of programs using tasking and synchronization, the ability to display task structure and status, the ability to break on exceptions, accepting an entry, leaving block/body containing tasks, and raise exceptions, as well as the ability to change Ada/C viewpoints. Quoted from the literature she provided me, the **SCORE** "development environment is a multi-language, multi-target, multi-host system designed specifically for mission and safety-critical embedded programming." Please visit http://www.ddci.com/ for more information.

Next, I visited William Pritchett with AdaSTAT. **AdaSTAT** is relatively new Ada95 Static Analysis Tool from DCS. **AdaSTAT** analyzes Ada95 source code for safety-critical restriction and collects and assesses both functional and object-orientated metrics. As listed in the literature provided, **AdaSTAT** has two key components: a graphical user interface based on Gtk, providing easy access to tools and features, and an ASIS-compliant analysis engine that is compatible with all compilers implementing the ASIS standard. Other features of **AdaSTAT** include a wide range of user-customizable settings and reports and a common interface across platforms. For more information on AdaSTAT, please visit http://www.adastat.com/.

Mark Lundquist and Janie Rood of Rational provided some input on the conference itself. They mentioned that it was better than last year, with regards to the size of the exhibit area and the setting, as well as the turnout of people. Rational Software helps organizations develop and deploy software for e-business, e-infrastructure, and e-devices through a combination of software engineering best practices, tools, and services. Their new product, **Rational Apex 4.0**, is a version upgrade of their software development product. This new product provides users with the full power of ClearCase. Please visit their website at http://www.rational.com/ for more information on their new product.

Jean-Claude Mahieux is with Top Graph'X, an international company based in France. The new product he is selling is **OrbAda**, a reliable, high performance implementation of CORBA. **OrbAda** is supported for most Ada95 compilers. **OrbAda** is CORBA 2.3 compliant, provides all the facilities helpful to develop CORBA distributed applications and to deploy them, has a "robust" Ada95 implementation, and has a very high throughput ORB. All in all, **OrbAda** is a cost efficient solution and is provided with responsive and efficient support. For more information on this product, please visit their website at http://www.topgraphx.com/.

Next, I headed over to Ada Core Technologies and talked with Sergey Rybin. Their product, **GNATPro**, is supported by many platforms, such as Solaris, Windows NT and many others. Features include Tornado certification, 100% support of Ada95, satisfaction of the strict Ada95 real-time requirements, efficient code generation, and many available tools. Please visit http://www.gnat.com/ for more information.

Greg Gicca of Aonix, the critical-software development solution, informed me of his new products. **ObjectAda Real-Time RAVEN™** is their latest product, due to make its debut in a few short weeks. **ObjectAda Real-Time RAVEN™** employs a small and very fast real-time kernel that is perfectly suited for hard real-time and safety-critical applications. As of right now, their latest product on the market is **ObjectAda**. **ObjectAda** has many language features, such as Ada95 validation, key annexes, lightning-fast compilation, integrated reference manuals, and interactive courseware. It also includes a visual Ada source browser. For more information, please visit http://www.aonix.com/ for more information.

QUOTE OF THE DAY

You can't be a real country unless you have a Beer and an airline. It helps if you have some kind of football team, or some nuclear weapons, but at the very least you need a Beer!

-Frank Zappa

Lady Ada, the Prequel!

By David Harrison (Logicon)

A long-established tradition continued with the presentation of a musical entertainment by illustrious personnel from that Harmonious Software Company, Ada Core Technologies. Purporting to be "a Survey of the life and art of Ada Lovelace's notorious father, Lord Byron", a collection of songs was presented by Baritone Nathan Hull, assisted by Robert Dewar and pianist Edmond Schonberg *(pictured below)*.

Ed Schonberg Tickled the Ivory with Expertise as Always

The concert opened with the US Premiere of *The Gnat Song*, sung by Robert Dewar *(below)*. This delightful ditty extolled the virtues of The Gnu: ("…the gnicest work of gNature in the zoo"), and, likewise, The Gnat: ("…you'll gnever find a single bug in Gnat.").

A Sight Never Seen Before?

The bulk of the performance presented various examples of the music of several notables, including Sir Arthur Sullivan, Wolfgang Amadeus Mozart, and Sir Hubert Parry, and various lyricists. The evening closed with a moving performance of Sullivan's *The Lost Chord*.

Cookie won the quiz in yesterday's issue of Ada-WOW. (So how many of you even noticed a "quiz" there? ☺)

Principal Singer Nathan Hull

Some Ada Trivia

By Erin Briska (The George Washington University)

(1) What does the acronym "**ISO**" stand for?

(2) What was the first validated Ada translator?

(3) The first Ada standard was MIL-STD-**1815**. Where did the "**1815"** come from?

(4) What was Ada's middle name?

(See tomorrow's issue for answers.)

Ada as a Foundation Programming Language:
Starting Off on the Right Foot

By Ron Oliver (The Oliver Academy)

Mike Feldman (George Washington University and SIGAda Education Working Group Chair, *pictured in next column)* gave an information-filled presentation on the first two courses (CS1 and CS2) usually required of a Computer Science major in the (U. S.) undergraduate curriculum.

Although rumor has it that more and more High School students are learning to program, Mike's experience for the last several years has been that the percentage of CS1 students who had previous programming experience has held relatively steady at around 40%. So, for most students, CS1 is their first exposure to a programming language.

Next Mike gave several reasons he felt Ada was the best choice for the introductory language (see the CD for the complete list). One interesting element on Mike's list is that GNAT is such a *very* friendly compiler.

Mike then digressed somewhat to explain how it is that "first languages" are chosen by a vote of C. S. faculty. There can often be rather frustrating "political" aspects of this process, as there can be in government, or even commercial enterprises.

For several years Mike has collected data (as best he could without a systematic way of ensuring he had complete/up-to-date information) on how many colleges and universities (world-wide) introduce their C. S. majors to Ada in CS1 or CS2. For several years the number increased steadily. The last several years it appears to be in steady state. It is difficult to say without good data on how many C. S. programs there are in the U. S., but Mike estimated that approximately one fifth use Ada in the introductory sequence.

The remainder of Mike's presentation was an update on some of the more interesting things currently available and/or being done. If you haven't already checked out AdaGIDE, a GUI made available in the public domain via the Air Force Academy. Another GUI, GRASP, from Auburn University, facilitates understanding the control structures in an Ada program, as well as for other languages. Anther interesting project at the Air Force Academy, LEGO Mindstorm, involves using Ada-programmable robot spiders very early in the curriculum. At a PC you can specify "commands" to control the spider's movements (www.legomindstorms.com).

Mike concluded his presentation with a report on recent research he has conducted in Computer Science Education. He is studying whether or not we can teach concurrency in CS1/CS2, without eliminating other important material. I recommended this be done in a panel at SIGCSE '83, and John McCormick concurred with my recommendation. Subsequently, John Dalbey and I conducted research at Cal

Poly, SLO (partially funded by DISA) in '93-'95. In the '95-'96 academic year I successfully showed that teaching concurrency in CS1/CS2 (in Ada) can be done without loss in other areas. Mike's preliminary experience tends to confirm my results. However, he wisely wishes to gain more experience with his research before making definitive statements. However, he feels he definitely learned a lot about the "issues" on this subject, based on his research to date.

Presenter and SIGAda Education Working Group Chair, Mike Feldman

Irish Proverbs

Regarding team programming and XP:

Chíonn beirt rud nach bhfeiceann duine amháin.

Two people see a thing that an individual does not see.

Giorraíonn beirt bóthar.

Two people shorten a road.

Regarding how you phrase the problems you find in a design review:

Is minic a bhris beál duine a shrón.

It is often that a person's mouth broke his nose.

Regarding the eternal hope of shipping a death-march project:

Súil le cúiteamh a mhilleas an cearrbhac.

Hoping to recoup ruins the gambler.

Tutorial SF3: Design Patterns in Ada

By Paul Stachour

I attended Matt Heancy's Tutorial on Design Patterns in Ada95 on Monday. I didn't know anything about the design patterns before I arrived, not having read the Design Patterns book yet.

Matt did a job of explaining what the various patterns were, such as the factory and subjects/observers paradigm. He then pointed out a number of issues associated with the management of resources, more than just that of managing memory leaks. Matt indicated that one does not wish to change code in a server just because someone new wishes to observe the server. The abstraction is that the code being observed calls "Notify" when it wishes to let all its observers know that something interesting has happened. Issues associated with this pattern include:

- How a subject indicates it is OK to be observed.
- Where the observation record is kept.
- How an observer registers the code to be called when the notification takes place
- How one ensures that if an observer terminates/is terminated that no further observer-code calls take place.
- How one ensures that if the subject being observed terminates, that the observation record is cleaned up. Matt showed us had to add controlled-ness to the data structures to ensure proper cleanup, and that this general technique is applicable to many different kinds of resources, not just memory leaks.

A key differentiator of Ada is its built-in support for concurrency, especially the protected record of Ada95. Matt showed how to use the protected record to solve a variety of concurrency problems, including releasing of semaphores when an exception is raised. One of the other concurrency problems Ada helps with is the deadlock that occurs when differing orders of operations (say "if A = B" and "if B = A") cause objects to be locked in a different order. Ada provides a way to get a unique order (see RM95 13.3(6)) to prevent such deadlocks.

A comparison of the C/C++ in the Design patterns book shows how much easier it is to ensure that the patterns are robust when written in Ada.

Report from the SIGAda Extended Executive Committee Meeting

By John McCormick (Univ. of N. Iowa & SIGAda Secretary)

After filling up on pizza at the Local Reps Dinner on Monday night, the SIGAda Extended Executive Committee (the EEC) met in the Sheraton to discuss SIGAda business. The EEC consists of the 7 elected officers who make up the Executive Committee (EC), the working group chairs, chairs of local chapters, the present and next conference committees, and the Ada Letters editors. All of the SIGAda members are also invited to the meeting to observe and contribute to the efforts of all the volunteers who keep SIGAda going.

The first order of business was Currie Colket's (Conference Chair) commendation of the good efforts put forth by the SIGAda 2000 Conference Committee and all the local volunteers in this conference such a success. Currie reported that about 140 people have registered as of Monday afternoon. Hal Hart (Conference Treasurer) forecast that the conference's revenues will exceed its expenses.

Bard Crawford (SIGAda Treasurer) reported on SIGAda's financial situation. Our fund balance has rebounded from its low point in fiscal year 1999. With a projected profit for SIGAda 2000, the fund balance is in good shape as we move toward planning SIGAda 2001.

Hal Hart described a successful year with the SIGAda "Ada Awareness" booth. Sponsored by the ARA (Ada Resource Association), and staffed by SIGAda volunteers, the booth provides an Ada presence at non-Ada shows and conferences. This year the booth visited SIGCSE, STC, AFCEA /GovTech, TOOLS, PSQT/PSTT, and OOPSLA. Next year Hal will target these and the

Embedded Systems conferences, and investigate Linux World.

Ben Brosgol congratulated Martin Carlisle for his work as editor of Ada Letters. This past year all issues were delivered to the publisher on schedule. Martin also brought Ada Letters to the SIGAda web site. Members can access the latest issue via a browser.

Paul Stachour, SIGAda 2001 Conference Chair, presented an overview of the Twin Cities (Minneapolis and St. Paul, Minnesota) as a possible site for next year's conference. He described Ada's presence in the area, potential local sponsors, potential venues, and the status of filling in the lengthy ACM conference paperwork. The EC voted unanimously to accept Paul's recommendation for the Twin Cities for SIGAda 2001. Please join us at the next EEC meeting there next September.

GEEK HUMOR

Best file compression around:
'rm -Rf *' == 100% compression

Standards

By Dan Larsen (The George Washington University)

Earlier this morning, well, actually, it was this afternoon, but the way GW schedules classes, anything between 1pm-3pm is considered early. Anyway, James Moore of the Mitre Corporation gave a speech on how languages, and more particularly, Ada, are standardized. I used to think that it was just a bunch of old guys with a bottle (well, make that two bottles) of scotch complaining how bad things are and what they need to do to improve them.

There are two types of "Standards:" The first type is "De jure," which is an authorized standard, such as ISO, IEEE, and ANSI. The second type is a "De facto" standard, which is a "traditionally accepted" way of doing things. Mr. Moore's speech was primarily on the De jure standard.

For authorized standardizations, all but one country have a government appointed standards body. Leave it to the Americans to be the exception – that's right, in this country, there is no government authorized standards body. However, we do have a body that represents us in international standards discussions, which is ANSI. ANSI itself does not create standards; it just approves or rubber stamps proposals that have made it all the way to the top of the food chain. ANSI recognizes organizations that it has accredited, such as IEEE or ISO.

There are three ways to make a standard that ANSI will recognize: The first is when an accredited organization proposes a standard, the second is when a standard itself is accredited, such as X3 (which was before my time, IIRC) or a canvas, which is a *defacto* standard that is generally accepted by other ANSI standards.

As you already know, ANSI represents the US in international computer standards matter. The particular committee to which ANSI is delegated is the Joint Technical Committee 1 of ISO and IEC. Within the committee exists Subcommittee 22. The Subcommittee is composed of several working groups that take care of matters such as languages, environments, system interfaces, binding techniques, and lingering responsibilities. Ada is represented under WG 9.

The Ada standard itself was approved by the Europeans in 1987 with the revision approved in 1995. In the US, ANSI approved the first standard in 1983 which is why it's commonly known as Ada 83. My sources tell me that Ada Millennium Edition was approved in 2000, but Dr. Feldman @ George Washington assures me that no such standard has been approved. *(Editor: Mike Feldman is right!)*

Overall, the audience was treated to a brief overview of standardizations. This reporter was pleased to learn that there was a formal process to standardizing these things, as he used to think that language revisions were just more excuses for unnamed professors to write more books and get more royalties.

Dave Emery in SWEBOK BOF

Tutorial MP4: Software Engineering Body of Knowledge

By Paul Stachour

I attended the tutorial on the software engineering body of knowledge. Unlike the other tutorials which I attended, this one was intended for the audience to indicate what ideas they had, and how this might lead to the consensus needed to truly have a categorized "body of knowledge".

We noted from the IEEE Software Engineering Glossary, a definition of Software Engineering as "The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software."

We noted that under that definition, there are probably very few software engineers, since there are very few software organization we know about that are disciplined, do things in a systematic way, and measure / quantify what they do. We noted that almost all of the civil engineers are licensed, but around 7% of electrical engineers. The SWEBOK is not about licensing or certification, but the data in the SWEBOK might be used by professional agencies at some later date to create such exams.

The Countdown Continues

10 Visionaries of the 90's

Issues 0 & 1 started one webfeed's countdown of the 90's Top 10 influence makers. Here are 3 & 4 *(plus #7, which got chopped, repeated from yesterday):*

7. **STEVE JOBS:** ***The comeback kid.*** The amazing thing is not that he revolutionized computing in the 80's, but that he did it again in the 90's! Apple still makes the most user-friendly computers the world has ever *seen*.

4. **JERRY YANG & DAVID FILO:** ***Co-founders of Yahoo!*** It started as a hobby, to find stuff on an obscure part of the Internet, the World Wide Web. Neither of them guessed that their guide, a categorization of websites, would someday become the most popular, valuable, and widely imitated brand in a multibillion-dollar market.

3. **Marc Andreessen:** ***The poster child for the digital revolution.*** Co-inventor of the integrated text-and-graphics Web browser *(Mosaic)* and co-founder of Netscape. Contrary to popular opinion, he did not invent the Web browser, nor create the first GUI for a browser, nor was his even the first to use pictures. Nevertheless, the Web wouldn't be where it is today without him because to a *good idea* he brought business smarts — marketing, 24-hour tech support, and learning to improve the product and ensure user loyalty.

Watch for Friday's conclusion of these "surveys" with the Top 2! Plus, the webfeed's URL so you can go read more. *-H²*

The Countdown Continues

10 Success Stories of the 90's — The Companies

Two more of the Top 10 companies that made the 90's the high-tech success story it was.

- **Netscape:** In the beginning was the word, and the word was *Netscape*.
- **Amazon.com:** The conquistador of e-commerce.

The Countdown Continues

10 Trends from the 90's — Will They Shape the Future?

And, 2 more of ten 90's trends predicted to influence the 21st century:

- *"Microsoft Dominates the Desktop"* In the 80's there was a resistance movement. Today, resistance is futile; users everywhere have been assimilated.
- *"Revenge of the Nerd"* The high-tech revolution spawns a new breed of alpha male.

Intrepid Reg Chair Tom Panfil and His Kingdom

Ada's Window on the World Staff

Editor-In-Chief
Hal Hart (TRW)

Reporters:
Erin Briska (The George Washington University)
David Harrison (Logicon)
Dan Larson (The George Washington University)
Ron Oliver (The Oliver Academy)
Paul Stachour

Unsung Heroes of Computing

Today we list the first 3 of 5 *Visionaries who changed the face of technology*. The "10 Visionaries of the 90's" being reported above stand out not just because they're captains of the technology industry, but because they stand on the shoulders of giants going back to the beginning of computing *(and earlier)* who still influence modern computing. Today and Thursday we celebrate these oft unheard-of noble laureates. They inspired the captains of industry, either by working with them directly or by changing the course of technology's development and enabling them to achieve what we enjoy today and what now largely shapes our software engineering industry.

5. **J.C.R. LICKLIDER (1915-1990):** Patron saint of the Internet and modern CS.

4. **ALAN TURING (1912-1954):** Patron saint of AI.

3. **AUGUST ADA (BYRON) KING (1815-1852), *Countess of Lovelace*: Patron saint of programming (worked with Charles Babbage on the *Difference & Analytical Engines)*, technical writing, and public relations.**